Transcript of

SEMINAR IN PLANNING - PROGRAMMING - BUDGETING

for the State of Hawaii

KAHALA HILTON HOTEL
HONOLULU, HAWAII

JANUARY 30 - FEBRUARY 2, 1968

OFFICE OF THE LEGISLATIVE AUDITOR — STATE OF HAWAII

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Kahala Hilton Hotel
Honolulu, Hawaii

January 30 - February 2, 1968

Office of the Legislative Auditor
State of Hawaii

TABLE OF CONTENTS

	Page
Preface	i
Seminar Schedule	ii
Instructors	vi
Introduction to the Seminar - *John A. Burns, John Hulten, Tadao Beppu*	1
Introduction to Planning-Programming-Budgeting - *John Haldi*	3
PPB for State Government - *Allen Schick*	24
Design of the Program Structure - *Allen Schick*	36
Case Study in Program Structure - Post Office (A) - *James Kelly*	44
Introduction to Program Analysis - *Graeme Taylor*	54
Establishing Objectives and Output Measures - *Warren Law*	69
Implementation of PPB in State Government - *Allen Schick*	79
PPB and the Legislator - *John Haldi*	101
Tools of Analysis - Case Study: Bureau of Mines (A) - *Graeme Taylor*	126
Information Systems for PPB - *James Kelly*	146
Case Study: Disease Control Programs (A) - *Warren Law*	154
Workshop Session - *Graeme Taylor, Allen Schick, John Haldi*	167
Resource Management versus Resource Allocation - Case Study: New Jersey Insurance Company - *James Kelly*	184
Case Study in Program Analysis - Office of Economic Opportunity (A) - *Warren Law*	193
The Future of PPB for the Public, Legislature and Executive - *John Haldi, Warren Law*	208
The Department of Education's English Program	
An Introduction: The Background of the DOE PPB Effort - *Nelson K. Doi*	223
The Proposed English Program: 1968–1973 - *Margaret Oda, Ichiro Fukumoto*	226
An Analysis of the DOE PPB Effort and Some Comments on the Impact of the Proposed Format on Legislative Decision-Making - *Yukio Naito*	236
The Central Analysis Group - *Myron Thompson*	246

PREFACE

On January 30 to February 2, 1968, the Hawaii Legislature sponsored a seminar on the Planning-Programming-Budgeting system for all State legislators and the heads of the various State departments. The entire seminar was taped, and this is a transcription of the proceedings.

As the reader will note from the schedule of the seminar, the legislators and administrators were divided into two sections for most of the sessions. The proceedings of both sections were taped. However, for the purposes of brevity, the tape of only one of the sections was transcribed. In so doing, the tape of the other section was consulted and important points and illustrations not covered in the proceedings of the first section were incorporated in this transcription.

The transcriptions have not been reviewed by the principals involved. The office of the legislative auditor, therefore, assumes all responsibility for errors in the transcription.

As the coordinator of this legislatively-sponsored seminar, the office of the legislative auditor wishes to acknowledge the most gratifying attendance by the legislators and administrators at the seminar and the generous assistance of the Management Analysis Center, Inc., the Department of Education and the Governor's Office for making the seminar possible. In particular, we wish to thank the following principals who conducted the seminar: Dr. Warren A. Law, Dr. John Haldi; Dr. Allen Schick, Mr. Graeme Taylor, and Mr. James N. Kelly, all of the Management Analysis Center, Inc.; Mrs. Margaret Oda and Mr. Ichiro Fukumoto of the State Department of Education; and Mr. Myron Thompson of the Governor's Office.

We sincerely hope that this transcription will be of assistance to the legislators, the heads of the State departments, and all others interested in the Planning-Programming-Budgeting system.

Clinton T. Tanimura

January, 1969

SEMINAR SCHEDULE

Program for Tuesday, January 30

JOINT SESSION (SECTIONS A & B)

8:45 - 9:00	Preliminary remarks and introduction (President Hulten and Speaker Beppu)
9:00 - 10:30	Introduction to planning-programming-budgeting (John Haldi)
10:30 - 11:00	Break
11:00 - 12:30	PPB for state government (Allen Schick)
12:30 - 1:30	Lunch

	SECTION A	SECTION B
1:30 - 3:00	Design of the program structure (Allen Schick)	Introduction to program analysis (Graeme Taylor)
	Case study - "Post Office (A)" (James Kelly)	Establishing objectives and output measures (Warren Law)
3:00 - 3:30	Break	
3:30 - 5:00	Introduction to program analysis (Graeme Taylor)	Design of the program structure (Allen Schick)
	Establishing objectives and output measures (Warren Law)	Case study - "Post Office (A)" (James Kelly)

Recommended preparation for Wednesday, January 31:

1. Read case-study entitled "Bureau of Mines (A)." Please prepare to participate in a discussion of the questions on page 6 of the case.

2. Read case-study entitled "Disease Control Programs (A)." Please prepare to participate in a discussion of the questions on page 10 of the case.

3. Read two-page note entitled "Introducing PPBS at the State and Local Level" by Allen Schick.

Program for Wednesday, January 31

	SECTION A	SECTION B
9:00 - 10:30	Implementation of PPB in state government (Allen Schick and John Haldi)	Tools of analysis; case study - "Bureau of Mines (A)" (Graeme Taylor and Warren Law)
10:30 - 11:00	Break	
11:00 - 12:30	PPB and the legislator (John Haldi and Allen Schick)	Information systems for PPB (James Kelly) Case study in program analysis "Disease Control Programs (A)" (Warren Law)
12:30 - 1:30	Lunch	
1:30 - 3:00	Tools of analysis; case study - "Bureau of Mines (A)" (Graeme Taylor and Warren Law)	Implementation of PPB in state government (Allen Schick and John Haldi)
3:00 - 3:30	Break	
3:30 - 5:00	Information systems for PPB (James Kelly) Case study in program analysis "Disease Control Programs (A)" (Warren Law)	PPB and the legislator (John Haldi and Allen Schick)

Recommended preparation for Thursday, February 1:

1. Read case-study entitled "New Jersey Insurance Company"; please prepare to participate in a discussion of the questions raised in the case.

2. Read case-study entitled "Office of Economic Opportunity (A)"; please prepare to participate in a discussion of the questions on page 14 of the case.

Program for Thursday, February 1

	SECTION A	SECTION B
9:00 - 10:30	Workshop session (Graeme Taylor and James Kelly)	Case study in program analysis "Office of Economic Opportunity (A)" (Warren Law and John Haldi)
10:30 - 11:00	Break	
11:00 - 12:30	Resource management versus resource allocation "New Jersey Life Insurance Company" (James Kelly and Warren Law)	Workshop session (Graeme Taylor and John Haldi)
12:30 - 1:30	Lunch	
1:30 - 3:00	Case study in program analysis "Office of Economic Opportunity (A)" (Warren Law and Graeme Taylor)	Resource management versus resource allocation "New Jersey Life Insurance Company" (James Kelly and John Haldi)
3:00 - 3:30	Break	

JOINT SESSION

3:30 - 5:00	The future of PPB for the public, legislature, and executive (John Haldi)
	Seminar review

Program for Friday, February 2

To Be Presented by State of Hawaii Personnel

JOINT SESSION

9:00 - 10:30	Joint Committee on Education
10:30 - 11:00	Break
11:00 - 12:30	Joint Committee on Education
12:30 - 1:30	Lunch
1:30 - 3:30	Governor's Central Analysis Group

INSTRUCTORS

Warren A. Law, Professor of Business Administration, Harvard University, was course director of the three-week PPB seminars conducted in 1966 and 1967 by the Management Analysis Center, Inc., at Harvard Business School on behalf of the U. S. Civil Service Commission. These seminars were attended by representatives from state and local governments as well as by federal employees. Dr. Law is an economist who teaches courses in financial management at Harvard Business School; his recent publications include studies on taxation, monetary policy, credit, and urban transportation. He has supervised the writing of numerous cases on PPB for the U. S. Civil Service Commission and the U. S. Bureau of the Budget.

John Haldi, a former professor of economics at Stanford University, was until recently Chief of the Program Evaluation Staff, U. S. Bureau of the Budget. In that capacity he was responsible for overseeing the development and implementation of PPB throughout the civilian agencies of the executive branch of the federal government. Dr. Haldi is now a private consultant in economic planning in New York City. He has lectured and taught widely on PPB before groups of state officials, and is currently working closely with several state governments on the design and implementation of PPB systems. He recently testified before the Joint Economic Committee of the United States Congress on "The Future of PPB."

Graeme M. Taylor, an associate of Management Analysis Center, Inc., is in charge of the firm's office in Washington, D. C. He is the principal author of over thirty cases on PPB written on behalf of the U. S. Civil Service Commission and the U. S. Bureau of the Budget. Mr. Taylor has been responsible for organizing the curriculum for a series of seminars to be held by the Management Analysis Center, Inc., to train officials of state, municipal, and county governments in PPB. He has taught in PPB seminars held at Harvard Business School and at the Universities of Iowa, Virginia, and Maryland, besides frequent teaching assignments for the Civil Service Commission in Washington, D. C. He is currently teaching a graduate course in cost-benefit analysis at the University of Maryland, and is also engaged in writing a book on the subject which will be published early next year.

James N. Kelly, President, Management Analysis Center, Inc., has prepared several of the case-studies on PPB on behalf of the U. S. Civil Service Commission, as well as teaching and speaking on PPB before many public and private groups. In addition to his responsibilities as president of Management Analysis Center, Mr. Kelly also teaches a course in planning and control techniques at Northeastern University, Boston, Massachusetts.

Allen Schick, Assistant Professor of Political Science at Tufts University, has devoted a substantial portion of his research activities to the development of planning systems in state governments. Dr. Schick's research has included a study of the impact of program budgeting at the state level and, more recently, an analysis of budgetary reform in the United States which is presented in "The Road to PPB -- The Stages of Budget Reform," Public Administration Review, December, 1966. Other recent publications include "Adapting PPBS to State and Local Governments," Cost Effectiveness Newsletter of the Operations Research Society, May, 1967.

Tuesday, January 30, 1968

INTRODUCTION TO THE SEMINAR

The Governor's Message

The Honorable John A. Burns

Fellow citizens and those who are responsible for conducting this seminar:

It is indeed a pleasure to welcome you, because I believe that there is nothing better that we can do that would contribute to greater efficiency and to the fulfillment of our desire to give the best possible service to the people of the State of Hawaii, than to hold a seminar of this kind.

During my five years in office, I have repeatedly expressed myself as to the character, the integrity, the dedication and devotion of the members of the State legislature. It has been a real pleasure and a real privilege for me to work with the members of the legislature. Your dedication and devotion to duty, your efforts to attain the best possible form of government, the best possible service to the people whom you represent, have been most exemplary. I have said and I will repeat that we have the finest legislature in the whole United States.

All of us desire to service our people, to provide them with those services for which our government exists. We have endeavored to render the best possible service and to provide those programs which will meet the needs of our people, and we have endeavored to do this in ways which promote efficiency in government.

There are basic difficulties, there have always been, and I have attempted to work with you to determine what our programs are doing, where we are going, and how we are doing towards getting there. The PPBS is one method of determining this, and it is proving to be probably the most satisfactory. I am delighted that we're looking at PPB, that we are going to learn what it's all about. I hope that we will be able to implement it—that through it the legislature may set its policies and the administration attempt to carry them out as best as it possibly can. I look forward to a very meaningful seminar that will produce results for the people of Hawaii.

Congratulations.

PRELIMINARY REMARKS

The Honorable John Hulten

President of the Senate

Legislators and administrators, I think it's significant that we're gathered here this morning. As the Governor said, we are working towards a common goal which is, service to the community. I believe that what we are looking for here today and during the next few days is not only a mechanical system of putting down figures, but a means of better articulation and communication between the administrators and the legislators.

One of the problems, of course, is not only in trying to provide the necessary revenues to run the State for the fiscal year, but in trying to analyze and help develop

policies and programs. This is a most difficult task, especially with a limited period of time in which to operate. It appears that the type of budgeting which we're going to hear about—planning-programming-budgeting system—is a tool which can be used to help not only in the formulation of a program, but in its analysis. It will provide us with something that we have been lacking, and that is a yardstick whereby we can measure progress towards desired goals. After all, it's a rather frustrating thing for legislators or administrators not really to be able to evaluate what they have done, not be able to evaluate the programs which they have initiated. I hope that as a result of this seminar we will be better able to do these things.

I want to take this opportunity to welcome and to congratulate the legislators and the administrators who are here this morning. By your presence, you show your interest in improving our system. You are giving up valuable time in order to come and acquire the necessary tools whereby you can, not only better articulate, but also develop better programs for the community.

At this time I would like to call on Speaker Tadao Beppu, who will introduce our guests—our professors—who are going to tell us about the PPB system.

AN INTRODUCTION OF THE SEMINAR FACULTY

The Honorable Tadao Beppu

Speaker, House of Representatives

Mr. Governor, Mr. President:

The Governor took some words out of my prepared text. He said we are the best legislators; I am going to add that we are better informed, better trained and better traveled than the legislators of other states.

True to form, I see that all of us are grouped by houses again. I talked to Mamoru Yamasaki* and he told me that he's not a senator yet; he says that "S-E-N" on his name tag stands for "senor."

This morning it gives me great pleasure to introduce those who will be doing the instructing. First I'd like to introduce a professor of Business Administration at Harvard University: Dr. Warren Law. Next is a former professor of Economics at Stanford University; he is now a private consultant in economic planning: Dr. John Haldi. The next gentleman is an associate of the Management Analysis Center, Inc.; he teaches courses on cost-benefit analysis, and, to be commercial about it, he'll have a book out early next year: Mr. Graeme Taylor. I want to also introduce an assistant professor of Political Science at Tufts University, who's done research in budgetary reform and who is the author of the paper entitled, *The Road to PPB:* Dr. Allen Schick. The next gentleman is a man who came here a few weeks ago as the advance man for the group. I notice they usually send as advance man a very young man. One of the first questions he asked me when he got here was, "Where is the tea house?" To be interested in a tea house, you have to be middle-aged like Senator Jimmy Clark and married for about 15 years. Mr. Kelley has been married for only about six months, I understand, and he's the president of the Management Analysis Center, Inc. He teaches a course in planning at Northeastern University in Boston: Mr. James Kelley.

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*For the reader's edification, Senator Mamoru Yamasaki has been a member of the House of Representatives. Shortly before the seminar, he had been named by the Governor to fill a vacancy in the Senate.

Tuesday, January 30, 1968

INTRODUCTION TO PLANNING-PROGRAMMING-BUDGETING

John Haldi

Governor Burns, Mr. President, Mr. Speaker, distinguished members of the legislature, other guests, ladies and gentlemen, on behalf of the group, let me say that we're all most happy to be here in sunny Honolulu to spend these four days with you.

In your notebooks before you, you have a schedule. You also should have a brown, two-page folder. The brown folder supersedes the schedule that's in your notebooks and it's the one we will follow. If you will look at the schedule, you will see that there are sections A and B. The section to which each of you belongs is noted on your name card. Just prior to breaking up for lunch today, we will explain to you where sections A and B will meet after lunch.

Development of PPB

What I'd like to do this morning is just try to explain to you a little bit about what the planning-programming-budgeting system is and what it is not, because it's been my experience that there frequently exists a misunderstanding about what PPB is and what it's not. I think most of you are familiar with the basic background of the planning-programming-budgeting system. It's got roots that go way back into the history of political administration or political science. Professor Schick, to whom you were introduced a minute ago, is a real historical expert on PPB. I don't want to preempt any of his story, but let me just say that the idea of program budgeting has been around for, in the recorded history of this government, well over 50 years, and it may go back considerably further. I've even seen a rather snide comment in some document that traces it back to the *Genesis.*

We're always faced, when we start presenting the concept of the planning-programming-budgeting system, with the fact that when people hear about it we get two reactions, sometimes almost simultaneously when there's more than one person in the room. The first reaction when people first hear about it is, "Well, that is impossible. It can't be done." Then, they think about it for a minute and the next reaction is, "Besides we're already doing it." Now between these two extremes, what I'd like to do is try and present the PPB system as something which can be done and something which by and large is not being done in its entirety. At the same time, as we go through what the PPB system is and what it is not, I think in each individual piece you look at you'll recognize something of an old friend you've seen somewhere in some guise before.

The components of the system are not that new. I think the two things that are newest about the PPB system are these: *one,* the integration of the components that we'll talk about into something that can be called a system; and *two,* the *doing* of it.

The basic ideas of PPB have been taught in one guise or another for decades, not always as a totality, not always as a complete system, but, by and large, you'll find that government agencies are not doing it in their totality. Now in the federal government, the agency which has received the greatest amount of publicity, as we all know, is the department of defense, and the publicity has probably come about for a number of reasons. *First,* it is so big–$76 billion is its proposed budget for this current year. It was about $46 or $48 billion when Mr. McNamara came in. Now that's a lot of money. *Second,* I think it's got a good public relations agent in the pentagon. A lot of government agencies aren't

as up on their public relations as the pentagon. Of course, when you're spending $50 to $75 billion a year and you call a press conference, it's not hard to get the reporter turnout and get it in the newspapers. *Third,* and most important, I think that the pentagon has come somewhere out of the medieval ages in its budgeting system, and it is probably true that in terms of where it started and where it is now, it has made as much or more progress than any other government agency. But that just means that it has sort of come into the twentieth century. You will find that a number of other government agencies are already doing routinely a number of things which the department of defense is now doing. They never got out press releases about it and they never labeled or named the system after the heads of their agencies the way the department of defense's system has been labeled the *McNamara system.* Maybe it's because it's harder to get changes in an organization as big as the department of defense; that's how Mr. McNamara got his first tribute. Admittedly, it's difficult to change an organization of $50 billion and 3 million individuals.

Objectives of PPB

Let's begin by discussing briefly the objectives of the PPB system. We have some slides here if they can be read. Can you see them over at the side of the room there? I'll read them out for those of you in the corner of the room who may have trouble seeing them.

On *slide no. 1* are the objectives of the PPB system that have been discussed many times in print in one place or another.

Slide No. 1

PPB OBJECTIVES

Link program & budget decisions
State program objectives more explicitly
Analyze & evaluate:
- Existing programs
- Alternative programs

Improve management:
- Information
- Decisions

Improve output from public programs

The first objective is *link program and budget decisions.* Now, clearly, budget decisions are not made in some kind of a vacuum, and I don't want to imply by what's up here that they are made in some kind of a vacuum. But we'll see as we go through the rest of today and the next two days, that *programs,* on which PPB is focused—the idea of programs being defined in a rigorous way and being used as the fundamental basis for budgeting, for appropriating, for keeping your accounting records, and for keeping your information system—is the unifying link or the common direct language which links these things together. This link is frequently missing in line-item type budgets by which so many governments are characterized. By this, I do not mean to imply that there's no linkage whatsoever between program decisions and budget decisions at the present time, but only that they are not linked in some orderly and logical fashion.

The second objective is to *state program objectives more explicitly.* This objective is one that we have an entire session on this afternoon. It's on your schedule there—the

1:30 - 3:00 session for section B; 3:30 - 5:00 for section A. To *state objectives more explicitly* means more explicitly than they are frequently stated. I'll try to give some specific examples of this as we proceed further this morning, plus we'll spend somewhat more time on it today.

The third objective is to *analyze and evaluate existing programs and alternative programs.* This does not mean to infer, again, that no analysis is being done of existing or alternative programs today. But it does mean that in many cases the analysis can be improved substantially, perhaps even radically. The analysis you see in the department of defense must certainly be relatively new, because it's been attacked so much. The use of cost-effectiveness analysis to make decisions in the department of defense is indeed a relatively new thing. It's not that the people in the department of defense didn't analyze before, but I don't think they analyzed in the depth and in the framework that is now being done or used to make most of the higher-level decisions in the department of defense. The decisions that have gotten in the news—the cancellation of the skybolt missile project, the cancellation of the B70 bomber—were both made on the basis of this new type of analysis. Moreover, this type of analysis has launched, I think, a more systematic and more thorough search for alternative programs. Again, I don't want to infer that people didn't search for alternative programs before because clearly they did. If they didn't, we'd still be using muskets and bows and arrows in the department of defense. But I'll have a lot more to say today and tomorrow about this. We have several sessions tomorrow on analysis of programs.

The fourth objective of PPB is to *improve management.* PPB exists not only in the office where the analysts are working and generating program analysis. PPB is a management system for managers, not for the specialist, not for the economist or the technician. It is a management system designed to be used by the top managers in the government—from the governor right on down to the department heads, to the division heads, to the bureau heads. It's meant to be a system for the managers to improve the management of government programs, to improve the actual information which goes to the managers and, with this information, to improve the decisions which they make, ranging from small decisions up to the big ones, the major decisions.

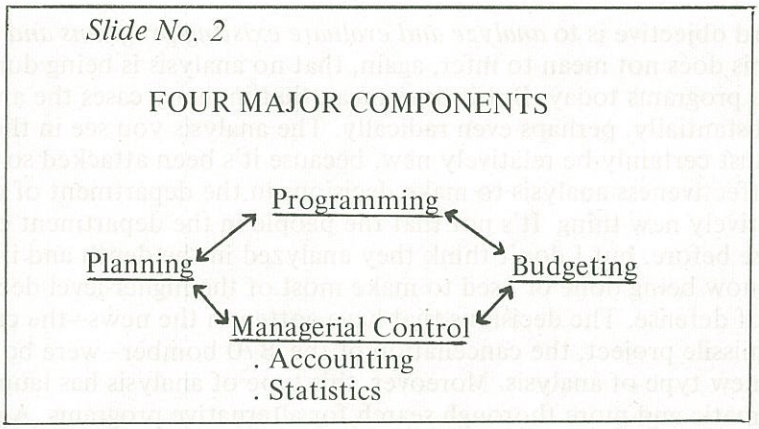
The fifth and final objective of PPB is to *improve output from public programs.* This objective should possibly be at the top, for it includes all of the other objectives. It's what we do for all of the others. The purpose of the PPB system is just what the governor said it is—to try and improve the output of the government programs for the people of the State of Hawaii. You can do an awful lot of those things that we'll talk about in terms of the mechanics of PPB, but if you don't finally improve what's coming out of your programs down here at the bottom, then you haven't accomplished anything. This is the end purpose of it all. It is to deliver more and better quality of public goods and services to the people of Hawaii. If that doesn't happen, then all of the other things we'll talk about would be for naught. So let's keep that in mind. That's ultimately what we're talking about here—it's better government for the people of Hawaii.

Components of PPB

There are four major components to the planning-programming-budgeting system. I want to stress that there are four. One of them got left out in the title, *Planning-Programming-Budgeting;* perhaps just as well, since the title is cumbersome enough as it is.

Slide no. 2 names the four components. You will note that the arrows flow to and from each component to another. This is to indicate that everything is linked to everything else in the system. This illustrates the integration of the various components I talked about

earlier. You don't start one place and then go from there to the next in some linear fashion and say that the first thing is the most important thing. For our discussion, however, let's start over here on the left (planning) because that's where the initials (PPB) start.



You start with planning and analysis. Then you feed into an explicit step called *programming.* Let's talk about what this *programming* is in specific terms.

Programming takes place, basically, after you've done some planning. You make various plans, then you lay out in physical terms exactly what it is that you're going to do. You're going to train so many physicians in the medical schools; you're going to train so many students in the first grade or second grade. In the case of the federal government, it is going to train so many people in the job corps, it is going to train so many in the neighborhood youth corps program. In the case of the defense department, it is going to build so many C5A's, and so many C141's, and so on. Programming means to lay out what it is you plan to do for the next several years. Now, this is nothing new to the people of Hawaii. It is my understanding that your capital improvements program is already laid out six years in advance. Well, it's trying to do the same thing for your entire program—for the operating portion of your program as well as the capital improvements part of the program—to lay out what it is you're planning to do, and also to lay out the financial requirements for these things which you plan to do, so that the financial implications of these various steps are shown in a systematic way for the entire program, not just for the capital improvements part.

Then, of course, there's *budgeting,* which I assume all of you are familiar with since you're about to launch into a 30-day session devoted exclusively to budgeting. Budgeting is, of course, taking a one-year slice of the program and going through it in detail. After you approve it, of course, the executive branch goes into action and through the allotment procedure, they feed it out to the various departments, divisions, right down to the field office level. The field office level carries through with what it is supposed to do.

After the field office has done what it is supposed to do—provide welfare benefits to people, train students in various knowledge and skills, ranging from the first grade up to the college and graduate school, provide adult education, and so on—you get or should get some kind of information back—some feedback from the performance of all of the programs. You start off with plans, then you program and then you budget, that's all *future.* The future becomes today and what is supposed to be done is done, and then it becomes yesterday. You've got to relate all this—the future, today and yesterday. This is what I call *managerial control.*

I use the term *managerial control* because it includes two important aspects, not just one. It includes **financial** reporting—the accounting aspect—and it includes **program** reporting. Frequently in government, these two things are not integrated nearly the way they ought to be. I don't know anything about the State of Hawaii; I'm not accusing anybody or anything here. All I can speak about is the experience of the federal government where financial records and statistical records are frequently kept by two entirely separate groups who meet once a year at the Christmas party, introduce themselves, and go back to their offices and go their separate ways for the rest of the year with no idea of collecting and disseminating information in a systematic and meaningful way about programs. I think this is partially true because there's been such a lack of emphasis on programs in the past.

These four, then, in summary form, are the major components. They feed on each other; you don't start with one and just go on to another. Timewise, of course, you start with planning; but oftentimes you iterate back and forth. You plan something and start to program it, then somebody along the line says it costs too much. Maybe the governor says it costs too much; maybe the governor approves it, but the legislature says it costs too much. When this happens, you go back to planning again. You come up with some other plan with cost figures which are within the bounds of what will be approved. President Johnson submitted his budget yesterday, and the GOP, in good election year fashion, said it's too much. If the budget doesn't get approved, somebody is going to have to go back to the planning board and come forward with new plans, new programs, and new budget submittals that everybody can agree upon, and then the budget will have to be carried out, and there must be some feedback from what has been carried out.

The feedback should influence the plans. This is something that frequently doesn't happen in legislative process. It doesn't happen oftentimes not because legislators don't want it to happen, but because we simply aren't organized to permit it to happen. The information and financial systems aren't organized in a way to facilitate its happening. It's a breakdown of the system more than of people. You ask the right questions but you don't get the answers. You push budgets and appropriations; you have to, but you're not organized to get the feedback the way you ought to be getting it—to find out who's doing well, who's doing mediocre, and who's doing poorly; to reward those who are doing well and to focus on those who are doing poorly. Now, sooner or later, you do get some feedback. Clearly, I mean things don't go on forever. But, the feedback system is oftentimes highly imperfect, and this is one of the things which the PPB system also aims to improve.

Program Definition

Let's turn our attention now to *programs* and the definition of programs which are used in planning-programming-budgeting.

Slide No. 3

PROGRAM DEFINITION

In general	For example
I. Major program category	I. Develop health resources
A. Subcategory	A. Increase manpower
1. Program element	1. Train physicians

Can Define Programs For

. State
. Department
. Bureau or division

We have a session on this later today, but let me introduce a little bit of terminology here. Programs are organized, in general, by something called major categories. For each major category, there are subcategories, and for each subcategory, there are program elements. The program element is generally the finest level of detail which surfaces in the system. Now, that doesn't mean that the program element is something that's particularly small. It's not like an element in physics where, as you know, an element conveys the idea of a very small particle. Let me tell you of one of the biggest program elements I know. In the department of defense, the polaris missile system is a program element. This element is about $2 billion—it's bigger than your entire budget. This is just one element out of about 1,600.

A program element is itself an aggregation of a lot of things. For example, the element polaris missile system in the defense department includes the submarines, the missiles, the submarine tenders, the men on the submarines, and all the other things necessary to keep the polaris missiles on station. You have to deal in aggregates when you're managing big systems. A program element is an aggregation of things. Here's an example which makes this idea a little more specific. In the health area, one of your major program categories would be something like *develop health resources.* Within the program of *develop health resources,* there would be a number of subcategories, one of them probably *increase health manpower.* One of your program elements within that subcategory might be *train physicians.* The training of physicians, training of dentists, training of nurses, training of other medically-associated personnel, such as opthamologists, would be a part of increasing health-related manpower. Of course, it takes a lot of things to train physicians. It takes hospitals, it takes equipment, it takes teachers and so on. So a lot of input go into the training of your physicians.

You can define programs for the entire state, you can define programs for departments, or you can define programs for a bureau or division chief. If you define programs for the entire state, this definition then, becomes the governor's program structure. It's tailored to the governor's needs. Now, when you tailor the program structure to the governor's needs, that program structure will very likely cut across departmental program lines. The sample program structure put out by the state-local finances project at George Washington University has, I think, six or seven major program categories for the entire state. Well, you have 17 departments in the state. You can't possibly fit all 17 departments into such six or seven program categories without lumping some departments together. The structure crosses departmental lines because the governor has responsibility for the entire state. Incidentally, such a program structure could also and would also be the proper purview of the state legislature.

For a department head, a man who's got a span of responsibility which includes a single department, the program structure which he would use for getting the total picture of his department would not encompass things outside of his department which are not his responsibility. He may, of course, choose to display certain information about what's going on in other departments which are related to his programs. But his program structure would probably look different from the governor's. His program structure would also show more details—things which sort of disappear from the governor's view in the governor's program structure. This is because the governor has far broader scope of responsibility than would appear in a program structure designed for a department chief.

Similarly, you can, if you want, design a program structure for a division head or a bureau chief within a department which would encompass those things for which the division or bureau chief is directly responsible. Let me give you an example on the federal level. The secretary of agriculture has a program structure that includes all of the 14 to 18 bureaus that exist in the department of agriculture. It's a rather interesting program

structure. We might digress just a moment to examine the secretary's program structure. Secretary Freeman refers to it as his *Three C's*—cost, consumers and communities. These three are major categories. In addition there is a category called *international* and another called *general cost* for the overhead of the department. The *cost* category includes programs for the cost of wheat, oats, soybeans—all these things you're familiar with. The *consumer* category includes programs for meat inspection, milk inspection, and so forth. It also includes feeding programs aimed essentially at consumers, like the school lunch program. The third program category, *communities,* includes a number of programs designed to aid communities. They have a community loan program and a rural electrification program aimed primarily at helping rural areas and rural communities. One of the interesting exclusions from the department of agriculture program structure is *farmers.* Nowhere does *farmers* appear, and the inference which can be correctly drawn from this, I believe, is that the agriculture department really doesn't give a damn about farmers as such. If you talk to the people in the agriculture department in a little bit, you'll find out that the preservation of the family farm is the biggest joke in the department. It gets the biggest laugh all the time. They gave up caring about farmers as such a long time ago. Program structures tend to be sort of revealing if you think about what they include and what they exclude.

Now, it is possible for the chief of any of the major bureaus within the agriculture department, such as the forest service, to have his own program sructure. In the departmental program structure, there might be a major program called *timber* or there might have a program called *hardwood.* This would be all the detail that the secretary of agriculture would be concerned about. But, for the chief of the forest service, his timber program might get down into considerable more detail. He might care about not only hardwood as such, but different varieties of hardwood. It would be possible, then, for a bureau chief to have his own program structure, and it would be along the lines of the secretary's and fit into it—would dovetail with it—but would be considerably more detailed.

Line-item budget and program-structured budget compared. *Slide no. 4* gives you an example of a real, old-line object class budget compared with a program-structured budget.

Slide No. 4

HEALTH BUDGET

By Program or "Outputs"		By Object-Classes, or "Inputs"	
I.	Develop health resources	I.	Division "X"
	A. Increase manpower		A. Salaries
	B. Provide facilities		B. Materials & supplies
	C. Health research		C. Services (other than personal)
II.	Control health problems		D. Extraordinary
	A. Disease control		E. Additions & improvements
	B. Environmental control	II.	Division "Y"
	C. Consumer products		A.
III.	Provide health services		B.
	A. Direct	III.	Division "Z"
	B. Indirect		A.
	C. Special groups		B.

This is a budget for health. On the left is a program structure for health. We don't need to go through the whole thing, but basically, it has three major categories. These, incidentally, are the major program categories for health that John Gardner, secretary of health, education and welfare, has adopted. *Develop health resources* is a major category.

It has *increase manpower, provide facilities* and *health research,* the basic health resources, as subcategories. I didn't have room to show the program elements. The next major category is *control health problems.* It has as subcategories, *disease control, environmental control* (water and air pollution—chiefly air pollution now), and *consumer products* (that's the FDA type of thing). The third category is *provide health services. Direct* services include things like the national institute for health centers, like the one in Maryland, and hospitals like the public health service hospitals which they operate around the country chiefly for the merchant marines, the coast guard, etc. Generally, government-run hospitals would be *direct* services. *Indirect* services include chiefly medicare. In the subcategory *special groups,* you have *child care* and *blind* and various other programs for special groups like that.

On the right side of the chart is a typical object class budget. The budget is broken down into organizational units—in this case, divisions—X division, Y division, Z division. Within each division, you have a breakdown by *salaries, materials and supplies, services, extraordinary,* and *additions and improvements.* This illustration frankly is straight out of the New Jersey state budget format. All divisions have exactly these five categories, repeated over and over again for each division. That is just a quick look at the difference between a program budget or what I would call a budget by output, and an object-class budget or line-item budget or budget by input. This example of an object-class or input budget is an extreme one. Sometimes you don't have all these inputs, and sometimes you have a sort of output-related budgets.

One of the striking things about a program budget, when it is a good one—one really designed well—is its simplicity. A good program budget just lays out in terms clear and comprehensible to anyone familiar with the department, exactly what it is that you're budgeting by and for.

Crosswalk: Outputs related to inputs. *Slide no. 5* is kind of hard to read. It is basically a table which was developed to relate your output budget to your input budget. These two budgets should have a direct relationship. It's something now commonly called a *crosswalk.* Charles Hitch, who was McNamara's comptroller in the department of defense, used to refer to this as a *course converter,* but *crosswalk* seems to be the terminology which has stuck.

Slide No. 5

CROSSWALK – OUTPUTS RELATED TO INPUTS

		Division "X"	A. Salaries	B. Materials & Supplies	C. Services	D. Extraordinary	E. Improvements	Division "Y"	Division "Z"	TOTAL
I.	Develop health resources	I.						II.	III.	
	A. Increase manpower									
	B. Provide facilities									
	C. Health research									
II.	Control health problems									
III.	Provide health services									
TOTAL										

Here you see the health resources programs listed on the left. The crosswalk, at least conceptually, is a table. In practice it gets to be a pretty big table, so you don't have to lay out the whole thing, but you could summarize by major categories. You lay out your program budgets down the side and your traditional object classes or your inputs at the top as column headings. The inputs listed are what you saw in slide no. 4—the divisions and the various objects of expenditure: salaries, materials and supplies, services, extraordinary, and improvements. These inputs go into each of the programs listed in the left.

When you see this table laid out this way, you realize that it's possible to total across the rows. You total across the rows all the inputs which go into each of the program elements. If I had the detail up here under *increase manpower,* one of my program elements might be *train physicians.* By totaling all the inputs that go into the training of physicians, the table would show how much of the budget, how much resources, would be spent to train physicians. Similarly, if you're interested in how much goes to travel, how much goes to personnel, how much goes to services, by divisions, you can total down the columns. Then, unless you made a mathematical error, if you total the sum of the columns and the sum of the rows, you get a grand total down here; whether you use the old math or whether you use the new math, it ought to come out the same. If it doesn't come out the same, you're in real trouble. Well, this is just a basic overview of how the old budget, where you have an old budget, is related to the new budget through what's called a *crosswalk.*

Well, so much for program structure—what the idea of a program is about. We'll spend more time on this later today, but the definition of a program is the unifying object around which the rest of the whole apparatus is gathered or focused.

Problem in structuring. The definition of a program can also become quite controversial. I've seen departments totally split asunder, arguing how to define a program or a program structure. It can generate quite a bit of heat, unfortunately. The reason is, once you adopt a program structure for a department or for the state or county, that is the way important people start looking at things. That is the way they see the picture. It provides a framework for thinking.

Let me just back up. I try not to use department of defense examples too much when talking about PPB because it seems awfully foreign to a lot of people. I think, however, there is one good example here, if we can think about it. The department of defense program structure starts off with major program categories, one of which is called *strategic forces.* That's broken down into *offense* and *defense. Offense* includes air force systems such as titan missiles, the minuteman missiles, and the manned bombers. You also have the navy flare submarines as part of the strategic offensive forces. Now, what this means is very simply that every time McNamara sees these things he sees them displayed together. It sort of leaves him to wonder and to compare the navy flare submarines with the air force's missile system. Direct comparisons are invited by the structure. Nowhere in this program structure does the army, navy and air force appear as such—they're all split apart and they are scattered all over this whole program structure.

Let's just pause a minute and go back to 1958 and 1959 and imagine that a memorandum is circulating around among the joint chiefs of staff which says, "Would you like the idea of adopting a budget format which pays no attention whatsoever and makes no distinction between the army, navy, and the air force and which presents to the secretary of defense and the Congress the entire defense budget without making any distinction whatsoever by service lines?" Can you imagine the replies you would have gotten back from the joint chiefs of staff if you had circulated such a memo? Well, I suspect they would have been negative and heated, and this is the same type of thing exactly which you frequently encounter when you set up a program structure.

A good program structure usually doesn't pay much attention to organizational lines. When people see their organizations being decimated in their eyes this way, needless to say they don't go to it like bees to the honey. We'll talk about this, as I said, at considerable length somewhat more, but I spent just a little time talking about programs and program structures because it is important to emphasize that you need a good, cohesive definition of the program. If you don't, the whole thing starts to fall apart right away.

Program Goals and Objectives

Having defined your program, you need to define program goals and objectives. This always seems to throw a lot of people.

I'll tell you of an experience we had in the federal government. Probably the most distressing experience we had was with the department of justice. The department of justice was told to "define your objectives." We went over and talked to the attorneys there. They acted very patronizingly; they put on their best attorney smile—that type of smile an attorney puts on when he tries to tell you that you're a very nice fellow but that, look, you really don't have a case; now forget about it and go home. We went over there and said, "Now, what's the matter, you didn't define your objectives." They looked at us and said, "Look, you really don't understand. We're attorneys, we're lawyers. Lawyers don't have objectives. Clients have objectives. We exist in order to serve our clients, and that's all." That's the approach you get all too frequently—"What do you mean, define our objectives?"

Goals and objectives distinguished. Let me first of all define some terminology, at least for the purposes of these three days. I know that my terminology is at direct variance with that used by a lot of other people, but for the sake of uniformity in the field, we have to define things one way or another. We need two words to define two rather different things in this area.

Goals, I interpret to be rather broad statements. We start out with broad statements like, *more and better health for Americans, more and better health for American Indians, better transportation,* or *better highways*—the type of things you inevitably find in political platforms and campaign statements.

You come down ultimately to something that's more precise about how you're going to implement these goals. Take the goal, *better health for American Indians.* One objective could be something like the following: *to reduce by 1972, the American Indian infant mortality rate, which is currently about three times the rate for the rest of the population, to twice that of the rest of the population of the United States.* Now, that's a rather precise objective, a rather specific objective. There's a variety of programs that you could use to try and achieve such an objective—prenatal care, programs to get more women in the hospital when their babies are born, more and better postnatal care, more doctors, more midwives, more other paramedical type of health services, better communication, and so on. There are all types of programs you can implement to try and reduce the infant mortality on the Indian reservations. I don't know which are the best programs to achieve these objectives. Anyhow objectives are rather precise statements. Given a budget, the objective may be unrealistic—that is, maybe you just don't have enough money to reduce Indian infant mortality from three to two times the rest of the population, but you have this objective nonetheless. It's always there whether you like it or not.

Beneficiaries of program objectives. I have up here *slide no. 6.*

Slide No. 6

PROGRAM GOALS & OBJECTIVES

Beneficiaries

- Who are *potential* beneficiaries?
- Do some benefit more than others?
  - How many?
  - How much?
- Should user fees be charged?

State Role

- What are Federal program objectives?
- What will the private sector provide?

General

- What quality output is desirable?

On it I have some questions meant to be suggestive about objectives. Unfortunately, we're dealing on a level of generalities which encompass the entire state government. Thus, it's difficult to be specific, but these questions apply to most every program. The questions are just suggestive of how you would go about getting at some definition of objectives for a program.

One series of questions concern beneficiaries. Who are the potential beneficiaries and who are the actual beneficiaries of the program? I'm sure most people realize that there are always objectives, whether implicit or explicit. Sometimes it is rather painful to face up to the realization that you have to be explicit about these things. One of the more painful realizations that the department of agriculture has about the school lunch program is that the school lunch program, rather systematically, fails to reach some of the poorest children in the country. They're systematically disenfranchised, if you will, by the school lunch program. I don't know if you're aware of this or not, but there are school districts where the children cannot afford to pay an average of 20¢, 25¢ or 35¢ a meal. You know that the charge for the meals is to cover some costs—cost of preparing and heating the food, etc. These school districts just don't have a school lunch program, and there's no mechanism to provide these districts with hot school lunches. So you find a rather systematic neglect of the poorest 15 percent.

If you have to state who the potential beneficiaries are, then you would have to ask whether your objective is not to feed these 15 percent of the children. Somebody has to answer that question. A rather needling type of question, but it's there, right there. If it's not your objective, then the question is, why are you running this program this way and why aren't you recommending some legislation to change the program?

Then, too, you have questions sometimes of the differential benefits that the program is providing the various people. Does anybody care about differences in the treatment of people? I don't know what you have on the state level, but I do know that on the federal level, you get programs which treat people differently. These differences in treatment are sometimes hard to believe. For example, let's take the whole recreation program of the federal government. About 80 percent of all federally-sponsored outdoor recreation is located west of the Mississippi River and about 70 percent of all the people in the country still live east of the Mississippi River. The result, of course, is that there's a rather heavy placement of outdoor recreational facilities to favor the people in the west as compared to those in the east.

This kind of situation is symptomatic of state recreation programs. The tendency is to place recreational facilities without any regard to where the people are. The consequent result, of course, is that the really poor people in the ghettos of the country don't get any benefits from these programs, because they can't afford to come close to where most of the recreational areas are. The facilities are too far away. You've got to have a car and all kinds of camping gear and be able to take the time and money to drive a thousand miles to get there. In the State of New Jersey, the parks and recreation department put all the parks in the southern part of the state where nobody is, for that is where the land is cheaper. The next time you read about riots in Newark, you might remember that that's part of the trouble. It's not their objective, they don't state this as an objective, but that's the way it works out. If you look at what is actually being done and then say what the objective must be in order to rationalize what is being done, you get a statement of objectives at least as an initial starter. That's one way to go about getting objectives.

Federal-state roles. There are other questions. You need to ask yourself what are the federal programs, what are the local programs, and how does the state program dovetail or fit into these other programs in the same area? What should our objectives be, given that the federal government and the local governments are doing certain things?

Quality of output. Another question that should be asked of government programs—at least, somebody ought to really struggle with it, lose a few nights' sleep over it—is, what quality of output is desirable? That's a good question. Government programs frequently have very poor quality control in the sense that they're turning out all kinds of quality we don't need, on the one hand, and oftentimes in other cases the quality is miserable where there ought to be a lot more stress on better quality of output. There are a lot of specific examples that I could give you of both. But, let me give you a very quick one.

In the federal area, the US coastal and geodetic survey—you know they make all the maps and charts of all the waterways all over the country—goes across Alaska and charts the Aleutian Islands in places where people build a kayak every two years or something, with about the same accuracy as they chart New York Harbor or Pearl Harbor, in places where big ships are going in and out every day and where extreme accuracy is a highly desirable thing because you might have a lot of expensive ships going aground if you don't have it. Of course, it might be a little more excusable if this were a one-time charting for all of posterity, but the ocean bottom shifts and pretty soon those charts are obsolete and the charters have to go back and do the job all over again. They dropped a marker in the water up there in the Aleutians where you might find that the only ship that comes around there in 15 years is the one which comes around to make these charts of this great quality.

There are a lot of other cases where the quality is very poor, and yet we just keep turning out these outputs of poor quality with consequent very poor results. We spread out our money so thin, we get no results whatsoever for it. Frequently, quality of government output is something that's hard to define, but it's something that one needs to be concerned with. What are our objectives in achieving quality? More quality or less quality? Less quality versus including more people in the program. What's the point of no return? These statements of objectives are not easy to do but they're very important. We'll talk about them more later today.

Costing objectives. Suppose you want a program called, *better health for Indians.* What are we going to do? Some guy says, "Well, we're going to reduce the infant mortality rate," and if he gets more precise he gives you numbers, "Well, we'll reduce it from three times to two times in the next five years." You might also have a program to

reduce the incidence of arthritis among the Indians, programs to reduce the incidence of venereal disease or cancer or what not, and you put all these programs together and you have an overall program which leads to better health for Indians.

Now, that's all fine and dandy. Just state all this and that's good. The trouble is, everything costs money. You'll be faced with this in your next session of the legislature—that everything costs money. You can state objectives, but you can't stop there. You must analyze these objectives, you must cost them out, you must find out what the alternative ways of achieving these objectives are and how much they cost. Even if you pick the best in terms of the most efficient (note, that the best is not always the cheapest and most efficient is not necessarily the cheapest) you still have to know how much it costs and how much it compares with the resources that you have. This means, in other words, some analysis. You cannot just tell agencies, "State your objectives," and have them come in with a series of objectives, which has no relationship to costs. You can't just derive objectives in some kind of a vacuum. They won't have any meaning.

If you ask the department of defense, "What are your objectives?" it would say its objective is to defend the country. You next ask, "Defense against what?" The department will reply, "Against all kinds of attack and all kinds of aggression from all parts of the world." Then the question is, "What do you need to do all this?" In response to this, you'd get a shopping list that would add up to $150 billion, easily. I read somewhere that the joint chiefs this year requested $96 billion and McNamara cut them down to $76 billion. That's the budget that just went to Congress yesterday.

You've got to cost out your objectives, you've got to analyze your objectives. If you don't, the statement of objectives is no good; you'd have nothing but meaningless pieces of paper.

Program Planning and Analysis

We now turn to the whole planning and analysis system.

Slide No. 7

Steps in Program Planning & Analysis

Evaluate existing program
Define major issues
Search for alternatives
- Be imaginative
- Range widely

Analyze interesting alternatives
Prepare written report (special study)

In planning and analysis, there are certain basic steps. You first evaluate the existing program and try to figure out what the objectives must be in order to rationalize the program as it now exists. Then you define major issues. The major issues may be, why don't we adopt some other objectives? Why don't we include quality of output in our objectives? These, frequently, are your major issues.

The next step is to search for alternatives. I have a couple of subheads under this which are very important; they are often overlooked in this whole business. The first subhead says, *be imaginative.* I want to stress that in analysis, the creation of alternatives is one of the most important things. If you don't do this, you'll be analyzing a lot of nothing. You don't have to be a good analyst to think of imaginative alternatives. Anybody can have a good idea, regardless of his background or training.

Imaginatively creating alternatives is one thing that the defense department has always done a lot of, but it's not something that other government agencies are in the business of doing a lot of, particularly operating agencies where everybody's out on the line all the time. The best example I know of, of a department where everybody's out on the line all the time is the post office department. The postal people are all out delivering mail all the time. Every day they get a new flood of letters, and if they don't get a new flood of letters, they're planning for the next Christmas flood of letters or something like that. They're all out on the job delivering the mail. This is a real operating program. Every day they've got something to do. The military is something like the fire department when there's no fire; it's got time to sit around like firemen. If there's no war, the military has time to sit around and plan, which it does. But the post office department never has time to sit around and plan. The same is true of a lot of other departments.

The education department is oftentimes overcome with masses of new children who are coming in each year. It barely has time to plan how to keep its head above water just handling the new crowd, much less do some fundamental planning. Really imaginative planning requires that it concentrate on trying to educate the children. The same thing is true oftentimes with the welfare workers. Every day they've got a case load. They start out early in the morning, they go like the devil all day and they barely get through at the end of the day; who's got time to sit back and really think about other ways of running the welfare program? The labor department, your employment center frequently is the same thing. It gets people queued up all day long in front of its workers, and who's got time to do any planning?

Imaginative searches for alternatives are oftentimes not part of the process of a governmental agency. To accomplish this, you need to make sure that you have a mechanism for infusing new ideas. Frequently your analysts, the guys who do the systematic analysis, are not good at generating alternatives. They don't have the imagination required to generate new alternatives.

Once you get the new alternatives, you must analyze them, subject them to a cost analysis, subject them to an examination to determine what the outputs look like. Oftentimes a program achieves more than one objective or has a multiplicity of outputs. You have to analyze how much of each of your various objectives a particular program is helping you achieve. Finally, you prepare a written report called a special study—we'll come to this later.

What is analysis: strategic planning. Analysis is done by an analytic staff, and this whole business of analysis, if you read the literature on PPB, you'll find, has created an awful lot of heat. All kinds of ideas have been propagated about somebody doing analysis of public programs before decisions are made. Let me say this. By program analysis, we mean analysis at a very high level of aggregation.

The best distinction between the various types of planning, the various types of analyses, is made by Bob Anthony, in *Planning and Control Systems.* He distinguishes between what he calls *strategic planning* and *managerial planning.* He's got a lot of points attached to this distinction. We haven't got time to develop all of them now. Briefly, however, he points out that *strategic planning* is concerned with major issues. In a corporate setting, strategic planning consists of things like, "Should we open a foreign subsidiary? should we merge? should we go into a new product line?"—problems which only the top management is concerned with. By *managerial planning,* he means continuous planning of pretty much the same thing that the line management has become accustomed to:

"What are our sales forecasts going to be next year? how are we going to tie production and inventory into the sales forecast? what are we going to do to achieve the sales forecast? how are we going to cement all the production, the inventory? In the managerial planning, the line managers have a continuing responsibility to become involved.

You always have strategic issues, strategic questions, basic fundamental questions affecting the programs in every major program area. Let me try to give a specific example of strategic planning which relates to government programs. The justice department has a civil rights program, among others. That's one program you have all read and heard about. Within the civil rights program, there is a number of strategic questions which need to be asked and need to be analyzed. Let me just first give you the program categories of the civil rights program, because that provides a convenient framework for discussing strategic planning. The four major areas in the civil rights program are employment or employment opportunity; schools and school desegregation; voting rights; and public accommodations. These are the four major civil rights matters which the justice department has to enforce. In addition to having these four major areas, the justice department is geographically dispersed.

Now, if you go to the department of justice and ask the people there what their strategy consists of in the civil rights area, they can tell you how many of their lawyers they have down South, how many they have up North, how many they have out West, and so forth. Then if you ask them, "Well, how much of your time do you spend on voting rights? how much do you spend on employment and how much do you spend on schooling and school desegregation? and how much on public accommodations?" they can't tell you. They really don't have any idea, at least in Washington, of how much time their lawyers in the field are spending on the various programs. Every good law firm has each of its attorneys keep a time sheet so that the firm can have some idea as to how much time each attorney is spending for each client in each area for each case. The department of justice doesn't have that.

This is one of the problems you'll find when you try to implement a PPB system. You say, "Well, let's discuss your strategic questions and your strategic issues," then you take a program or program areas like civil rights and you try to say, "Why are you spending so much time on employment and why are you spending so little time on voting?" The departments don't know how much time they're spending. They don't know whether they're spending 90 percent of their time on voting or 90 percent on employment, or whatever else they're doing. So the first issue in analysis is to find out what the department is doing and then you can get on to discussing what the strategic questions associated with the programs are.

Every government program I've ever seen—ranging from the running of employment offices to school programs to welfare programs to health programs to recreation programs—has what I would call some strategic issues associated with it. These are issues which the legislature should be concerned with. These are the major issues, the major policy issues. Even in a simple recreation program, the issue which rarely gets focused on is, why do you keep putting all your recreational facilities out West and not where all the people of the country are? On the federal level, one reason it never gets focused upon is the fact that you never have a program hearing in the Congress. The issue more or less arises when the request of each of about 14 departments concerned with recreation comes up before the Congress piecemeal in different places. The forest service provides recreation, the park service provides recreation, the soil conservation service provides some recreation on its land, the department of agriculture has encouraged farmers to convert crop land to recreational use, the bureau of sport fisheries is in the business essentially of providing recreation, the bureau of reclamation provides recreation, and the corps of engineers provides

a lot of our water-based recreation. The Congress never gets a comprehensive review of the entire recreation program. Yet, if you ask the forest service why is it that recreational facilities are all out West, it will reply, "Well, that's because all of our land's out West; let the other 13 bureaus concerned with recreation provide recreational facilities in the East." You just never have a way within the Congress to coming to grips with these basic strategic issues, these strategic questions, that surround each program area.

There's a lot more that can be said about analysis. I think maybe we ought to move on though. Let me just skip on here briefly and try to wind up this introduction.

Slide No. 8

Analysis **can**

- Illuminate merits of existing programs
- Generate useful information
- Help reduce errors
- Aid political-economic decisions

Analysis **will not**

- Make decisions automatically
- Guarantee success
- Eliminate all errors and mistakes
- Replace the decision-maker

Programming

I want to talk about programming. I mentioned programming earlier as a rather specific function and as one of the parts of the PPB system. After you do your analysis, you talk about your objectives, you make some plans. You throw up to the decision-maker and the various decision-making chain some ideas and plans, and then you try to construct something called a program and financial plan, and this program and financial plan is one of the major components of a PPB system and this is where the idea of programming comes in.

Program plan. In the program portion of the program and financial plan, you lay out what it is you're going to do over the next few years by program elements. *Slide no. 9* is an example. Again, the example I use deals with the program to *provide health services.* The subcategory shown on the slide is *increase manpower* and the program element noted is *train physician.* You lay out on the program plan the outputs you expect over the next few years.

Slide No. 9

OUTPUT MEASURES & FORWARD PROGRAMMING

	'65 actual	'66 actual	'67 actual	'67 plan	'68 plan	'69 estimate	'70 estimate	'71 estimate	'72 estimate
Program									
I. Provide health services									
A. Increase manpower									
1. Train physicians									
–Man years of training									
–MD degrees awarded									
MDs establishing residence									

Possible output measures

In determining outputs, you have to figure out what the best indicators are. In this example, the measure is either the total man-years of training we're going to have or the number of M.D. degrees which are going to be awarded. These are the types of things that you usually program. You get a government agency to program because these are the things which the agency controls. Now the things which the agency controls frequently are not what you might call the ultimate output. The ultimate output is something like the number of M.D.'s who are establishing residence in the state. Well, that would be a harder thing for the University of Hawaii medical school to program because they don't control the number who are going to establish residence in the state, although that's a much better indicator of how much health service you're providing for the people of Hawaii. You've got a pretty nice climate here so I don't suppose you have a problem of losing too many physicians. In Vermont or places like that, this can be a problem. Train all these people, put all the money into training and they all go establish residence in Hawaii or Florida, or some place like that. In any event the idea is for each program element, regardless of what agency you're in, you lay out what it is that you plan to do.

Let's take another specific example—let's take that example that was mentioned before, the civil rights program of the department of justice. Within the program category of civil rights, you can have various programs which relate to employment. In this employment area, you can measure the output by the number of cases you expect to successfully litigate or by the number of employees you expect to place in jobs without instituting cases and without litigations, and so forth. You can lay out what it is that you plan to do over the years ahead and how many man-years, how much manpower you plan to devote to these various programs.

Financial plan. Having programmed, you then get the cost of these things. When you get a full texture of the total cost, you get the financial part of the program and financial plan. *Slide no. 10* is an example of the financial part.

Slide No. 10

MULTIYEAR FINANCIAL REQUIREMENTS

'65 actual	'66 actual	'67 actual budget	'68 budget	'69 estimate	'70 estimate	'71 estimate	'72 estimate

Features

I. Provide health services
  A. Increase manpower
    1. Train physicians
    2.
    3.

Shows cost of programmed outputs
Compares 2-3 actual years
Compares last budget with
  . Actual expenditures
  . Proposed budget
Shows future implications of current budget decisions

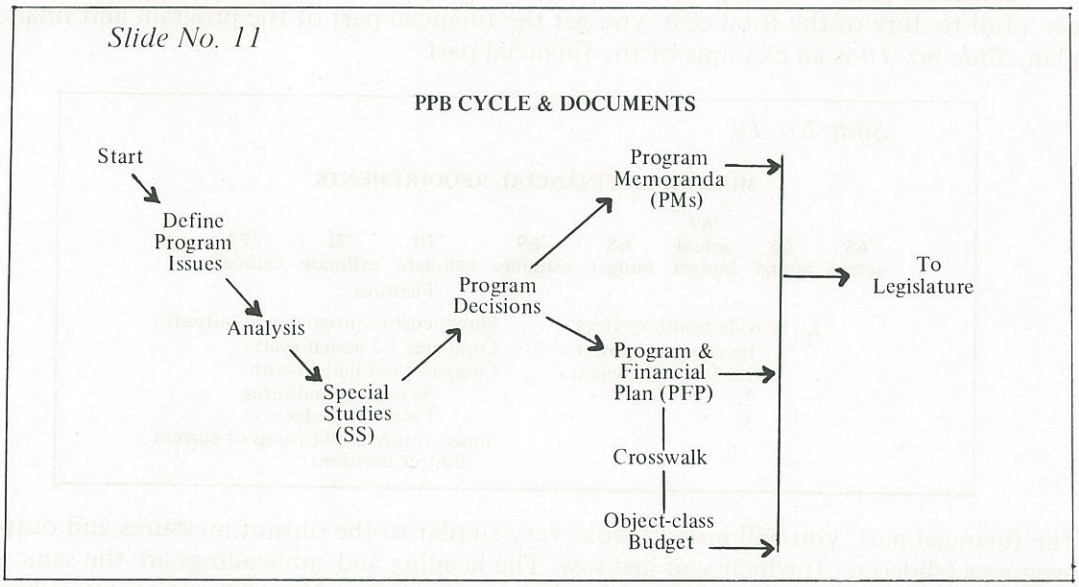
The financial part, you will notice, looks very similar to the output measures and output programs (slide no. 9) which you just saw. The heading and subheadings are the same—*provide health service, increase manpower, train physicians.* You will notice, we're bringing together, based on a common definition, the output side with the financial side. You display for both the output side and the financial side, the last two or three years of your actual, the current year, and the estimates for about four more years. The financial side shows where the program plans are going to leave you financially. This gives you the financial requirements for each department. If you add up the future years' costs, you would have a picture of where the state is going to be if no change is made to the plan.

This multi-year program is very much like your capital improvements program, as I understand it. That is, you make a multi-year display, but nobody is tied to anything beyond the first year. But it does give you an idea of where you're going until you change. It gives you a good picture of where you're going until you agree to change that picture, and frequently managers find it very useful to have an idea of where they are going. Now the State of Hawaii seems to be in what is an almost incredible situation of having a budget surplus right now, when many states are going right into what is frequently categorized as fiscal disasters. If those states just lay out in this multi-year fashion, all the mandatory increases which the programs will demand in future years, the fact that they are going to need another tax increase two years from now and another tax increase two years after that, even if they don't have any new programs, should become apparent. Maybe they don't want to face up to that kind of reality, I don't know. But, anyhow, this is the idea of laying out in a comprehensive framework, a comprehensive structure, the multi-year financial requirement.

PPB Cycle and Documents

Now, by way of summary, let's talk about the whole PPB cycle in a slightly different context that tries to bring together the elements I've talked about up to now. *Slide no. 11* gives you a picture of the PPB cycle—the budget cycle—and the documents. You start the whole process by defining program issues. This includes questions about objectives—have we got the right programs? are the programs aimed at the right people? are we trying to do the right thing? In education, are we educating the right people, enough of them, in the right subjects, the right curriculum? are we teaching by the right methods? should we have computer system instructions? more teachers?

Slide No. 11



Then you have some analyses of the issues, and out of the analyses come some special studies. The special studies should contain, perhaps, some recommendations. A good special study would also contain some alternatives. The decision-maker who is faced with a paper which simply says, "Here's an issue and here's a solution," should reject it immediately. This is probably one of the biggest contributions that Mr. McNamara has made in the department of defense. The defense people used to have something called *issue papers,*

and the classic issue paper said, "Here's the problem, here's the solution, here's the recommendation," without any discussion of alternatives and alternative ways to achieve solutions to the various problems. Mr. McNamara, when he received such an issue paper, sent it back for further study.

The special studies feed into what I call *program decisions,* and this is a very necessary and distinct thing. I should point out that the program decisions are made by the people in charge of the programs. These are the managers, the bureau chiefs, department heads, the governor. These are not the specialists. In fact, if an issue paper comes from a specialist and says, "Here's the problem, here's the solution, and I recommend you adopt the solution," the manager can't really manage. If there's really a problem, he has no choice on the basis of this study but to accept the solution that's recommended, unless he says, "We'll live with the problem." A manager must have alternatives from which he can choose, from which he can exercise some of his judgment, some of his wisdom, some of his intuition. If he doesn't have these things and doesn't ask for them, he's not managing; he's being managed by his specialists who are doing these analyses for him and who are doing these issue papers. In order to manage, you must have alternative studies; the manager must have some real choices. If the legislature is to manage, it must have some real choices. It it's confronted with either this or nothing, usually nothing is an untenable sort of thing.

Anyhow, you have program decisions. Now the decisions have to be made first, of course, in the executive branch, and when the decisions are made, they are recorded in what is called *program memorandum.* The program memorandum will be discussed in considerably greater length today, but let me just say right now by way of introduction, that the program memorandum is a specific document, the likes of which have usually not been seen in the traditional budget justification material. Now, the general inclination of most government agencies, when first confronted with the PPB system, is to take all their old justification material and cut it up and repaste it and re-edit it slightly and call it a program memorandum. Such is about as far from the truth as one can get.

The program decisions are also recorded in the program and financial plan which I showed you. In other words, if you decide to adopt a specific program aimed at reducing the infant mortality rate of Indian children and decide to do specific things like establishing clinics or health centers and what not, those things are recorded in your program and financial plan. What it is you're going to do is recorded and the cost of it is recorded. Then, if you want to relate that to an object class budget you should have a crosswalk which relates it to such object class budget.

Then, all these documents go to the legislature—the program and financial plan, the program memoranda, and object class budget, if the legislature desires an object class budget, and the crosswalk. At this point, the legislature is able to analyze these documents and question the various people, and it then appropriates or not as it sees fit.

Managerial reports. Finally, once the PPB system is installed and fully working, the last thing you should be able to get, after you've been operating for a while, are some managerial reports on this whole process. *Slide no. 12* is an example I cooked up to illustrate the type of reports you might look for. I just want to use this example to try to tie together some of the things we've covered today. In case you can't read it, we have here our old friend, *training physicians.* Underneath it is *man-years of training,* and in the first column, it says we planned 270 man-years of training. This is the number of students we expected to have enrolled in medical schools. The next column says this is how many people we actually trained—in this case, 256. There were some dropouts and no-show's or something. Then

there is a third column, which gives you the difference between what was planned and what was actually done. The information on this report is culled from your reporting system. It comes out of your reporting system. Incidentally, you get a report on what actually happened from a reporting system which uses the same program definitions that are used in the programming system. So this report tells you what you planned and what you actually did.

Slide No. 12

MANAGERIAL REPORTS

Train physicians	Plan	Actual	Difference
1. Man years of training	270	256	-14
2. Expenditures	$2,130,000	$2,249,000	$119,000
3. Cost per man year	$ 7,880	$ 8,780	$ 900

Report requires
- Full integration of programming-budgeting-reporting-accounting systems

Report shows
- Actual, plan & deviation from plan
- Unit cost of outputs

Similarly the report reports on the expenditures. The first column says what the budget was; the second column reports the actual expenditure. I don't know if you can actually overspend a budget if you're tied down by law, but this example notes that for some reason you spent more than you planned, resulting in a difference of $119,000. The *plan* is your budget and the *actual* is your financial accounting and reporting. This means, in other words, that you get your financial, accounting and reporting system to line up with your budget system in such a way that the reported dollars actually spent are recorded in the same way in which the guy who recorded the budget was estimating his budget. This is not easy. There's a lot of work involved here.

Cost per man year is a report on the amount of money actually spent per man-year. In this case, the cost per man-year in the budget was $7,880. The actual cost turned out to be $8,780, with a difference of about $900 per man-year for training.

Now, this report doesn't tell you whether the training was good or bad and what should be done, but it does give you some information. This report ties together your four systems—your programming system, your information system, your budget system, and your financial and accounting system. All of the four systems get tied together in this type of reporting, provided that they've adopted the same definitions and the same categories; otherwise you are going to be comparing apples and oranges. This takes us back again to what I said earlier about the concept of a program trying to tie together all of these things.

Conclusion

This is basically, then, just an overview of what it is that the programming, planning and budgeting system tries to do. It tries to integrate the plan with the budget by doing a number of things—by setting up analytic staffs where you don't have analytic staffs, by adopting common program terminology, by getting the budget people to adopt budget categories and budget formats that people use when they deal with substitute issues that are before them. Too often in budget formats, the budgeteers have their own language—their forms, a language that somebody not familiar with the budget has trouble using in communicating and in finding out where the money is and what's going on. PPB makes things much more straightforward, I think. It requires the work of a great number

of people to make a PPB system a fully functioning and successful system. It requires inputs from analytic staffs, it requires inputs from your accounting people, it requires inputs from your programming staff, it requires inputs from your budget staff. All of them have to work together to make a successfully working PPB system.

Tuesday, January 30, 1968

PPB FOR STATE GOVERNMENT

Allen Schick

We have several readings on the table. Those of you who haven't picked up copies yet are invited to pick up one of each as you leave. These are background materials; they are not assigned or required reading.

The very term *assigned readings* puts me back into Boston where I have a captive audience of students and reminds me of the time problem that we're going to have today. I'm scheduled to talk roughly 75 minutes. But I've been raised in programming, like the computer. I can talk either 15 minutes or two hours, not in between, because they happen to be the lengths of my courses. However, I'll try to accommodate myself to you.

Among the four readings which we want you to select is one that I wrote, *The Road to PPB*. Unfortunately, it is not as alluring as *The Road to Hawaii*, but you might read it nonetheless. The second is *Selected Comments*, which is a little 12-page publication by the Jackson subcommittee dealing with PPB; the third is *PPB Note No. 4*, which was published by the state-local finances project referred to by John Haldi this morning; and the final selection is *PPB Progress Reports*, issued recently by the Proxmire subcommittee of the joint economic committee of Congress.

Following John Haldi is not very easy. It reminds me of something which I saw in Waikiki yesterday. Virtually every other store front advertises, "See all the islands in five hours." This is like seeing all of PPBS in one hour. Well, we've seen all of PPBS, but we're tourists still, and we want to probe and study each of the things discussed earlier a bit more intensively in this and succeeding sessions.

PPB as an "Integrated" Budget System

Actually, this planning-programming-budgeting system is not as old as the wheel. Some people think that it goes back quite a long time and that they've had each of the components—planning, programming, budgeting—in their state. *Planning*, they say, is a device for getting money from the governor; *programming*, that's a device for getting money from the administrator; *budgeting*, that's a device for getting money from the legislature. Put them all together into PPBS, and the planning-programming-budgeting system is a gigantic device for getting money from the taxpayer. We're all familiar with this sort of thinking. But, we'll try to give PPBS a new twist.

Budgeting, seriously, is quite old in state governments. It's even old in a state which has had territorial status like Hawaii. Hawaii budgeted before it became the 50th state. When we try to understand what is new or distinctive about PPBS, we'll discover that it is a combination of old and new elements. The old elements are things which have grown up along with budgeting in the past 50 years or so and which will continue to be with us even in advanced systems under PPB. Just like the bride going to the altar with something old and something new, PPBS has a lot borrowed, and it's going to make some people blue. We can look at PPBS as an amalgam—a combination of several budget systems simultaneously. Let's look at some of these and see how they relate to one another.

Kinds of information supplied by a budget. If you look at the budget of any state, including the State of Hawaii, you are likely to note immediately that it provides you with information generally about two or three kinds of things. Actually in Hawaii, you're

provided with information about three kinds of things. In most states you get information only about two kinds. Hawaii, in this sense, is more advanced; it has a more developed budget system than most states.

The three things are: *first*, you get information about the organizational unit which is spending the money; *second*, you get information about the items which you are going to purchase by virtue of the appropriations—things like personnel, travel, supplies, materials, equipment, and so on—the various objects of expenditure; and *finally*, in states such as Hawaii, you also receive information about the kinds of things that you are going to do with the money—the functions.

Hawaii has at the present time what might be called a *functional* program structure. For example, the function called, *education*, is divided into such units as the department of education and the University of Hawaii, and these two are divided further into sub-units such as the state administration, the district administration, instruction, instructional agents, and so on. This structure provides legislators and administrators with information about what is going to be done with the money which the legislature is asked to appropriate and which is finally authorized for expenditure via the appropriations.

PPBS adds on to these three kinds of information (organization, objects of expenditure, functions), another kind of information which is very important—information about objectives, programs and benefits.

Let's talk about the last term, *benefits*. I think it's important to see quite clearly the distinction between thinking about benefits and thinking about functions. They are not the same thing. An administrator comes to you—whether through the ways and means or the appropriations committees or through one of the selected subcommittees of your legislature—and requests funds for a particular function. He lays out for you a program of work and says, "These are the kinds of things that we plan to do during the next fiscal year, if you appropriate the funds which we are requesting." When he does this, he is not indicating to you explicitly what benefits might be derived from that expenditure. Certainly, an alert and conscientious administrator has benefits in mind. He believes that if you provide the recommended funds for instructional aids in the department of education, you will be purchasing particular benefits. But, these are not laid out for you explicitly in the budget. You have no way of going to these benefits to ask these questions: "Are these the benefits that we, as legislators, as representatives of the citizens, want to invest the taxpayers' money in?" "Are these the benefits which were promised last year?" and then, skipping to the succeeding fiscal year, "What happened to the benefits which were promised?"

We have to make an iron-clad distinction between functions—the work which is being done—and the benefits. Benefits are a step beyond functions. For someone to come to me and say that it cost $4.50 per capita, per day, in one of the state's correctional institutions, doesn't help me very much. It tells me that this is how much it cost to work, but it doesn't tell me what is happening, what is changing, as a result of investing $4.50. What I want to know is, what is the purpose of this program?

Under PPBS, therefore, we are going to combine or integrate—to use John Haldi's words, we're going to crosswalk—four different informational systems: organizational, objects of expenditure, functions, and benefits. By combining them, we can view these four systems in a different light. We can relate them to the three fundamental purposes of every budget system.

Purposes of a budget system. Every budget system, no matter how complex or how elementary, has to serve the purposes of controlling your spending, managing the work of the state, and planning the policies of the state. Controlling spending is the oldest and the

most entrenched of these budget functions, and thus the most developed. The first two informational systems, *organizational* and *objects of expenditure*, clearly have been devised and have achieved their high status by virtue of the fact that they are relatively effective control mechanisms. The legislature is able, by focusing on the organizational units, to control the aggregate of spending—the total amount of money that is to be spent—by the University of Hawaii, by its branches, by the community colleges, by the department of education, and so on. Via the organizational set of accounts, then, it can control the aggregates. Similarly, via the objects of expenditure accounts, it can control the particulars—within each of these organizations, how much is being spent on personnel, how much is being spent on travel, how much is being spent on supplies, and so on down the list. Objects of expenditure and organizational information, then, are indispensable categories for control. But they are not enough.

If you are an administrator of an agency or if you are a legislator who is concerned not only with ascertaining whether the money was spent frugally and legally, but also with ascertaining whether something was done with the money, you move from the strict *control* orientation to what we call a *management* orientation. Here we move from the first two sets of accounts—organizational and objects of expenditure—to a third layer of accounts, *functional accounts*—what are the units of work being done? The distinctive element of these management accounts is information regarding workload and unit cost. This information is now provided along with the budget justification and the budget request. This indicates to you the program of work which is expected to be accomplished in the forthcoming fiscal year if the sums are voted. We move then from the strict *attention to inputs* to what we call *attention to outputs*—what is the raw quantity of work which is being produced by the agency as a result of your appropriations? This, also, however, is not enough.

If you are a good legislator or a good administrator, you are going to be concerned with, not work for itself, but rather work for certain objectives and benefits. Here, we move to the fourth category and the third kind of budget system—the *planning budget system*—in which we try to begin, not with questions of inputs or raw outputs, but with the big picture—the questions of policies, the questions of planning.

The integration. All of these systems (organization, objects of expenditure, functions and benefits) are going to be tied together under PPBS. Just because the State of Hawaii is going to give more attention than ever before, and perhaps more attention than any of its sister states, to planning,does not mean that you can forget altogether about how much money is being spent by a particular organization, how much money is being spent for personnel and the other objects of expenditure. You're going to need a system which integrates all of these.

Let me say two things about this integration. First of all, note the sequence of words in *planning-programming-budgeting system*. Maybe we shouldn't have been so highfaluting with our terms. Some guys in Washington tell me that the main output of PPBS is new jargon. They might not be far from wrong, but in this instance, I think that we are quite fortunate that we use these terms—planning, programming, budgeting. Chronologically and logically, planning has to precede programming and budgeting. Before you make your budget, you want to know what your goals and your objectives are. Before you vote your appropriations, you want to know what the benefits are going to be for the people next year, and this requires a process of analysis and planning long in advance of the actual submission of the budget for a vote.

A second comment that I would make is that the integrated system must be used systematically. Quite often I hear people say, "Well, we've always used the term 'budget system.' What is different, system-wise, between PPBS and what we had previously?"

The fact of the matter is that, heretofore, we've had a system only by default—that is, a system by definition. All things fitted under the same umbrella—object, work, revenues, expenditure, this department plus that department, plus all the other 15 or so departments. By default, we called this a *system*.

A *system*, however, means that things are viewed in relation to one another by virtue of the fact that we have a conception of the whole. We begin with the whole before we examine the parts. In a system, we soon discover that the parts do not add up to the whole, if they are seen only in isolation from one another. So, in saying that PPBS will combine the controlling, the managing and the planning function of government, that it will combine the universe of information—information about objects, about organization, about work and about benefits—we are saying that they will be combined, not merely *de facto,* but logically, cognitively, as well.

PPB as a "System"

As a system, we can view PPBS as forging several kinds of relationships. *First* of all, under PPB, *we relate one program to another.* Programs are not seen divorced from one another. This does not mean that at this stage of the game or at any time in the future we will develop either the skill or the will to relate the program in civil defense with the program for Magic Island. It does mean that when things are so close to one another that they serve the same master, the same benefits, we must view them together. You might say, "Look, Allen, it's futile to try to compare the benefits from health with the benefits from maintenance of the taxation system." Maybe you're right, but that's not what I am asking you to do. I'm asking you to compare the benefits from health with the benefits from health. Compare, then, one program with another—that begins to make PPB a system.

Second, under PPB, *we compare the cost to the benefits.* That seems obvious. We have a double-entry bookkeeping system in the state—cost on one side and benefits on the other—yet it's as if the two sets of ledgers never go to bed with one another. They never see one another. We never know whether more costs provide more benefits or less benefits, more services or less services. By relating costs to benefits in a system, we see the sensitivity of one to the other. The fact is that, if we vary the costs, we also vary the benefits. If we want to buy more benefits, we have to invest more money. Relating costs to benefits is then another way of viewing your budget life systematically. Cost to benefit comparison is not going to be easy to make, because on both sides we are still in the medieval period. We know very little about benefits, and we also know very little about costs, strangely enough.

This may appear to run counter to common sense, which a lot of us have grown up with, but when we relate cost to the benefits in a system, we do not relate them in terms of *averages*, but, in terms of what the economist calls *margins*. If you invest $1 million in a program, it is very unlikely that you will buy twice as many benefits than if you invest only a half million dollars. Very rarely. You might purchase three times as much or only one and a half times as much. Sometimes the added increment would be absorbed entirely by administrative costs; sometimes there will be no overhead necessary. This is what we mean by relating cost to benefits in a system. We're not asked at any moment in time to rediscover all the islands or all the world, to build up a megamillion-dollar budget as if there were no history, no past, no learning, no experience. We deal with the margins, with the increments in a system.

Third, *we relate accomplishments to plans.* I have the feeling that this will be the most difficult thing to do in budgeting.

The current budgeting practice presents an awesome paradox. On the one hand, the budget is a product of the past or the present. I was told yesterday that in Hawaii– and

this generally conforms to the experiences in all of the states—roughly 95 percent of next year's budget is a product of this year's or last year's budget. In viewing next year's budget, you ask such questions as, "How much money did we spend last year?" "How many new positions do you want?" "What do you want to do differently?" Thus, when you make your budget, you seem to be very retrospective about it.

That's one side of the story. There is another side. This is why I call the present budgeting practice a paradox. When you make your budget you really disown the past. You receive almost no systematic information about what was delivered compared to what was promised. You forget about the past. It's as if (I suppose the governor will present to you the budget for the 1969 fiscal year) the year 1969 were year one. Nothing like this happens in your budget deliberations: "Couple of years ago we decided to spend $5 million on this program; you know, it's working. Let's double our bet," or, "You know, a couple of years ago we decided to spend $5 million and it's not working," or still again, "A couple of years ago we decided to spend $5 million on it and we've accumulated enough experience to modify it." No, *this* is always the *first* year. PPB, as a system, relates plans to accomplishments.

Fourth, under PPB, *we relate alternatives to one another.* And I'll say more about alternatives later, but let me say that *alternatives* is a word you'll hear more and more of during the next three days. I hope you'll hear it a million times so that you'll never forget it. It's the password to everything. There is no one way to Rome. After all, there are at least two ways to Hawaii—well, there are at least two airlines, United and Pan Am. Is there only one way to teach kids to read or to develop a program for higher education? Surely, there are alternatives.

If we played a game and went around the room in a psychedelic exercise—an exercise in free thinking—how many alternatives do you suppose we can think about for Magic Island? Let's forget for the moment the cost, the operationality, the practicality and just do some free thinking. How many benefits can we contrive for Magic Island? I'll bet we'll invent more benefits than there are people in this room at this moment. And yet, you [the legislators] get the annual budget from the governor, and the governor gets recommendations from the department heads, and the department heads get recommendations from lower levels as if there's only one way to accomplish a thing. You know, if the Gospel has more than one version, we can tolerate more than one in our budget. So,systematically, relate your alternatives one to the other.

Finally, we relate our programs and our activities to our objectives. Activities are not simply random or organized clusters of work done by people. It's not simply Sammy running, in the story, *What Makes Sammy Run?* It's running to an objective. It's purposeful activity; and for something to be purposeful, we have to have a purpose in mind. This is finally, again, what we mean by a system.

"Analytic Planning" under PPB

How do we achieve this system? Let me use two terms and marry them: *analysis* and *planning*, or for short, call it *analytic planning.*

What is analytic planning? Just a few points about what analytic planning means. The *first* point is that *analysis does not exist when you don't have alternatives.* Analysis can only exist when you are willing to relate one possibility to another possibility.

The *second* point, *analytic planning cannot exist when you think only in terms of the present.* This is very difficult to wean ourselves away from. The problem does not lie merely in the old boogeyman which they call *politics*. We are a society which gives frenetic, almost exclusive attention to the present, as if there were no yesterday or as if there were no tomorrow. A French theologian called it chronotology—the worship of the

present. But, *to plan* means that you must perceive of the present only in relation to a future state of affairs. You must relate what you do now to the future. If you don't do that in a state which is right now as virginal as Hawaii, you're not going to be able to do it 10, 20, 30, 40 years from now. You'll find your options closed, doors shut, your opportunities aborted.

The *third* point. *You cannot plan and you cannot analyze in a single year frame.* This has been one of the problems of budgeting.

No matter how conscientious an administrator or legislator you are, if you take a snapshot of the budget world beginning July 1 and ending June 30—call it your fiscal year—you have almost no option. In a single-year frame, no matter how analytic you are, no matter how imaginative and innovated you try to be, you are going to discover that you are beholden to past commitments. Every year that you stretch this time—one, two, five, 10 years ahead—you are expanding your options. Suppose you think in terms of 10 years, it's not simply an aggregate of one year plus one year added up to 10 years. No, it's the whole opportunity to use an aggregate of resources—the sum of the single-year increments of resources—to shape the future in the way you wish it to be. So, to do PPBS, to do analytic planning, to do budgeting that is systematically related to your purposes, you have to begin to break out of the single-year box.

Before you run for the fire bell and say, "You mean the governor is going to ask us to buy a five-year budget, lot, stock, and barrel?" Let me reiterate for you what John Haldi said. You buy a single year, but you buy a single year as it relates to the future. You see the single year, not as free-floating, unconnected to the tomorrows and the days after those, but rather as an intimate, explicit relation to the future. This is analytic planning.

Rules of analysis. How do we get analytic planning? Let me say a few things.

I understand that most of you are lawyers, at least more than 50 percent. John Haldi said some very generous things about lawyers this morning. I'm neither a lawyer nor a budgeteer, so if you ask how I belong in this room, you have a good question. Those of you who are lawyers are somewhat familiar with the development of the common law. You recognize that today if you enter a court to make a case, there are established rules of evidence which have developed over centuries which provide you with fairly fixed, clear, accepted guidelines about what to do. Five hundred or a thousand years ago the rules of evidence did not exist.

In budgeting, we are in the process of making the common law. As yet, we don't have rules of evidence. Today, when an administrator comes to you to make his case for money, he doesn't analyze his case, he justifies it. It's like going to the court and not making your case according to the rules, but bringing in extraneous, spurious evidence. That's justification. In analysis, you have to develop rules of evidence. Let me begin to suggest several of them.

Rule one: You must be explicit. I'm going to be explicit about explicitness. There is no substitute for it.

Ohio is a testament to state development; it is the only state to my knowledge which, having developed a functional program budget, retreated into the line-item budget. Not long ago, when I was in Ohio, I went to the chairman—I forget whether it was the senate or the house committee that gives out the money—and I asked him to explain why he liked the old line-item system better. I said, "Does it tell you what the agencies are doing with your money?" He replied, "Well, you just have to look at the name of the agency and you know what it is doing." Well, I'll tell you, look at the department of education; you don't know what it's doing. The superintendent has a difficult time finding out what's happening two levels below him. That's true. The name *department of education* doesn't tell you anything. It's a cloak. The CIA has nothing on the budgeteers or administrators. You've got to be explicit.

Now, there is a lot of difficulty in being explicit. No one really wants it when he finds out what the price is. Do you know what the price for a legislator is? I'll throw the bean so you can all drop out if you decide you don't want to pay it. The price is that you are going to have to say "No" to a program or "Yes" to a program. It means that you cannot in the future say, "You know we love your programs, Mr. Superintendent (or Mr. Department Head). We want you to continue to have them grow as much as possible. We're cutting a million out of your budget—you know, out of overhead, out of administrative cost. We aren't touching your programs the least bit." Of course, you know that you are touching the programs when you cut a million dollars, but you don't want to recognize it because it's difficult. Being explicit requires that you be explicit.

On the other side of the fence, it requires that the administrator be explicit. He can't merely compile his budget like a shopping list to take to Santa. You know, this is really a beautiful analogy. A kid makes a shopping list around Christmas time and says, "I need it." "I need it" is a demand which has no counter to it. If you need it, you're going to need it. That's the end of the story. So he puts down what he needs—a rocking horse, a six-shooter, records, and so on—all the things that "I need it" means to him. The administrator does the same thing—he makes a shopping list. He lists a new secretary, a more liberal travel allowance for that trip to the mainland that he couldn't swing last year. Then, he says, "I need it." Being explicit means that you identify the purposes for which you "need it."

Rule two: You must be objective. Here, again, it's difficult. Objectivity means that when you do your analysis, be sufficiently aboveboard that, to the extent that figures don't lie, you don't make them lie. This means that the budget documents of the future are going to be more statistical or quantitative than in the past. The budget is going to be a compilation of statistics—sometimes the statistics won't be the most relevant ones, however. The fact of the matter is that words are not as neutral, as objective, a language as statistics.

Of course, statistics aren't perfect. Suppose you were going to the legislature with this problem: 25 percent of the children in the islands have reading problems. You can put two innocent sets of words before that 25 percent which tell two different stories. You can say, "*only* 25 percent have reading problems," or you can say, "*as many as* 25 percent have reading problems." These two sets of words convey two different pictures.

Statistics are going to play a more meaningful role in the new rules of evidence. But, let me take half of that back at once. Because we are in the common law stage, so to speak, of budgeting, we are going to find that it's very difficult to put numbers to a lot of the things that we are trying to accomplish. Let me be a bit assertive here. Don't quantify prematurely. It's the worst of all possible sins, because it means that we are getting the wrong, the misleading, numbers. If you can't measure it, don't, but at least describe it. Begin to develop a language of benefits. Begin to talk about, study about, and think about what it is that we are trying to accomplish. Be objective and explicit, and begin to state in narrative form what the benefits, the purposes, are.

Now having taken back what I took back, I'll take back half of what I just said. There is danger in using words. If you are a puppeteer of words, you can make them dance. Just as you might use the wrong numbers, you might use the wrong words. The most likely thing to happen, when you first begin to put the benefits in narrative form, is that you'll use words from the language of control and the language of management, and not from the language of top planning. This is why I'm forcing you to make a distinction between work and benefits. I predict that the first output from PPBS will be a torrent of words describing what you're doing rather than about benefits. You're going to have to suffer through this to develop your common law of evidence.

We've heard a lot today about the federal government. We've knocked it repeatedly against the wall. I'll add one other knock to it. After all, it's the Big Daddy. I've seen

program memoranda and analytic statements dealing with the benefits of the various federal departments. Almost all of them had reams of justificatory detail rather than analytic material. Once we received one from the department of agriculture, which began like this: "The Department of Agriculture was created in 1862 by the Act of Congress." This statement was followed by a lengthy quotation from that act, running more than a page at single space. Then the memo described that in 1917, the department did this; in 1924, it did this; and now it is doing this. The memo was, of course, descriptive; but it used the wrong words. The words used would have been harmless, except for one thing. Here and there, in between the words, as we were dozing off, falling asleep, the department plunked $3 million for this, $5 million for that, $60 million for that. When we finished reading the program memorandum, we were presented with a big bill. Reading a memo of this kind, you are impeded from thinking rather than incited to it.

Rule three. This third rule, you'll hear again and again. *You must deal with alternatives.* You must deal with alternatives across the board. Almost nothing is exempt.

There are, for example, alternative assumptions. You're planning and making a decision today, to create your tomorrow. A lot depends on whether the population of Hawaii grows by 20,000 or 30,000 or 10,000. Critical decisions—tens and tens of millions of dollars—depend on that single assumption. Assume that the population growth is fixed at 10,000, and you've already robbed the analysis of its dynamic quality. You have to say, "You know, it makes a difference whether it grows by 10,000 or 20,000 or 30,000. These are our own assumptions about the growth in the future. And, depending on the growth trend, these are what we propose."

Objectives, too, have alternatives. People disagree about what our objectives are. Presumably, that's one of the reasons why you have two parties in Hawaii. There are alternative objectives. This is the guts of political life; this is the guts of spending your money. This is what we decide—choosing from among alternatives those objectives which we want to achieve.

Then, there are alternative ways to achieve those objectives. There's no one way to provide remedial reading instruction to the underachievers. It can be done inside the classroom; it can be done outside the classroom. It can be done in the home; it can be done in the library. It can be done with books; it can be done with audio-visual equipment. It can be done with a regular teacher; it can be done with special teachers. Think for five minutes, and you'll add exponentially to that list of alternative activities.

Finally, there are alternative levels of spending. There's not just one level of spending. Again, I remind you of what I said before, that you have to know the gradation, the margins, the increments, and be able to reach them.

The switch from alternatives to recommendation. Here, I want to digress a bit to say something about alternatives in general, although if I say it today, I don't know what I'll say about it tomorrow when I deal with implementation of PPBS.

When do you switch gears from dealing with alternatives to dealing with a single recommendation or a single decision? Let's retrace our steps. Suppose, the governor were to come to me, a legislator, next year and say, "Ladies and gentlemen of the legislature, we all attended the PPBS seminar and I bought it lot, stock, and barrel. As a result, rather than recommending a budget for this year, I am presenting alternatives A, B, and C. You decide." I can see the Honolulu Advertiser headlines the next day: "THE SPEAKER AND THE PRESIDENT ACCUSE THE GOVERNOR OF PASSING THE BUCK." There will, perhaps, also be a mass resignation among the legislators. Seriously, however, we all recognize that the governor, regardless of what analytic exercises went on previously, will present to the legislature a single recommendation. But, what the legislature should receive from the governor is the analysis which led to that recommendation.

Going still a step backward, if I were a department head, I would ask myself, "What do I recommend to the governor—alternatives A, B, and C, or my recommendations?" If I take the first course of action, I will immediately lose control over my department. My subordinates will discover that they have to end-run around me to the governor's office. Here, too, the administrator's job is to recommend a single course of action to the governor, but keeping the books open so that the governor can see why he is recommending alternative A in contrast to alternatives B and C.

Now, where do you draw the line at which you switch from analysis of alternatives—co-equal alternatives—to recommending a single alternative? It depends on the size of the government. The smaller the government, the higher up you make that switch. The larger the government, for example the federal government, you have to make that switch at lower levels. In Hawaii, you might make it at the bureau level or at the departmental level. Clearly, I think somewhere in between the department head and the governor and between the governor and the legislature, you should have already switched to your recommendation.

Planning. Let me move to planning now. Hawaii is, in one sense, among the blessed states in planning. It has, from what little I've seen and read in the last couple of weeks, among the finest planning systems in the nation. You have a twenty-year general plan and a six-year capital improvements program. More than one-half of the states have neither. Let's place planning in a somewhat different context to see how it might be improved in Hawaii.

Tying today and the future. Planning, first of all, must be distinguished from projecting. If you project the future—for example, the population of the state in the year 2000—your job is to predict it, not to influence the future. The purpose of planning, however, is to shape the future, not to take it as given. It is to mold the future by using your budget—your millions of dollars which are to be spent. It is to purchase, to build, to achieve in the year 2000 what you want.

Planning always implies a connection between today and tomorrow. When you plan, you think in terms of the present implications of the desired future; or conversely, the future implications of present investments. Indirectly, of course, this can go on endlessly. You know that everything you do today somehow influences the future. But, for conscientious planning, I think you should recognize only the direct relationship. Only when you can think in terms of direct relationships, do you have any reliable information about them and can you swing into purposeful action.

I hope I'm not misunderstood about what I'm about to say next. In deciding how long to plan for, I would always be very parsimonious. The shorter the planning period the better. Some of you have been reading all these awesome science fictional things about the year 2000. The writers of these articles and stories can tell you how the year 2000 will look like, but they can't say a darned thing about how the year 1969 will look like. The farther ahead, the more imaginative, psychedelic, you can be. But, I want to know a little about the world of action. So, be parsimonious—never longer than it requires for your decisions. I think the way Hawaii does it is superb. You recognize that in planning you need two different time dimensions. The general plan has a larger time dimension than the operational plan—twenty years for the general plan versus six years for your capital improvements program. I would say, by and large, that is very, very important.

Planning as a system, however, means that you must relate all your resources to one another. So I suspect that, as PPBS develops in Hawaii, one of the natural changes will be an integration of the capital improvements program with the operating budget. I don't know how that integration is going to be achieved. There are many ways to do it. You are going to have to tailor it to your own specifications. One caution, however. This integration

should not be achieved in a way that drains the capital improvements program of its current utility. In other words, right now you have, at least regarding the capital sector of the budget, something that looks six years ahead. I wouldn't want the integration to result in a combined operating-capital budget that only looks one year ahead.

One final note about tying today and the future. This is very important, and here I depart from the counsel of a number of my colleagues, including those in the United States bureau of the budget. If you plan for many years in the future—five and 10 years ahead—you have many more options than you would have if you planned only for the current year, not only five times as many options, but 10, 15, 20 times more. To me, then, it seems strange and unjustified that our early experience with PPBS should tell us, "Regarding the single year, we want alternatives. We want you to put down the trend, the prediction, of what this year's plans, expenditures and outputs will be five years from now."

Let me tell you, if you have only one option five years from now, you will have no more than one option today. Anytime you get a plan beyond one year which doesn't deal with options, with alternatives, it is barring you from effectively dealing with alternatives in the current year. It's important to tie today and the future together. Deal first of all with an analytic analysis of alternatives in your multi-year plans; then relate this to what you're trying to accomplish in the current year.

Constraining the planner. We have another problem regarding planning. Planning frequently is taken as a signal to build castles in the sky. The only trouble is that there is no sky and the castles come tumbling down to earth. What I am referring to is the fact. You tell a planner to plan, and this is immediately taken as an opportunity to outdo the budgeteer who says, "I need it." After all, when a kid says, "I need it," he's already been constrained, a little inhibited. He knows what's kosher and what's not kosher, what goes and what doesn't go. The same thing with the budgeteer. He got 10 grand last year and you slapped down an additional five grand. He knows he can't ask for the moon this time around. Thus, he's constrained when he makes his budget. The planner, however, he's way off over there. He can ask for the sky, *plus*. He can develop a plan that will consume the gross state product of Hawaii from today to the year 2000. That's not his fault; he's not constrained.

On the other hand, suppose you try to constrain him. You tell him, "Look, we know your game; we're going to impose a ceiling on you. Tell us what you can do with $X million—what alternatives, what benefits we can pursue with the $X million." You are going to begin to feel uneasy about this, because a constraint of this kind violates the concepts of PPBS. You want people to show you, really, without any *a priori* judgment about what can and what cannot be done.

The solution that I would suggest for you is to give your planner particular instructions, not absolute constraints. Rather than give the planner no instructions and let him fly his kite as he wishes, or alternatively tell him he can plan but to no more than $5 million or $10 million in this category, I would tell him, "Look, your budget in this category now is $5 million. You know the budget is going to increase. PPBS is not a device for cutting down the budget. It's neutral as far as that is concerned. It's a device for allocating the budget. Let's see what plans you can come up with at 110 percent of current spending, at 120 percent of current spending, at 130 percent of current spending." A nice thing about this is that you don't have to pick the same percentages for every agency.

Suppose you look at an agency or a category and you say, "This is growing. This is something that is becoming important." Let's say Hawaii has grown over the last 20 years and suddenly there's a new awareness of the fact that if we don't do something in the next five to 10 years about our open spaces, our recreation, our wilderness, we'll never be able to do anything about it. In this instance, it's unrealistic to say 110 percent of 120 percent.

You might tell the guy 100 percent, because you want that as a baseline to force the guy to think of reallocating the current program, but also tell him to try 150 percent, 200 percent and 250 percent. In other words, different increments.

A third possibility—for an agency which is in a relatively stable condition and when you want to try doing other things—is to give the planner the following percentages— 90, 100, 110 percent of current spending. This forces the guy to think about what happens if you don't have as much money in the future as you have today. That can be very, very important in doing analytic planning. To reiterate, you have to think in terms of options toward the future.

Incentives for PPBS

What incentives are there for PPBS? This is not in the script, but as we near lunch, I think I want to say a few things about it. What incentives are there for it? I'm not going to ask what are the disincentives. You know them better than I. The easiest thing to do is to continue doing what you're doing. I admire your leaders. They rejected that easy course of action.

A couple of incentives are: *No. 1*—and I'm reviewing this largely in terms of the legislative audience here—every year you get the budget and it has the wrong words—justifications and descriptions. You don't want this. *No. 2*, every year when you work out the budget, you argue about, "Do they really need that additional secretary?" You generally give it to them, and somehow you let slip from your grasp the big question—not, do they need $5,000 for a secretary, but do they need $5 million for the program? *No. 3*, every year all you really tackle is five percent of the budget; 95 percent of the budget goes unscrutinized; and hell knows what's going to happen by 1984 when the current year commitments build up, build up, and build up unre-examined. *No. 4*, every year the departments come to you, and they don't tell you a word about what happened to the money you gave them last year. Add these four things together and it's *legislative frustration* with the budget.

On the administrative side, I'll let you invent your own incentives, but I promise you that there are really good ones for the good administrator. The supreme incentive is that he'll be able to make the program that he wants—not merely inherit and mechanically continue the past.

Policy-making before Budgeting.

There is one change that PPBS is likely to bring, which is very important. That's in line with what I indicated before about the chronology of the initials in planning, programming, budgeting. In PPBS, policy-making is going to take place before budgeting, and it's going to be top policy-making.

Right now this is what happens. Before the governor submits a budget to the legislature, he goes to his department of the budget and says, "Begin to work." The department sends forms to the agencies and tells them, "Begin to work." The agencies usually know they're going to get the forms so they have already begun to work. If it's a large agency, it instructs the subordinate units to "begin the work." The order to "begin the work" reaches down to the lowest level capable of saying, "**I need it!**" That's a very low level indeed, even in a relatively small state. The lowest level might be 10 echelons removed from the governor. It receives reams of technical instructions, "Form A should be filled out in triplicates; make sure you use a black pencil; make sure that column A is filled out and rounded in this fashion"; etc, but not a single policy guideline. The lowest level, of course, says, "I need it," and includes in its budget everything "it needs."

If all of these lowest level requests are assembled, you will notice two things: (1) the requests exceed by tens of millions of dollars the total resources available to the state—and without anything added as icing by the top level of administration; (2) there will be an almost perfect correlation between the requests of these lowest levels and the budget as it is finally voted. The final budget is then essentially the budget of the lowest level of government capable of forming a budget. In other words, when Governor Burns goes before the legislature in the very near future and says, "This is my budget for the fiscal year 1969," you have to recognize that the budget is really an aggregate of the "needs" of the lowest levels. Under PPBS, because you have policy-making and programming before budgeting, the lowest level receives statements of policy to guide it in the formulation of its budget. These statements of policy are the main instructions it receives.

I want to allow at least a few minutes for questions, so I am going to cut off here very abruptly. We ought to have at least a few minutes for questions or comments before we adjourn for lunch.

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Participant: Will you give us an illustration of the last statement? What might be a statement of policy with reference to a teacher in a classroom?

Schick: Remember, I said, "the lowest level capable of forming a budget." I assume that a teacher in the classroom today does not make a budget. In other words, I'm not talking about the lowest level in the bureaucracy. That, I did not say. Any level that is capable of making the budget is *de facto* making policy, and it ought to be governed by policies made at the top level of government.

Let's say the lowest level capable of making policy for a teacher in a classroom is a school principal. The principal ought to receive, before he makes his budget, a statement about what the state policy is with regards to language arts, for example. Let's assume that the State of Hawaii, because of its cultural background, regards language arts as most important. This means that two principals in two schools should be behaving roughly similarly regarding the budgetary expression of that policy. That is an illustration.

Participant: I'd like to ask a question relating to planning. If I remember correctly, you said that the shorter the time span the better, and that the future should be tied to the present. What about those plans that are specifically geared for 20 years in the future and are not recognized in the present year?

Schick: Well, I think we can separate the first part of your question from the second part, because I don't know enough about the state general plan. Let me retrace my grounds, because I don't want to be misunderstood. What I'm suggesting is that you plan for no longer than is necessary, because as you stretch your plan every additional year, your data become less reliable and the relationship between costs and benefits becomes more tenuous. That's number one. All planning, all analytic planning, relate the present with the future. I know of no state that has as good a system as you have. That is, you recognize the appropriate sphere of your 20-year general plan. If things work perfectly, this general plan will be reflected in the six-year capital improvements plan and will be reflected as well, under PPBS, in the multi-year plan, and finally, will be reflected in the single year of the current year of both the operating and the capital plans.

To make this thing even more perfect, I would like to see what I suspect Hawaii will very soon be doing, to expand the scope of this 20-year plan to include not only land use and physical facilities, but also the various social programs and educational programs that you are providing. If you have a 20-year statement of these, geared to a six-year or a five-year plan and to the yearly operating and maintenance costs, I think you would be closing this planning circle beautifully.

Tuesday, January 30, 1968

DESIGN OF THE PROGRAM STRUCTURE

Allen Schick

Deliberately, we did not speak very extensively or intensively about the techniques of PPBS—the kinds of tools that you use in PPBS. I say, "deliberately," because our purpose was to indicate that the concepts are more important than the techniques and that each state will develop its particular kinds of techniques which suit its programs and organizations. In other words, there are going to be many ways to reach the goals of PPBS, and to begin with techniques might mislead you to take the techniques as being more important than the concepts. They are not.

Nevertheless, I think we recognize that if you go out and tell a person to plan or to analyze, it's like whistling in the dark. If you just tell him that, he wouldn't know what to do, how to go about it; he wouldn't know what you want. Techniques are necessary for the conversion of ideas into practice. The techniques which I am going to discuss in the next half hour or so are modeled after the federal system, but they are sufficiently general that they can be, I think, applied profitably to the Hawaii situation.

The Structure, Generally

Let's begin with the concept of benefits again. If you want to have a system of investing the state money, which is tied to the purposes and benefits that the programs are going to deliver, you have to have an information system which informs you about the benefits. The existing information systems in the budget, which I talked about this morning, inform you, not about benefits, but about how much is being spent by a particular organization on a particular object of expenditure for a particular schedule of work. So you need a fourth kind of information category to tell you about benefits.

The usual term used for this fourth kind is called a *program structure*. A program structure, in short form, is a system of classification of a budget which puts together in one category all the programs, all the activities, all the costs which are related to a particular benefit, so that, if you look at that single category, you are able to decide how much of the components, how much of the elements, you should spend money on. You can compare one component with another. You can decide more polaris or more minuteman.

In a program structure, then, you tend to disregard organizational lines and to disregard sources of funding. Your main consideration is not how the state is organized or whether an activity is funded by the state or federal government, but what is the most useful way for you to look at the purposes of the state in order to make your budgetary decisions.

Some of you might wonder, if a program structure's so good, why don't we go a step further and reorganize our state so that the organizations themselves are aligned in the same fashion that the program structure is? The reason why this is not necessarily desirable is because you might want to organize for efficient management in one way, but you might want to organize for decision-making purposes in a different way. You might, to continue with the polaris and minuteman case, consider it sensible to retain as a distinct organizational entity, the *department of the navy*, which has administrative responsibility for polaris, and retain a still separate departmental entity, the *air force*, which is responsible for minuteman. Despite the fact that these are refinements of the same program structure, you want them to be separated organizationally or administratively.

Rules for Developing Program Structure

There are not very many rules for developing a program structure. Let me cull out the ones that I think will be useful for us.

The first rule of program structure. There are as many ways to structure programs as there are to tell a particular story. In other words, there's not one single way to develop a program structure. Two people looking at the same organization, the same cluster of programs, the same benefits, might come up with two different sets of program structures.

As John Haldi indicated this morning, people fight over such things as program structures. It's not surprising; the stakes are very high indeed. Suppose, you have a library component, consisting of your elementary and secondary education program. If you classify this library component as a part of the total library system of the state, even though it's identified administratively with the educational organization, you come to one set of decisions. If you were to submerge the library under the board or superintendent of the department of education system, you come to a different set of decisions.

What's important to know is (and this is the first rule of program structure), having selected one program structure, you have thereby denied yourself the opportunity to select a second program structure. The structures are preemptive or exclusive.

Here, we have to consider something very important—the purposes of decisions. For purposes of *decisions*, you can have only one program structure. That's the way you decide. For purposes of *information*, I think you can have as many program structures as your information system allows or you want to have. Particularly with computers, with data processing, there is no difficulty in displaying a program in a multiplicity of ways. You're going to continue, as we pointed out this morning, to display a program in terms of organizational units, in terms of items of expenditure. You can explain and display it programmatically in several ways as back-up information. You shouldn't be tied to one informational type, even though you're bound to one way of deciding.

The second rule of program structure. As I'll get to in a little while, you should never consider your program structure as an absolute bar to decision-making in any other context. Suppose, you have your program structure, but for a particular problem that's confronting you, you know it's more profitable for you to look at the components of this structure in combination with the components of another structure. Go ahead and do so. The fact that these are two different program categories should not prevent you from doing so. To refrain from doing so would run against the purposes of analysis. I think too many people blindly take a program structure religiously and prevent analysis rather than encourage it.

This, then, is the second rule of program structure. The first rule, I said, is that displaying programs in one way prevents you from displaying them in another way. The second rule is that, although you can have only one structure for the purposes of decision-making, this should not prevent you from looking at other structures for the purposes of analysis.

The third rule of program structure is that you must place in a program category all those activities, those expenditures, which are regarded as substitutes for one another or which complement one another. Let's consider what we mean.

By *substitutes* for one another we mean anything which can be used *instead of*—polaris *instead of* minuteman; headstart *instead of* remedial reading in the library. To the extent that things are substitutes, they are required to be in the same program structure; otherwise, you will be prevented from making the substitution.

The second aspect—things which are *complementary* to one another should be housed together. Suppose, in order to have a headstart program, you also need to have a program for training headstart teachers. Since the training of your teachers has nothing to do with

the training of youngsters, we treat them separately. To think systematically, however, we have to put them in the same box. How can you decide for a headstart program unless you have the complements for it? Sugar goes together with spice, lemon with tea, headstart training of children with the training of teachers. It's very important to put the complements together. If you see one part without seeing the other part, you won't be able to make rational decisions.

These are the basic rules, and after these rules, you can have all the fighting in the world. Let me indicate what some of the fighting is about.

Opposing Views on Program Structure

I detect two basically different positions about a program structure. One position is that you can spend too much time on developing a program structure. You can spend months and months, and years and years of fighting in trying to develop an exotic program structure. As a result of all these endeavors, you're likely to come up with something which is alien, which is strange, unfamiliar, not related to the work of your agency and not understandable by the legislators. According to this view, you should develop what is called a *functional* program structure—a program structure which is related to the familiar functions of the state—health, education, social services, transportation, recreation, and so on. To develop this kind of program structure is relatively simple. You can do it for the whole state in a couple of days of good thinking.

On the other hand, there are those who say that, if you develop only a functional structure, you won't have a structure which encourages or facilitates, even demands, analysis. So these people say no matter what, no matter how long it takes to develop it, no matter what new terminology you need to invent, you should develop an *analytic* program structure—a program structure which itself possesses the elements for analysis. An analytic structure groups together all the components which are geared to the accomplishment of a single mission or which provide comparable benefits, so that when you do your analysis, you can look within the category itself and have all the information which is necessary for you to make your decision. The strategic defense category for the department of defense is an analytic structure, not functional. The department of defense doesn't function that way, but analytically we think that way.

These are the separate views, and as PPBS develops in Hawaii, I'm sure you'll have a bit of fighting about these views.

PPB Documents

Beyond developing a program structure, what do you employ it for? A structure itself doesn't do the analysis for you or do the planning for you. So we have three other documents which John Haldi alluded to, and I'll talk about them a little more.

The program memorandum. Let's take the first one, which is basically an analytic document called a *program memorandum*. Here, we have a critical problem, and the solution is not at all simple.

Suppose, the governor or the legislature tells each department, subdepartment, division, and so on, to present an analytic statement. The departments wouldn't know what to do. They'll give you rivers of descriptive and justificatory material which are not relevant. Suppose, on the other hand, to avert this problem, you give them detailed forms and instructions: "This is what we want your analytic statement to consist of." You might think that you'll be getting analysis; you'll get just the opposite. You'll have people routinely filling out the boxes in the form according to your instructions, and routine is the number one enemy of analysis. So what do you do?

The solution which the bureau of the budget developed was to ask each agency to develop a program memorandum. It told the agencies, "You decide how the document should be constructed, what the components should be. We'll give you guidelines around which we want you to build. One program memorandum to each category in your program structure."

The first year the bureau of the budget did this, as we suggested this morning, it got miles of material. This wouldn't have been so bad, except that the initial intention was that the program memorandum should be read by the President of the United States. He couldn't read thousands and thousands and thousands of pages, even though they were marked, *for night reading*. It so happens, as you might be aware, that for the President of the United States today, all readings are marked, *for day reading* or *for night reading.* Then, there is a third category which is for neither night nor day.

The bureau of the budget in the past year modified the concept of a program memorandum. It said, "Rather than using the memorandum to do your analysis, we want your memorandum to be an authoritative report of the decisions that you made and how you went about the analysis that you did. If for one decision you did no analysis, you tell us that. If for another decision you did the analysis, you refer to it without going through the analysis. You make the decisions. You tell us why you made it, which alternatives you considered." This has led to some improvements, although it would take a couple of years to drive out all of the irrelevant material.

Well, then, the program memorandum no longer is the number one analytic document. It's only a report of the action taken as a result of analysis. It doesn't do the analasis.

The special study. This brings in the second document called the *special study*. Here, I think we have a recognition of the fact that you can't analyze everything at the same time, and you can't analyze everything every year. It just won't work.

If you try to make it routine, if you try to have your department do its analysis every year, you know what will happen? The administrator will call in his secretary, and he'll say, "Jeannie, can you go to the files and get last year's program memorandum?" She'll get it out and he'll cross out "fiscal '68" and put in "fiscal '69," cross out "$5 million" and put in "$10 million." He'll fix it up a little maybe—he'll review it for all telltale signs of age. He'll erase the creases, take out the out-dated things and put in something new, so that it's up to date and has the right words. He'll hand it in as a beautiful analysis. But, it'll be nothing of the sort. It'll have the veneer of analysis, but it will in fact be essentially a continuation of the old programs.

Thus, we need to recognize analysis as a *special* study. Let's say this year you are not going to analyze everything. You'll identify suitable candidates for analysis. Maybe five percent, maybe 10 percent, maybe 15 percent of the whole state program will be analyzed this year. To a legislator who may say that that means 85 to 90 percent will go by without analysis, I'll turn the table around and say that it also means that 10 to 15 percent will be analyzed for the first time, and I consider that to be a small gain.

How do you pick the candidates for analysis for your special study? Well, you might take the clues from anywhere. A new governor—he has new ideas. A new department head—he wants to remake the department. There's a crisis—and you know the signals which tell you that you've got to make a change. There's a legislation expiring, and you have to do something—do you want to renew the legislation? do you want to change it?

All of these are clues that tell you not only that an analysis can be done in an area, but that the analysis will be read and listened to. Anyone can do an analysis in his hotel room upstairs and read it to himself. But, if you're really strategic about it—I think I'll

call it "political," because you know so much more about it than I do, so let's call it "political"—if you're really political about it, you'll ask yourself, "What should we analyze this year that people will read and listen to," and then have an analysis done of it. Then, you've got your special study. Then, your program memorandum will refer to the special study, without repeating all the detailed analyses in it.

The program and financial plan. The program memorandum and the special studies are the basic analytic components of PPBS. Then, there's a planning component. Generally, that's called the *program and financial plan*, which John Haldi talked about this morning.

My own preference is to regard the program and financial plan, not as a separate volume or a separate report, but as a chapter of the program memorandum. The bureau of the budget regards the program and financial plan and the program memorandum as separate. Regarding the program and financial plan as a part of the program memorandum is very important. I believe that the program memorandum should address itself, narratively and in terms of the current year, to what the program and financial plan statistically deals with in five- or seven- or four-year increments.

We've had a lot of trouble with the program and financial plan, as you might suspect. If you simply tell the agencies to plan five years ahead, you might really be in for a surprise when you read their plans. Let's say you begin in 1968. You ask the agencies to present in their plans, the costs and benefits all the way from 1968 through 1972. You'd expect a curve line that goes like this [indicating old program phase-out, new program phase-in]. But, no, the department guys are too smart for that. After all they don't know what's going to be in 1972. They do like this [projections of existing programs, based on current level of services, plus workload increase].

It's very important that you tell the agencies that in their program and financial plans they shouldn't only put in the future year costs of existing programs. This is regarded as detrimental to PPBS, and in some ways even worse than the current budget system, because it solidifies the protected, entrenched positions of existing programs. The very purpose of PPBS is to allow you for the first time to begin to re-examine existing programs. My solution is to make the program and financial plan a part of the program memorandum and, in addition, do what I suggested this morning—that is, to give them, not absolute feelings of constraints, but to give them budgetary constraints in terms of increments—90 percent, 120 percent and 50 percent of current budget levels with which to work in planning for future years. I would regard this as an optimal solution.

These, then, are the main components of the PPBS. Let me stress again that the purposes are more important than the techniques, and in Hawaii, as you proceed with PPB, you might develop a system which doesn't even use the term or the technology of the program memorandum. That's okay. You must determine for yourself what's the useful way. You know that this is a new game for all of us. If you have a better way of doing this—where there's something more amenable to your situation—by all means don't feel bound by what we're describing.

Effect of PPB; Controls over Spending under PPB

How does the new PPB system relate to the old budget system? This is a very serious problem, because, unless you give attention to it, what is going to happen is that one is simply going to be added to the other. It's easy just to add PPB on to the old system. There'll be a whole new corps of analysts who will sit in a room separate from the corps of budgeteers. You'll have the old, and now you'll have the new. The problem here is that you won't really get the new; you'll get some subsidized combination. But, even more unfortunately, you'll have administrators saying, "Oh, PPBS, you know what it is—just another requirement from up above." Then you might have legislators saying, "PPBS—just another way to hire more administrators to do more make work."

If you're really going to do PPBS, you're going to have to do two things. First of all, you'll have to trade away some of the old rules of budgeting, and secondly, you'll have to integrate the old with the new. Let me begin to discuss those aspects.

Subordinating organization and line items. Integrating PPBS with the existing system doesn't mean that you've got to change entirely the existing system. It's clear that somewhere in the administration, you're going to have to continue to give attention to the objects of expenditure. It's clear also that you're going to have to continue appropriating your money by organizational units. That's the only way to achieve legal accountability for spending. You cannot appropriate money to a program. You'll have to first appropriate it to an organizational unit—a place which,by law, has people who are legally responsible for the expenditure of funds. Thus, objects of expenditure and organizational units are going to remain.

The main change that you are going to have to make to the existing system, if you are going the route of PPB, is to subordinate organization and the line items. Under PPBS, you are going to give less attention to the organizational units and items of expenditure. There will be a sort of centralization of planning and of policy data and a decentralization of responsibility for objects of expenditure and organizational data. If I seem to be saying this with great confidence, I'll simply add a sequel. No one's done it successfully yet. But in Hawaii, at least, I detect an interest in trying to do it. For example, I've been informed that the legislature has vested the University of Hawaii and the department of education with a measure of fiscal autonomy through lump-sum budgeting. This is a legislative recognition that you're more interested in what the level of spending is and what the level of accomplishment is, than in what the items are. It's not that you're uninterested in the items; you recognize the limits of giving attention to items, for they don't tell you all that there is to know about programming. Authorizing or preventing the hiring of an additional person is not very helpful in determining what the program is accomplishing.

A new system of controls over spending. Under PPBS, since the focus is on programs, you're going to need a new system of controls over spending. Here, let me suggest several methods of controlling. One is *internal control*, which is very familiar to industry; the person who spends the money has the primary responsibility for how he spends it.

Internal control, however, should be subject to a *post-audit*. Under PPBS, the post-audit functions of the legislative auditor in Hawaii will be expanded—expanded, not in the sense of the comprehensiveness of the audit, but in the sense of the purposes of the audit. You will now be giving attention, not only to the legality of spending, but to the sufficiency of performance by the agencies—how well the agencies spent the moneys appropriated to them; what was accomplished by the agencies with the moneys.

Another method of controlling spending is what Haldi referred to as *variance control*. I'm not sure that I'm going to be very successful in explaining this in the short time available, but variance control is a system which informs you immediately of what the agency accomplished with its funds. Asking a legislator to give up his control over spending through objects of expenditure requires that you substitute something else—control through a review of performance. A new kind of information is required for performance control. The new information required is that which tells the legislator what happened to the money that was authorized to be spent. If I were a legislator and I don't receive that information and I am asked to trade away the objects of expenditures, I would say, "No." I'd refuse to. I'm going to ask, "What am I gaining in return for it? What assurances do I have that the money will be well spent?" Unless I have a new system that assures me of that, I would be reluctant, and properly so, to surrender my old objects of expenditure information.

The lesson here is that if we are unsuccessful in satisfying the requirement for control in budgeting, we will not be successful in satisfying the requirements for planning and policymaking. Control, because it's a much more important function legally and in some

ways politically, cannot be preempted. You have to have a system which accommodates control. The first time there is an abuse, the first time that the Honolulu headlines read that a guy spent excessive money on travel or did the wrong thing in hiring people, that may be the end to PPBS, because you'll feel that you'll have to rush in and reimpose item control and all other controls aligned with it that you were willing to divest yourself of. To prevent this from happening, you need a system of internal control, performance audit, and finally variance control.

You need a system which very quickly, without requiring you to go through thousands and thousands of lines of statistics, and very effectively identifies for you at once how much the agencies spent, compared to how much they promised, what it cost, compared to what they represented, and what they did in comparison with what they promised. You should be able to have on a few sheets of paper—four, five or six pages—in simple language and in numbers that anyone can understand—not a voluminous budget, not an annual report of the treasurer or of the comptroller, but in a few pages with a summary tabulation—information as to what was spent compared to projections and what was accomplished compared to projections, with good explanation for the deviations or variances.

You should have this report in relation to your budget. It should not be given to you sometime in the middle of the summer, when everyone's gone home and you've closed the books. At that time, you've already authorized the appropriations for this fiscal year, and it's too early to begin worrying about the next year. So, if they send you this report in the summer, it's going to be filed away—you know where. No, it has to be related to the budget season. It has to be used for budgeting.

If you have the report when you are considering next year's budget, you can look at the report quickly and note whether or not the departments have delivered those benefits which they had promised. You can compare that with what they have planned for next year. There may, of course, be perfectly legitimate reasons for not having delivered. But you will have a very quick way of being able to frame your questions. The ability to ask the right questions is, to my mind, the most important weapon that the legislator has. From what I have seen of some legislators, their problem is that they don't know what questions to ask. They say, "We ask them a question and we almost get our heads cut off. They try to snow us with statistics." The report on accomplishments indicates the questions that you can ask. This is the way the PPB system gets integrated for you.

A Specialized Information System

PPBS is going to do something which is difficult I suspect for anyone to follow, particularly for a legislator to follow, and which will take a dreamer to do in an ideal sense. This something is the difference between the first Russian constitution of 1917 and the second Russian constitution of 1936. The first Russian constitution proclaimed, "Each according to his wants." The second constitution about 20 years later changed this to, "Each according to his needs."

In other words, you are going to have to develop a *specialized* information system, different from what you have at present where every consumer of budgetary information gets exactly the *same* information. The present system, in the long run, reduces information to the lowest common denominator, which is not planning and analytic information, but detailed, itemized information—the small picture rather than the big one. What you are going to have to develop is a specialized information system in which the legislature will get information which is different from what the department head gets, and the department head will get information different from what a person three, four or five levels down the line gets. After all, a guy who's at a supervisory level, somewhat removed from

the department head, does not need the same information that the department head does. Nor does the department head, who is restricted to a particular functional area, need the same information which the legislator requires. This leads me to the last thing that I would like to say.

Automated data processing. I know very little about the data system in Hawaii. I know that there's a project called SWIS to improve Hawaii's data system. I know that right now there are a number of agencies which have a voice in determining the information system—the department of accounting, the department of budget and finance, the legislature, the governor's office, and so on. There are two things that I might say about this.

One is that all of these agencies are going to have to get together and negotiate. I hope that in the course of negotiation, you retain your smiles, for which Hawaii is known, because you're going to need to. People are going to shout, they're going to be angry. They're going to be dogmatic. They're going to really insist on their views.

The second thing that I would like to say is this. I don't know whether the budget system or accounting system is computerized, but I suspect that in the next five, 10, 15 years it will be, or if you already have a computerized system, it's likely to change as the technology changes. I think that it would be very sensible to relate the developments of PPB with the developments in automated data processing, because unless you have automated data processing, it is almost too costly, cumbersome and not worthwhile to have a multi-purpose budget system—a system which handles information for the purposes of controlling, managing and planning—a system which uses a multiplicity of information sources; a system which specializes in information. With automated data processing, the multi-purpose budget system can be developed relatively invisibly, routinely, and automatically.

Now, rather than continue here, I am going to invite Jim Kelly to come up and introduce you to the mystical world of case analysis.

Tuesday, January 30, 1968

CASE STUDY IN PROGRAM STRUCTURE

Post Office (A)

James Kelly

During the three days of this seminar, which is a long time for you to be sitting and listening, we're going to be doing two radically different activities. One of them, you experienced this morning—by the lecture system, you got some very straightforward, hardhitting opinions and ideas about the concepts of the planning-programming-budgeting system. The second activity is the case studies. I am more responsible for these case studies than for the straightforward lectures on the concepts of PPBS. It is through the case studies that we try to apply the concepts you get through the lectures to actual government situations.

In conducting a case study discussion, we've got to ask you to be very permissive with what we can do. We are going to ask you to step away from your role as legislators or as executives in the government. The purpose of a case study is not to find the *right* answer. The purpose rather is to take a real situation where people muddled through a problem trying to do some of the things that Allen Schick and John Haldi talked about this morning. The case study method asks you to go through the same kind of thinking process that the people involved in the case went through, and from that exercise to formulate your own conclusions. Your conclusions might possibly vary greatly from the one that the people in the case actually arrived at, but that's not important. The point is that the case method permits you to think about and grapple with a real problem—one that is not too close to home with you so that you can discuss it without a great deal of emotion. Today's case is the *Post Office Department.*

Background

The post office department faced, in 1965, the same problems and the same challenge that many departments in Hawaii will face, if you continue down the road to PPB. The postmaster general asked his people to formulate a program structure—a structure which points out the major missions of the post office; a structure which could be used to organize all of the programs of the post office and which could be used for rational, decision-making purposes.

The reaction of the people within the post office was of two different and violently opposed kinds. One group said, "We ought to do a program structure according to the functional categories." The other group said, "Let's do it according to product category."

The questions raised by this case are as follows. What is the difference between these two types of structures? Why does either structure make any sense for the post office? What structure would you suggest?

Existing Post Office Information Systems

Let's start by taking a look at what the post office is doing now—now being before PPB. What kinds of information are being generated in the post office at the present time? There are three basic systems. Can anybody outline these systems for me?

Participant: No. 1, I think, is a report by which Congress sets the rates.

Kelly: Okay, that's called the *Cost Ascertainment Report.* Now what are the characteristics about that report?

Participant: About 90 post offices turn in over 49 percent of the revenue of that group. Seventy-five of the largest post offices are picked at certain intervals, and by counting the mail that goes through those post offices on certain days, the post office comes up with a formula by which it distributes its cost.

Kelly: So, statistics are used to distribute costs among the classes of mail. Now I think you are all aware of the different classes of mail: first class, second class, third class, fourth class, special services. In total, I think, there are probably 24 or 25 different types of services that the post office performs. The *Cost Ascertainment Report* registers statistical samplings of the activities in the entire post office and allocates all costs to the different services and the different classes of mail. This is required by the Congress and by the postmaster general for purposes of setting rates for the different services and classes of mail.

Another characteristic of this report is that it comes out about six months after the end of each year. Thus, it's not a very timely document, but it's useful for rate study. For rate study, you don't really need to have the report much more often than this.

What's another report that the post office currently generates in its present information system?

Participant: Another is a report containing *work measurement* statistics. The number of pieces mailed is measured against the hours spent in collection, delivery, sorting—a whole variety of breakout.

Kelly: The report measures the quality of work being done to show how efficiently the post office is performing its job. It measures the number of pieces being sorted per hour. This report, I believe, is issued thirteen times a year.

Participant: Yes, every four weeks, according to the bureau of finance.

Kelly: Right.

The third kind of information that is being generated in the post office is the *appropriation structure.* This is the structure that goes to the Congress. The structure is organizationally oriented; the appropriation structure follows the organization chart almost right down the line. This appropriation structure, however, is not a very accurate vehicle for expressing what the post office is doing. You will recall that out of a total budget of $5-½ billion shown in the appropriation structure for fiscal year 1965, that category called *Operations* accounted for about $4-½ billion. This $4-½ billion doesn't tell you much about what's going on in the post office. Yet, this is the information that Congress received before PPB came along.

Now these three types of reports are completely separate from one another; they are not in any way related to each other. One is oriented towards the services offered by the post office. It is prepared late and is intended to assist the Congress in setting rates. Another is oriented primarily towards operations to determine the efficiency with which the post office is performing its different kinds of tasks. Still another is oriented towards budgeting.

I think, you can generally agree from looking at these types of reports, that there is a lot of room to improve the kinds of information being generated in the post office. These documents do not really aid in making important decisions.

Arguments Made: Functional v. Mission

Now, can anybody tell me how the two different groups within the post office argued for their respective positions? You will note that the two groups were definitely, very violently opposed to one another and that memoranda went back and forth arguing for each position. I think this case is one of the best presentations of the two different points of view regarding how to frame a program structure.

Participant: The bureau of finance within the department felt that the functional approach should be used. The chief of the bureau of plans and programs, however, said, "Dammit, this ought to be by missions—by the kinds of services we're providing and by what we are set up to do." The argument was a real long and hot one, and all through it neither side gave even an inch.

Kelly: Let's make sure we know what this program structure is all about first. Basically, the President said, "None of the information that I'm getting from the post office tells me anything about what is the mission of the post office. Give me a structure that spells out your primary missions. Then I want to know certain things—I want to know the cost of each mission; I want to know how you can best determine how effectively you're doing each of these missions."

Let's look at the two opposing views. Those arguing for the functional approach said that the job of the post office can best be characterized as, *collection of mail, processing of mail, transportation,* and so on. These are called *functions* because they spell out what the post office performs.

The *missions*-oriented people prepared a structure according to the classes of mail—first class, second class, etc. First class mail consists of private correspondence, second class is publication, third class is advertising, and fourth class is merchandise. In addition to the classes of mail, the mission-oriented people proposed another category called *support activities*—those services more or less common to all classes of mail.

The question is, which structure is the most useful way of presenting information to the Congress and the postmaster general. The people on both sides of the question were honest people, and the disagreement was an honest disagreement about which structure is the best. What were the arguments given for these two? Can anybody give the arguments of the people behind the functional approach?

Participant: I think, one of the arguments for the functional app roach was that the post office already has a system in effect by which the post office already is gathering information system on the basis of *collection, delivery, transportation, processing mail,* and so on; that it would take too long, and probably would cost too much, to install a new information system to give the kind of data needed if the missions approach were adopted.

Kelly: Right. The argument was that the missions approach would require a lot of new information. Any other arguments made for the functional approach?

Participant: I think the second argument was that the functional breakout is similar to the breakout of the organizational structure, and that the majority of the work of the post office is in operations, and that this functional approach represents the operations breakout which is more easily understood.

Kelly: All right, so the argument was that this functional method represents the way the post office is now being managed—that we organize and manage the post office through the collecting function, the processing function, the transportation function, and the delivery function. This is the way we collect information and manage the post office, and, therefore, this is the way we should parley our decisions. When we go out to pick

up mail, we don't send one guy out after private correspondence and another guy after periodicals. When we deliver mail, we don't send out four guys for four different types of mail. We just don't run our post office that way. We run it by collecting, processing, transporting and delivery. If we discard the functional approach and install the missions approach, we're going to have programs split up all over the place.

What were the arguments for the missions approach? Let's look at exhibit 10 on page 31. I think this exhibit does a good job of summarizing the pro and con arguments. Here the missions people argued: "The problems of the post office are best looked at in terms of the products, the parts available to each objective. Service is best considered by classes of mail." What does this mean? What are they getting at here?

Participant: It means that an analysis can be made of programs proposed to meet the objectives of the post office.

Kelly: You can better analyze your achievement of the goals. You can establish your objectives more clearly on this basis. You can use systems of analysis. You can look at the entire process of handling private correspondence.

In other words, they argued that the missions orientation allows you to analyze the objectives. They also argued that it wouldn't really be such a hard job to create a new information system. They argued that they are not adverse to information received in an object-class sense, but that the post office should get some rough figures on the total cost of handling private correspondence, of handling publications, of handling advertising, and so on; that the post office doesn't have to create a full new system to get this information, but that it could be gotten from the information now available by just reporting it out in a different way.

Participant: Really, the post office already had some objectives—for example, delivery of first class airmail in one day and so on.

Kelly: Yes. All of you are familiar with the ABCD program in the post office. This is an important program in large cities, at least it is on the East Coast. By this program, the post office is trying to get overnight delivery of first class mail within the city. This is a sort of a subprogram under the first class private correspondence category. You can't really reflect on an objective such as this with a functional category—the objective of overnight delivery by looking at *collection.* The functional structure doesn't give you a good picture of the whole system, of how the post office is operating with respect to the services it is supposed to render.

Take another example—airmail. A long term objective of the post office is to deliver any airmail letter in one day. This is a very clear statement of an objective of the post office. Remember that the goal or the overall objective of the post office is to provide for the dissemination of information throughout the United States. That broad objective is broken down into several sub-objectives. One-day delivery for airmail, two-day delivery for land mail material, and so on, are the specific objectives by categories of mail. It's possible to make very clear objectives by classes of mail.

In the functional structure, how would you relate the functions to the objectives of the post office? The functional structure is very much oriented towards management. By this structure you can measure the outputs by the number of pieces of mail collected, sorted, etc., but you can't measure the outcome by the time taken to deliver first class mail, etc. The functional structure, I think, has a statistical orientation rather than a benefit orientation. Nobody benefits directly because you spent one cent per letter collected. You can't decide on that basis whether or not the service to the public is good or bad. On the other hand, if you can say, "It took one hour to deliver all first class ABCD mail within the metropolitan area," you begin to get a feel for how good that service is.

Participant: Maybe this isn't the time to bring it up, but the last letter in the series of correspondence in the case study made me ask myself this question, why was all this time and all this effort wasted and why did all this correspondence back and forth take place, when in the very end, the department's bureau of finance said, "Regardless of what you think of it, we're going through with the functional categories"? This bothers me. The department ruled how it's going to be. If this is the way it's going to be done, then, why bother seeking the opinions of others in the department? Maybe there was something to be gained from this back-and-forth-study, but in the end, all the work was for naught.

Participant: Can we merge the two approaches?

Kelly: How would you merge them?

Participant: You could have *collection* as a major category, and underneath that you could have four subcategories—first class, second class, third class, fourth class mail. You could have the same subcategories for each of the other categories—processing, transportation, and so on. This way you could merge your management needs and your program needs.

Kelly: In other words, you're saying that *Collection, Processing, Transportation,* and *Delivery* would be your primary categories, and then have subcategories by classes of mail.

Participant: Yes, or the reverse.

Kelly: You could have classes of mail as your major categories and the various functions—collection, processing, and so on—as the subcategories? What's the difference?

Participant: Well, for one thing, the basic difference is in how you view the information. Categorizing classes of mail under *Collection,* for example, doesn't tell us whether we are meeting our objectives; it tells us what it cost to collect. Collection is not the objective; the objective is to deliver first class mail in one day to the right person. We're concerned not with what it cost to collect, but with whether or not first class mail was delivered in one day.

Kelly: Let me refer back to something that Allen Schick stressed this morning, I think at the beginning of this session. He said, "You've got to save information," and the question that we are trying to deal with is, what's the best way to organize the information in terms of reporting it for purposes of legislating? Let's just assume that we're going to report to the Congress by only a summary report—that is by the major categories and not by the subcategories. I don't think this would ever be done, but let's take this extreme situation. What Congress will then see, if the structure is along functional lines, is the cost of collection, processing, transportation, and delivery. On the other hand, if the structure is along classes of mail, the Congress is going to see what it costs to deliver first class mail in one day.

Participant: The functional approach is like a man saying, "I'm going to take a walk," and he starts walking. The missions approach is like the fellow who wants a drink of water or something—this is why he wants to get to the end of the golf course; he's not just going to walk over there, and when he gets there, start on back. In missions, it's what you want, and this should be set up in a considerable detail; functions should be secondary. It's only after you decide what you want, where you are going, and how soon you must get there, that you decide whether you are going to walk, jog, or run. So in the post office. You must first decide what you're going to do—deliver first class mail in one day, deliver advertising mail in one week, and so on. It's after we decide on all these objectives that we apply the mechanics of it—collection, processing, transportation, and delivery. These are purely secondary functions.

Kelly: So, you're saying you're in favor of the missions category?

Participant: Yes.

Kelly: That this is the best vehicle?

Participant: Well, we need the votes.

Kelly: We need the votes, yes, but for purposes of the top levels of government, it is more meaningful to structure in terms of missions, in terms of the objectives of the post office.

Participant: We have to decide first where we are going, before we get going.

Kelly: Yes, and this missions approach is more oriented towards where we're going—one-day service, six-day service, etc. We want to know the relative cost of each of these missions.

Participant: The Congress and the people don't really care about collection and delivery and transportation. They're not interested in the functional problems. They always want to know about the service. As you know, if it takes an airmail letter two weeks to reach me, you just bet I'm going to call the postmaster and ask what the devil the post office is doing.

Kelly: Let's take an extreme case. If you weren't concerned about service and all you wanted to do was look for the most effective way of performing this function of delivery, I think the best alternative would be to take all the mail and dump it in the middle of the post office floor and have everybody come in and sort out his own mail. You'd save a lot of money this way. It might take a month or two to get your mail, and you'd get a little bruised by the time you got it, but, boy, it's a very effective way of cutting down on the delivery cost.

Of course, you would never exclude some consideration of how the post office is performing its functions, but its functions are not the primary orientation. The primary orientation is the missions—how much are we spending to achieve what kinds of results?

Why did the functional approach even have a chance of winning out against this beautiful missions, goals and objectives approach?

Participant: One answer is that, if you do everything that you want to do by taking the mission approach, there just wouldn't be enough money in America to do it all.

Kelly: You mean you can't improve on the services?

Participant: You've got to effect your goals within the framework of what you can do.

Kelly: And you're saying that we don't have much opportunity to improve here?

Participant: If you stretch the objectives to the ultimate, then the best service is for a postman to pick up at your office the letter you want to send me and bring it over post-haste to my office. We can't afford that kind of program. So we've got to do the next best thing and put it in an ABCD box—I'll get it within four hours or at least by the next day. Missions must be subject to the facts of reality.

Kelly: In other words, we could spend another billion dollars and only improve the services over here from 24 hours to 18 hours; whereas, with the same amount of money we could improve our functions a great deal—for example, automate the processing of mail. This has been done at Harvard. It's got an automated plant where mail is processed at the lowest cost in the country. With a functional structure, you're saying you have an opportunity to be more efficient in the performance of responsibility.

There's another reason which is given for favoring the functional structure—it is the problem of developing a new information system for a missions approach. The

bureau of finance said, "We just don't have information by private correspondence, publication, and so on. It's not available. If we go the missions route, it will mean that we will have to create an entirely new information system." The counter argument of the people favoring the mission category was that it won't entail much more work to get this information system; the post office is already doing some samplings which can be used to find out the cost of these various services. Don't wait six months to get the information. Let's get it timely. Shouldn't cost that much money.

Think of your own department—the department over which you have some review function. Think of the problems it would entail to change from a functional category to a mission category.

The Structure the Post Office Finally Adopted

What did the post office finally do? It came up with a structure which is a sort of a compromise between the mission and the functional approaches. (See table 1.) *Direct Services to Mailers* is somewhat service oriented. Basically, however, I think the program structure is functionally oriented.

The second sheet (illustration 1) is interesting. This was done by the post office. It tries to describe these two different approaches discussed in the case. The vertical axis is along functional lines—*Direct Services to Mailers, Processing of Mail,* etc. On the horizontal axis are the missions. All the functions are going into each of the missions.

This graphic illustration depicts the several kinds of things the post office is trying to do. Functionally, it is trying to manage the department efficiently—control people, control operating cost, establish budget, and so on. It is also trying to determine missions, set performance standards, set rates and estimate the volume of activities. This graph puts the process of strategic planning along one scale and management control on another. I think it is a very vivid diagram of the two different kinds of activities which the post office is trying to carry out. You might review this graph and see if you've got any questions about it.

In the end, then, the post office came out with a functional structure. As you know, this is in violation of the rule that Allen Schick stated this morning. He said, "You've got to go on a mission basis—you've got to establish your goals and objectives." The reason the post office settled on this structure was the fact that the post office was so far from any sort of a decent information system about the operations of the post office that to make a jump from the existing information system to a new one required by a mission structure would have meant that the mission structure would have to get along with very, very fragmentary information. Given this state of its information system, the functional structure was the best it could do for the time being.

The post office really can stand a lot of improvement. I've heard it said, and this was said several years ago about the telephone companies, that if the post office continues at its present pace, every person in the United States would be working for the post office in the year 2000. It is a very laborious and inefficient operation. I feel, quite legitimately, that the post office can make a great deal of improvement. In reality, however, the department is probably better off with that functional structure for the next five years. The point I would like to make is that it's nice to have a firm rule in mind—that is, structure along mission lines—but the rule should be applied with a certain amount of hesitation. The question that should be asked is, does a mission structure really help in making important improvements? If it doesn't, even though it might conceptually be the best, don't do it.

Participant: Did the post office make this final decision or did the Congress?

Kelly: The post office. Congress wasn't involved. The federal bureau of the budget was the one that sent out this request to the post office.

Participant: Congress has nothing to say then about the organization of the post office department?

Kelly: Nothing.

Participant: The point I want to make is, if Congress is presented with this structure, can it say to the post office department to do it over again along the ideal alternative?

Kelly: The Congress is not involved in the process. Up to this point the PPB system has been developed at the executive level. The Congress is just now beginning to ask, what is just going on? In that sense, I'm very proud of this group where you, the legislators, have taken an active interest in learning about PPBS.

Participant: Did political pressures of tens of thousands of postmasters spread across the land have an influence on the structure?

Kelly: The decision was made at the very top level by the deputy postmaster general and the postmaster general.

TABLE I

POST OFFICE DEPARTMENT (A)

Final Program Categories

The final program categories selected by the post office department were as follows:

I. Direct Services to Mailers

II. Processing of Mail

III. Delivery Services

IV. Transportation

V. Providing Auxiliary Services

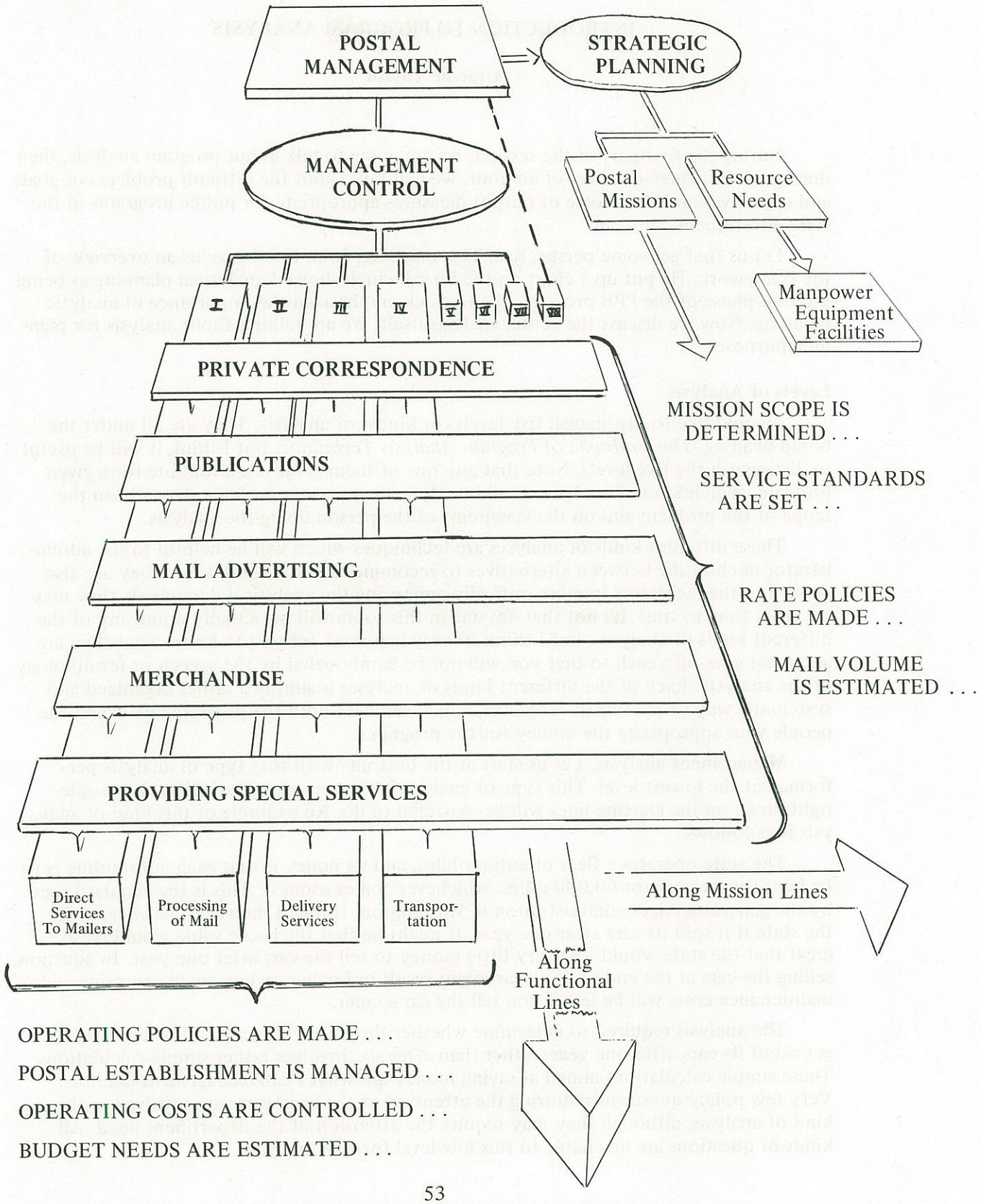
VI. Enforcing Postal Laws

VII. Research and Development

VIII. General Postal Support

Within these categories, sub-categories were developed to correspond to product lines of the department, where feasible. The following page presents a pictorial explanation of the relationship between the final program categories and sub-categories in the management and strategic planning of post office activities.

ILLUSTRATION NO. 1



Tuesday, January 30, 1968

INTRODUCTION TO PROGRAM ANALYSIS

Graeme Taylor

During the first part of the session, we are going to talk about program analysis, then during the last three-quarters of an hour, we will talk about the difficult problems of goals and objectives and the choice of output measures appropriate for public programs in the state government.

Let us first get some perspective. This morning, John Haldi gave us an overview of the framework. He put up a chart on the board which showed analytical planning as being the first phase of the PPB process. Allen Schick emphasized the importance of analytic planning. Now we discuss the actual analysis itself. We are talking about analysis for planning purposes.

Levels of Analysis

I would like to distinguish five levels (or kinds) of analysis. They are all under the broad heading, *The Umbrella of Program Analysis Technique*, but I think it will be useful to distinguish the five levels. Note that any one of them is most appropriate for a given problem. Which kind of analysis should be done in any given problem depends on the scope of the problem and on the viewpoint of the person doing the analysis.

These different kinds of analyses are techniques which will be helpful to the administrator in choosing between alternatives to recommend to the legislature. They are also helpful to the legislators in more critically appraising the analytical documents they may see from time to time. It's not that anyone in this room will be actually doing any of the different kinds of analyses, but I think it's very important for you to know what they are and what goes into each so that you will not be bamboozled by the speech or terminology of the analysts. Each of the different kinds of analyses is simply a rather organized and systematic way of looking at problems, which can help both the program chiefs and the people who appropriate the money for the programs.

Management analysis. Let us start at the bottom—with that type of analysis performed at the lowest level. This type of analysis is the sort of analysis that the people right down on the starting lines will be expected to do. An example of this kind of analysis is as follows.

The state operates a fleet of automobiles, and its policy is that each automobile is to be kept for six years or 60,000 miles, whichever comes soonest. This is the standard used by the general services administration in Washington. It might, however, be cheaper for the state if it sold its cars after one year. It might be that the resale value would be so great that the state would lose very little money to sell the cars after one year. In addition, selling the cars at the end of one year might result in further savings since operating and maintenance costs will be less if you sell the car sooner.

The analysis required to determine whether the state policy should be changed to get rid of its cars after one year, rather than after six, involves rather simple calculations. These simple calculations aimed at saving money are what I call *management analysis*. Very few policy questions requiring the attention of the legislature are involved in this kind of analysis, although they may require the attention of the department head. All kinds of questions are amenable to this low level form of analysis.

It should be noted that this kind of analysis is *low level*, not in the importance of the question involved, but in the degree to which major questions of policy are involved. Although *low level*, this type of analysis is important nonetheless. It can save the taxpayer considerable sums of money, if done in the right areas.

Operations analysis. The second level of analysis is what is often called *operations research* or *operations analysis*. This is different from management analysis only in the sophistication of the analytical techniques required. Management analysis needs little more than common sense and a calculator. In operations analysis, you might need to call in an outside specialist who is acquainted with the techniques of, say, *linear programming*, *queuing theories*, etc.

A type of problem in which these techniques are applicable might be garbage collection in the city of Honolulu. The objective of the city, let's say, is to collect the garbage once a week from every household and place of business in the city. The question is how to do this in the most efficient manner—how do you most efficiently route the trucks to pick up the garbage?

This type of problem is often solved by using the *linear programming* or *queuing* technique. You identify the location of the depot from which the trucks come, the garbage pick-up points, and the sites of the incinerators or the garbage dumps. You then try to determine the most efficient way of moving the garbage trucks from one point to another. You can't solve this kind of problem with the slide rule.

In this kind of analysis, the decision-maker, the manager or the legislature doesn't have to worry, because, again, we're not talking about policy issues. We're simply trying to be more efficient in how state funds are used.

Cost-effectiveness analysis. The third kind of analysis is what I call *cost-effectiveness analysis*. Very often, this term is used synonymously with *benefit-cost* or *cost-utility* analysis. I think, however, that there is a distinction between *cost-effectiveness analysis* and *benefit-cost analysis*. (Benefit-cost analysis is explained next.)

In cost-effectiveness analysis, the objective is pretty clearly established. The question is, what is the least cost way of achieving it? The distinction between cost-effectiveness analysis and operations analysis is that cost-effectiveness analysis requires more than just a computational technique.

An example of cost-effectiveness analysis might be in the field of education. Suppose our objective is to educate 10,000 high school children per year in a particular county. Let's say there are two alternative ways to do this—one is to build a large, central high school at a relatively low investment cost but requiring a high annual cost to transport children to the school; the other alternative is to build a series of smaller high schools geographically dispersed, requiring a higher total investment cost but a much lower annual maintenance cost. We have to weigh these two alternatives over time to see what the total cost of each of these alternatives really are—to determine which one is cheaper over time. The objective isn't the question; it's simply a matter of retrieving the least cost way of obtaining our objective.

The problem involves policy questions—policy enters clearly in the decision—and so, it cannot be equated with management analysis. Although a computational routine, such as operations analysis, can help toward the solution, the policy can't be ignored. It is, thus, not a decision to be left to a low-level, front-line manager. This decision must be made at a pretty high level.

Benefit-cost analysis. The fourth level of analysis is what I call *benefit-cost analysis*. Here, the word, *benefit*, comes first. This emphasizes the fact that we are concerned here primarily with benefits. In cost-effectiveness, we supposedly know what the benefits are;

the question is, how do we achieve them at the least cost? But, in benefit-cost analysis, the benefits themselves are open to question. It might be that we are not quite sure what the benefits are, or, even if we can enumerate them, maybe we can't actually measure them.

An example of where benefit-cost analysis may be useful is this. Suppose, we have this question—if we invest $5 million in a recreation program, are the benefits worth the cost? Here, not only do we have to correctly identify the benefits of the recreation program, but in some way, we also have to relate the benefits to the dollars we have available. This is a very hard kind of analysis to do. This is what I call benefit-cost analysis.

Systems analysis. The fifth level, somewhat distinguished from the other four, I call, *systems analysis*. By this I simply mean analysis of a problem where there are a number of related components.

For example, let us say that the problem, as we see it, is to reduce congestion at the Honolulu International Airport. Let's say that someone has come up with the suggestion that we should improve the baggage handling facilities in the terminal. Now, if that is the way the problem is formulated and if that is all the analyst is given to wrestle with, he might not come up with an optimal solution. It might be that the congestion at the Honolulu International Airport can be reduced by building more access roads, changing the traffic pattern, relocating the FAA control tower, constructing another airport on another island, moving general aviation from the Honolulu airport to a smaller field at Pearl Harbor. There are many possible ways of reducing the congestion at the airport other than just by improving the baggage handling facilities. You can't consider each of these alternatives separately. The problem concerns the total system, which presumably is to move people in and out of Hawaii on this island most efficiently by air. That is the sort of problem which is amenable to systems analysis. It isn't just a question of operations analysis; it is not a cost-effectiveness problem; it isn't something that a low-level person can solve by management analysis.

Let me offer one observation here. The concept of program analysis is so new that the few practitioners that there are, are disagreeing over terms. As Allen Schick this morning said, we are sort of writing the ground rules of evidence as we go along. There is no body of experience. You cannot, for example, go to a bookstore and order a textbook on program analysis. There just isn't any such thing. The practitioners are in disagreement, although their general purposes are similar—they use different terms, they put emphasis on one aspect of one subject rather than the other. I am giving a personalized view which I hope is relatively consistent with the majority, but it is nonetheless a personalized view only. I offer my definition or definitions only so that during the next couple of days, we will all be talking in the same language. I frankly don't care what you call these things, whether you call them cost-utility or benefit-cost or whatever, just so long as you recognize that there are different types of analytical techniques applicable to different problems.

Performing Systems Analysis

Let us now talk in some detail about the actual performance of systems analysis. How do you go about doing it? We are going to talk about this, not because you would actually be doing the analysis yourself, but because you may be called upon to criticize the result of someone else's work. Please feel free to interrupt me at any stage, if you have any questions or comments.

This morning, John Haldi used the word *iterate*. By this he meant, to oscillate back and forward between what looks like steps but really aren't. It's sort of like a juggler keeping several balls in the air all at one time. In analysis, we have to remember that we just don't do things one step at a time—we oscillate back and forth. At any step, we have to consider the previous work and we have to anticipate the subsequent step. This is the *iterative process*.

So the steps in performing systems analysis that I am going to put on the board should not be interpreted as sequential steps, but should be thought of as the balls the juggler keeps in the air at one time. In systems analysis, you have to think of the many different steps at the same time. [See illustration.]

Define the problem. Our first step clearly is to define the problem facing us. This sounds so obvious, it hardly seems necessary to explain, except that the *real* problem is often overlooked in an analysis. The obvious problem, the nominal problem, is very often not the one that really should be of concern to us. Unless you define your problem correctly, you can waste a awful lot of time solving the wrong problem.

Objective. After having made a first stab at defining the problem, the next task, and this may be rather repetitious, is to find our objective. Again, I repeat, these should be stated, hopefully, operationally, simply, and specifically as possible.

Alternatives. The next step, obviously, is to generate imaginatively our alternatives—all *relevant* alternatives.

Model. When we get our alternatives, we must next construct our model, clearly stating our assumptions and the constraint.

Let me say a few words about *models*. This is a word that is bandied around very loosely. It often conjures up visions of a gigantic computer, whirring away with elaborate economistic relationship built into it. This is not so. A model is simply an abstraction of reality—the decision-maker's or the analyst's view of reality. He has chosen to view the real world in this way for the purposes of analysis.

For example, let's say the factory manager views his total cost as being the sum of his fixed costs and the number of units produced times the variable cost per unit. Now, this is clearly a model, this is not reality. In business, the behavior of factory operation is not that simple. Fixed cost is very seldom fixed; per unit cost does not usually vary in direct proportion to the number of units. But, the way the manager views his total cost happens to be a useful shorthand way of laying out the relationships for purposes of calculations. That is a model—a very simple one, to be sure.

Another simple type of a model is one in which the analyst, simply and logically, writes down the relationship that he believes exists between inputs and outputs—between the inputs that he allocates to his program and the desired program outcome. A simple description of the relationship constitutes a model.

The important thing is that when the model is constructed—that is, after we go through this process of deciding the relationships that exist—we have to be very specific in stating the assumptions and constraints under which we are operating, because if we don't, then the people who read the analysis later would have no idea as to how we derived our answer. We're sort of borrowing from the scientific method here. The essence of the scientific method is that an experiment be reproducible. I am not suggesting that systems analysis is a science. It certainly is not; it is an art and will probably remain so for quite a number of years; but at least the analyst can borrow from science just this one feature—that as far as is humanly possible, if you give two teams of analysts the same problem and if you give them the same assumptions, the same constraints, and the same data to work from, you should get reasonably similar pieces of work, unless one or both of the teams for some reason or another made a mistake in calculation. The assumptions and constraints which are operational in a given situation are incorporated in the so-called model, so that the two teams will come up with reasonably similar results. When a layman —an educated, informed man of good judgment—reads the analysis performed by an analyst, he should be able to understand it and he should be able to see what the assumptions were, where the assumptions came from, what facts were used, what facts were endorsed, etc.

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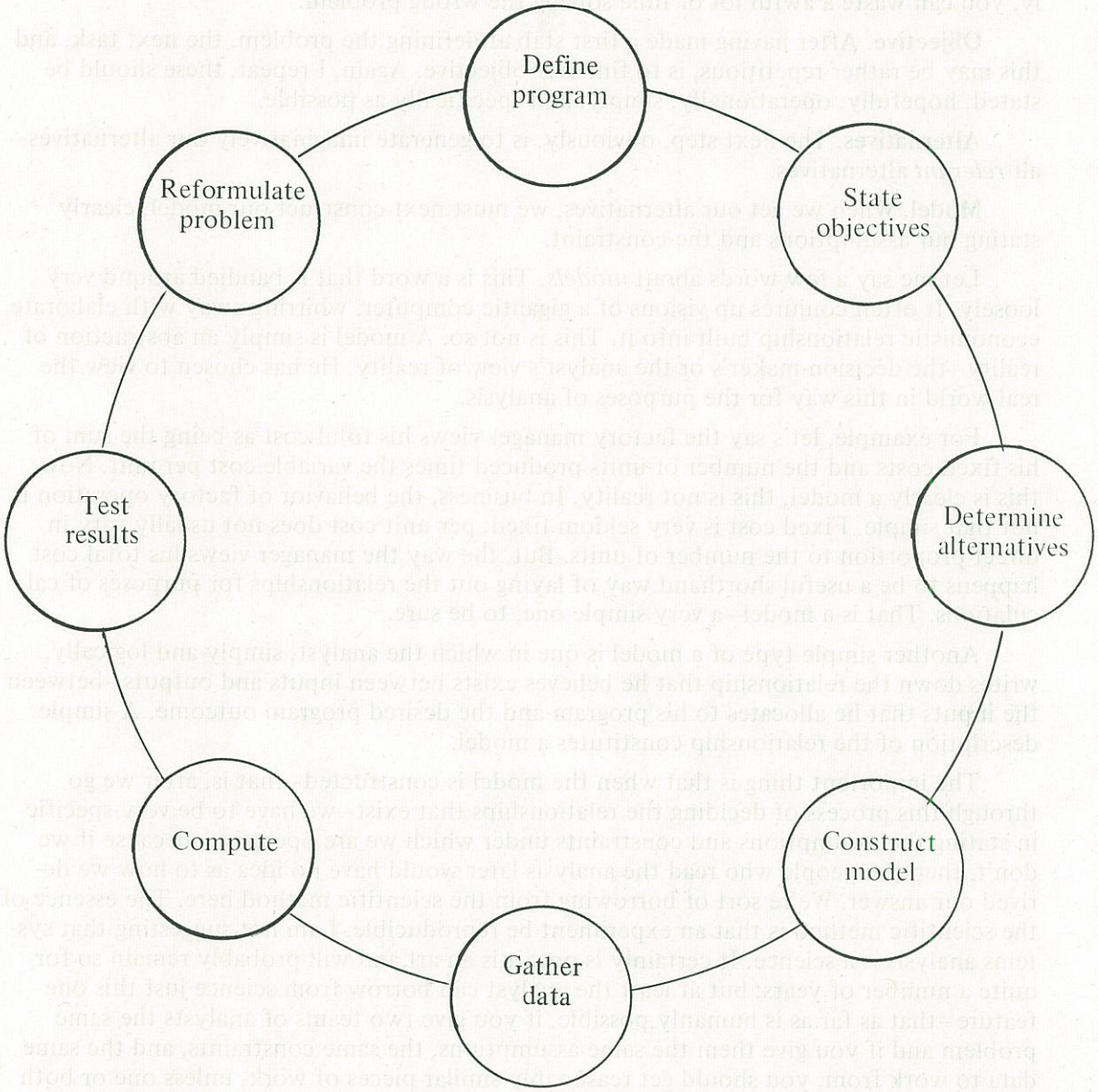
Illustration

Steps in Systems Analysis



Participant: Is the department head, say, of an agency, involved in the construction of the model?

Taylor: I wouldn't expect the department head to be an analyst, but I'd expect him to be involved to some degree. You cannot expect the analyst to start from scratch without any guidance or ground rules from the consumer of the analysis—in this case, the department head. There has to be communication between the man who calls the tune and the piper. During the problem formulation stage, it is very important that the department head be involved. You have to avoid having the analyst solve his own problem. You have to avoid the analyst going off on a tangent with the wrong objective in mind, ignoring certain alternatives or examining only those alternatives that look feasible to him. It is very, very important that the department head or whoever is going to consume the analytical work be in constant communication with the analyst during the early stages.

Participant: Isn't the kind of analysis you are talking about going to require the hiring of consultants—outside expert help?

Taylor: I would hope not. This is a question which we will be covering in much more detail later on during the week. But, let me just say that the analyst hopefully is a person with program knowledge from the department, who is of an analytical bent and who systematically examines programs. If the analysis involves complicated techniques, he may have to call on outside help. But, very often, the best analysis is a very simple analysis.

The maternal and child health care study, which is reprinted in that green booklet on the Proxmire committee hearings which you have in front of you, is a 35-page document, starting on page 10, I believe. That bit of analysis is not in the least bit sophisticated—it doesn't use complicated mathematics but examines in a very clear and logical way the benefits of the various child care programs. Now, I know you don't need an outsider to do that kind of analysis. What it would need would be a man who knows the child and maternal health care field and who has a logical, systematic mind. Some problems, clearly, like the garbage collection business, I wouldn't expect just anyone to be able to program—it involves some technical *linear programming* skills. I would assume, in such a case, that someone from the University of Hawaii or somewhere else would be called upon to set up the actual computational formula. But, even in such instance, the department head would have to specify the objectives, not the analyst.

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I find this is a good place to emphasize again the iterative nature of systems analysis. Clearly, when we get to this stage, we might find that there are some more alternatives we haven't thought about, or that the objectives as first stated are not the most meaningful ones—some may be downright impossible—or that we're solving the wrong problems. So, obviously, we've got to oscillate back and forth within this area, sort of juggling the balls in the air at the same time. Actually what we'd probably better do is to make, using the jargon of analysis, a *first cut* of the problem—you know, give it the once-over-lightly treatment; sort of jump ahead of ourselves and go through all these steps to see what is before us—before we actually invest too many man-years and too many man-weeks or man-days.

Data gathering. Now we come to a step that should be easy, but unfortunately in fact never is—that is the data gathering step. Gathering data should be easy in the best of all possible analyses in the world. All we have to do is go out and pick up the data, but this is unfortunately not the case. The data that we've been previously gathering have been gathered often for different purposes. They have been gathered, for example, for purposes of operational and fiscal control—to insure honesty in our expenditures, to insure that we have spent only for what we said we were going to spend and to insure that the expenditures

are recorded in the right amount. That sort of information is very often not helpful for analytical planning or for program analysis of the kind that we are talking about today.

What do we do, if we can't gather the exact data necessary for program analysis? We have to make decisions today; we can't defer those decisions until these data suddenly become available. What we have to do is simply make the best of what we have. Find out what information is obtainable or readily obtainable within a short period of time and use it, being very careful, however, to express what our confidence is with respect to the validity of the data in some sort of numerical fashion.

How do we express our confidence? We might say, "Well, I'm 90 percent sure that my cost is going to be $1 million a year, but there's a 10 percent chance it may go as high as $1.25 million." Just making that simple statement is a lot better than saying, "Our cost is going to be a million dollars," which implies that we are 100 percent confident of the figure. Sometimes delineating two points within which we anticipate the figure to fall is a way to get around the inadequacy of the data.

Compute. Then comes the computational step. *Compute* means to feed the data into our model, whether it be a machine model or simply an equation, or into our own heads as ordered by the verbal ground rules that we've established.

Very often this computational step is confused with the whole analytical process. You hear such phrases as *computerized decision-making* or *taking the politics out of decision-making*, and so forth and so on. The computational portion is purely routine. The creative aspect has all been gone over before—in problem formulation, in defining objective, in the creation of alternatives, etc.

Testing results. After we've *computed*, after we get a product out of the end of this process, we've still got to test the product. When you look at a document and see just one recommended conclusion with no caveat, no qualifications, in my opinion, it is a bad piece of analysis. An analysis should end with an explanation or description of a type of testing called *sensitivity analysis*. This type of testing examines to determine to which variable the results are most sensitive. Let's say that the analysis assumed a cost of $1 million for this program. In a sensitivity analysis, this question might be asked, "What if our costs actually were 10 percent greater; what would the effect be on our results?" Maybe an alternative that looked bad before might suddenly look pretty good, and if that happens, then we would want to go back, I think, to look at some of the cost estimates in greater detail to pinpoint to which cost item the result is most sensitive to change.

Another type of testing would be what is sometimes referred to as *a fortiori analysis*. Let's say we are examining two alternatives, X and Y. X comes out the better of the two after the analysis is completed. What we might want to do then is go back to the analysis and bias everything deliberately in favor of Y every time we make an assumption—make the assumptions all in favor of Y. If X still looks better than Y after this process, then we can be pretty sure that X is indeed the preferred alternative.

The third type of testing is sometimes called *contingency analysis*. Here we are testing for changes in the scenario, to use a military jargon or phrase, or testing for changes in the parameter. In a military context, we might raise this question, "What if Red China decides to enter the war with North Vietnam? How would our battle plans, our force tactics have to change to meet that contingency?" You can do parallel things in the field of social welfare, health, and education.

By such testing, the consumer of the analysis—the decision-maker, whether he be the department head or a legislator—should be in a better position to critically appraise the recommended conclusion.

Reformulating the problem. Often there is one more step in the analytic process—that of reformulating the problem. Our analysis might reveal some alternative we haven't thought of. It might reveal that our objectives are absolutely impossible to obtain. It might reveal some serious weaknesses in our data so that we might want to install some new kind of information system or mechanism to gather those data which will be of use. It might reveal that our model is seriously deficient in that we just don't know what relationships there are between the costs and the benefits in the program. In such instances, we might then have to reformulate the problem and, in a sense, start all over again.

I would issue a warning here that we should fit the scope of the analysis to the nature of the problem. It clearly would be infeasible to go through this sort of process of spending many man-years of scarce analytic talent, if all you are trying to do is to decide to buy automobiles or to rent them or to sell them after one year or after six years. Clearly you've got to choose the hammer to fit the nut. Obviously, a coconut requires a bit more knocks of a hammer than a peanut, and the same is true of analysis. The technique that you choose and the amount of time that you invest has to be weighed against the magnitude, the difficulty and the importance of the problem.

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Participant: Even if you formulate the problem at the start, might you not have to reformulate it at any stage of the analysis?

Taylor: Right. As I said, it's like a juggler who has many balls in the air at one time. A good analyst, if he is a clear enough thinker, should be able to distinguish the red ball from the white ball and the blue ball although they are all in the air at one time. He should be able to think of all the steps I outlined at once. As I suggested earlier, a good way of doing this would be to do the analysis once over lightly—kind of run through almost on the back of an envelope—and then go back to start the serious work. But you are right, there would be a reformulation at many stages.

Participant: Can you illustrate the use of systems analysis, say, to the language arts program of our education department?

Taylor: Well, I'm sure we'll all be talking about that particular problem much more on Friday, but there's no reason why we shouldn't look at it in a general way.

First of all, we need to define the problem. It may be that the level of ability of our children in language arts is X times below the national norm, and we feel that it is desirable to raise the language ability of our children. The question is, how can we improve this? This is a very vague statement of the problem.

Then we would state our objective operationally. Maybe we'd like to bring the average up to the national norm in a given period of time. This may not be possible, given the availability of resources, but let's take some sort of statement like that to begin with.

The next question is, what are the alternative ways of achieving this rough statement of our objective? We begin to list them. Maybe there are 25 different ways to improve ability in language arts—remedial reading, audio-visual, more teachers, more teacher helpers, better books, more classrooms, etc., etc.,—heavens, there must be thousands.

The model in this case would simply express some sort of professional educator's view of the relationships between a given program and the result on language arts ability. Educators, professionals in their subjects, not being crystal ball gazers, can't know positively what the results are, but they can make some assumptions such as, okay, if we have ten more hours per pupil per week in remedial reading, our guess based on our experience is that we'll get an extra increase in ability. That would be the model in this case.

We then will have to gather information which probably would be test scores and the cost of the programs and so on. We make the computation—we weigh the costs of the different programs at different levels of funding against the anticipated change in the level of ability in language arts.

Then, hopefully, we will test our computation. Suppose that the remedial reading program is only 85 percent as effective as we first thought. What would be the effect on the reading ability? We might find that we are creating professional monsters, so we may want to redefine the problem a little bit further.

This is roughly the steps you go through. There's nothing mystical or magical or mysterious about it. It simply is a logical, systematic, common sense way of laying out the problem.

Participant: In the language arts program of the education department, there are several different alternatives that don't allow you to discriminate between results. We don't know enough about the differences in results you get from the different methods.

Taylor: You mean the problem is the fact that the connection between what you do and the objective is uncertain?

Participant: We don't know whether a reduction in the teacher-pupil ratio or whether the remedial reading program or some other program is going to produce the results we want.

Taylor: This is a problem. It may very well be there will have to be some controlled experiments in that case. Such experiments could be included under *gathering of data*. The trouble is such experiments take time, and you've got to make your budgeting decisions now—you can't wait for a sophisticated study. All I can say is, do the best with what you have. Incidentally, don't confuse the pupil-teacher ratio with output. That's very often done.

Participant: As I see it, one of the most valuable tools, as far as the legislator is concerned, is your model, which tells you what you hope to achieve with a program. Given certain assumptions and constraints, this is what ought to come out. Now, a year later, we check the results against this and see whether our program was effective or not. Suppose we find that it hasn't been effective or that it didn't measure up to our model. How do we go about analyzing what corrective measures should be taken? Could you explain how we would go about picking out where this thing went off track?

Taylor: At least two things could have happened there. No. 1, the world changed, so to speak. The environment under which the program was carried out differed in some way from the environment which had existed when you made your analysis. Costs could have gone up. Many things could have happened.

No. 2, the analysis itself could have been done wrong. The analysis may not have considered all the factors, etc. Assuming that's the case, you would then go back to the analasis and just check through all the critical points. Where were the critical assumptions made; have these, in fact, proved to be true? Suppose that the assumption was that the school population was to grow 10 percent and in fact it grew 15 percent. That may explain why you didn't get your results.

I think you would want to have a total screen, a list of some of the most critical assumptions that were made and just go through and check them out and see what happened. But, you couldn't do that unless the original analysis is explicit. As Allen Schick emphasized very strongly this morning, you've got to be explicit. Unless that explicitness is captured and preserved in a language which the layman can understand, it's just a waste of time, because only then will you be able to go back later to reevaluate the results of the

program and measure them against the promises that had been made. I'm not sure that answered your question.

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Frequency of Analysis

You don't have to do an analysis for every program every year. Otherwise, the entire State of Hawaii would be employed analyzing the government's program. It would be like the post office in the year 2000 when everyone's going to be delivering the mail unless we do something about it; or the internal revenue service in the year 1975, when we'd all be working for the IRS, if it starts auditing any more tax returns. Obviously, we have to cut the suit to fit the cloth, and to use the phrase Allen Schick used this morning, "An analysis like Spanish should be opportunistic." For the coming year, there might be certain major fields—in education or in transportation or in recreation or in any other—which issues are of such importance and of such urgency that you might want to expend your scarce analytical talent on those problems. The following year, issues in those areas which are of less priority this year may present themselves as being the most important ones and to which you might want to divert your analytic talents.

One other point, an analysis need not be tied to the fiscal year. You can have analysis, because of the nature of the problem, which might require more than a fiscal year to complete, or because of the time when the problem arose, which might overlap the fiscal year.

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Participant: You mentioned that you wouldn't go into an in-depth study in the use of automobiles. You spoke of the safety factor which might influence you to change autos more frequently than six years. But, to do this kind of analysis, wouldn't you require some technical skills which may be possessed only by an outside expert?

Taylor: An in-depth study, yes, but the full paraphernalia of analysis would not be required in that case. The auto trade-in case is an example where a detailed management study would be necessary and desirable. But, personally, if I were the department head, I would not expect that the problem is difficult or technical enough to require the services of systems analysts from the Rand corporation to do it for me. I'd expect my own people to be able to do it very confidently; and, indeed, if they couldn't, I'd wonder why.

Participant: You say there's a scarcity of analytic talent. I keep wondering where it's coming from.

Taylor: That's a good question. We're going to talk about that more later. The other week I heard a man say that in Washington there are only three analysts outside the department of defense. He said, there is Bob Levine, who is the chief planner for the office of economic opportunity; Bill Gorham, who is the assistant secretary of health, education and welfare for program analysis; and Bill Gorham's deputy. And he said that when he used the word, "analyst," he meant the kind of person who can think analytically. What are really the qualifications of an analyst? That same person said that the main qualification is a very high order of general intelligence; that it doesn't matter whether the guy is a philosopher or an engineer or a teacher; that it doesn't matter what his background is, so long as he possesses extreme intelligence, an acute mind, and a logical approach. Of course, he's got to have program knowledge in the area in which he is operating. I can't imagine turning a social worker loose on a transportation problem. Actually the talent that is even scarcer than analytical talent is the talent to be able to communicate the

results of analysis to top management. How do you translate the analysis into terms that can be meaningful to the busy legislator or the busy department head? This is very hard.

Participant: Hopefully, would the department head want to train somebody in his own department to be an analyst?

Taylor: Yes. David Novick, who is the head of the cost analysis department at Rand was asked this question the other week, and he said that he prefers to grow his own talent. He prefers to take a young man with some sort of numerical or quantitative background—whether it be in physics or engineering or whatever—and turn him into a high-grade systems analyst. That's precisely what Rand does.

Perhaps the same thing might apply to the department head. The head of the department of transportation might want to take a man with some sort of numerical background and make him a highway or transportation analyst. That presupposes, however, that there exists within the department some analytical resource which can be trained.

In addition, you can send your men to school for training or bring in an outside expert to help you train them. There are many different ways of doing it. I think it depends on the resources available to you. There is no one way. Learning by doing is very often the best way, if you have the right teacher on the job, but there are many, many different ways of developing analysts.

Participant: If I were to be gathering data, would I be doing it on a regular basis so that I could have them at the beginning of the analytic cycle?

Taylor: The sequence of steps I gave you is arbitrary. In fact, in some cases, data gathering would be the first step. For example, you might want to take an inventory of what you've got before you try to determine what your problems are. This sequence I gave you is a very generalized, conceptual scheme. It clearly has to be adapted to fit a given problem.

Participant: You had a list of items there earlier before you erased the board—management analysis, operations analysis, and so on. Now you draw this picture of the analytic cycle. What is the relationship between the two?

Taylor: This picture depicting the analytic cycle is to me a conceptual scheme to illustrate how to perform a systems analysis or a benefit-cost analysis. In doing a management analysis, you would not have to go to the . . .

Participant: It's the in-depth, sophisticated ones that require all these steps?

Taylor: Right. In cost-effectiveness, you would eliminate the *alternative* step. In cost-effectiveness analysis, this step would not be nearly as important as it is in benefit-cost analysis. This is a generalized, conceptual analytical scheme. *Management analysis*, *operations analysis*, and so on, which I put on the board, are just different levels of performing basically the same generalized process. Of course, the analytic scheme applies to the program structure and not the organizational structure or the line item budget structure. We are not analyzing as between organizational units or line item expenditures, but we are analyzing programs. The program structure is merely the framework within which the analysis takes place.

Participant: Why can't you analyze the programs on the same kind of breakdown as where we structured the programs for an organizational unit?

Taylor: Well, it may be that within the social services department, you have some program which you may want to consider even when you are dealing with what is essentially a health problem. The majority of the health programs are in the health department. But, if your objective is to reduce the incidence of a particular disease in the state, for example, it may be that some of the social services activities are actually alternative ways

of achieving the target of reducing the incidence of that disease. So you would definitely want to compare both the health department programs and the social services programs side by side in program terms rather than just narrowing your focus on the department of health alone.

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The Language and Faulty Alternatives

There is just a couple of other caveats here. The role of language is extremely important. The good analyst would hopefully avoid the use of vague terms like *obviously* and *the best way of achieving our objectives is*. That sort of language can only becloud and befog the issue. Hopefully, the document is written in pure, clear prose. As Allen Schick this morning said, the word, *beauty*, means different things to different people. Then, the end of *beauty* can be very hard to achieve.

If you are reading an analytical document, I think one of the things you would want to watch out for would be those little innocent-looking, but actually dangerous, words that tend to bias the conclusion. As Allen said, the choice of *only* or *as many as* before the *25 percent* can make all the difference in the world. So beware of that.

Beware also of implicit assumptions. Beware also of faulty, overlapping alternatives.

Beware of the alternatives that put out a strong hand. For example, the post office department knows that Congress isn't going to cut second class mail delivery service in downtown Honolulu district. If it is asked to cut its budget, its very obvious tactic would be to put up as an alternative the elimination of the second class mail delivery service. By putting up an alternative which the agency knows very well is not going to be acceptable, the real alternative often slips by, by default. So, you have to watch out for political stratagems and tactical maneuvers in analysis as in any other form of budget presentation.

You ought to realize too that it may be that a mix of objectives or of alternatives is actually preferable than putting all your eggs in one basket. Because of the future uncertainty, it might be preferable to have a judicious mix of alternatives, each of which attacks the problem from a different aspect. Maybe you really believe that alternative A is the best way, but just to be on the safe side, you may want to have your eggs in alternatives B and C as well. This is very often done, and you ought not to exclude that possibility in looking at the pieces of analytical work.

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Participant: This morning, Mr. Haldi gave us a hypothetical case of reducing infant mortality among the Indians. Would you apply your discussion of the model to that hypothetical case and bring in the factors of assumption and contingency?

Taylor: If the incidence of mortality among infants on Indian reservations is higher than the average national mark, in a rough, back-of-the-envelope analysis, as a statement of our objective, as John indicated this morning, we might say, "to reduce the incidence of infant mortality on Indian reservations to two times the national average," or one and a half times the national mark.

There are many, many different ways in which we could achieve this: prenatal care, postnatal care, more doctors, more midwives, better communications, etc. Let's not exclude any possibility at this time; let's get all of the alternatives up on the board before we rule anything out. After we have done that, then we want to eliminate the most obviously infeasible ones. Some of the alternatives might appear obviously too expensive or

obviously politically infeasible or obviously not compatible with the Indian culture. We rule out these and concentrate on the major feasible, relevant ones.

We then proceed to construct our model. In this case it would probably consist of a physician's impressions or experience or judgment about the relationship between the alternative we select and the reduction in infant mortality. A physician might find, through his experience, for example, that if an expectant mother sees the doctor in the third month of her pregnancy, the doctor would be able to detect X, Y and Z defects. Thus, if every mother sees her doctor in the third month, this will result in a 10 percent reduction in infant mortality. This explicit statement of the relationship between the cause and effect, between the input and the output, in a sense, would constitute our model in this case. Once we describe this relationship, we have constructed our model. The assumptions would be along the same lines. For example, it may be that medical knowledge is uncertain; and the doctor assumes that if the mother comes in the third month of pregnancy, the defects can be detected, and if they are detected we can reduce infant mortality by X percent. These things have to be very clearly stated at this point.

Participant: What would the constraints be?

Taylor: Some of them might be those because of which we ruled out some alternatives as infeasible. For example, the Indian culture might be such as to rule out certain medical programs.

Participant: In the model, would the dollar amount available be part of the constraints?

Taylor: Hopefully not in the once-over-lightly type of analysis. I don't think at this stage, if you are doing systems analysis, that you actually want to put on a dollar ceiling. On the other hand, as we talked about it this morning, you've got to get somewhere in between the two extremes—the blue sky approach and the specified budget amount. I personally would not operate under a budget constraint. I would go through it once, without that constraint. The constraints would be more ethical, cultural, practical, and medical rather than budgetary. For example, the Indian reservations may be so enormous in size and the transportation problem may be such that requesting mothers to come in to a central clinic might be infeasible—that might be a constraint to one of your alternatives.

Participant: Then what you are talking about here, when you speak of constraints, is the limitations on the model in terms of the beneficiaries of the program that you are seeking to develop?

Taylor: That would certainly be one kind of constraint, right.

Participant: You are not talking about built-in governmental constraints?

Taylor: Well, it may be that in some problems, existing legislation is a constraint. Of course one of your outcomes might be recommended changes in legislation. But, on the first run-through, you might want to ignore the possibility of changing legislation. In that case the existing legislation is a constraint.

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The Scope of Analysis

This is a good place to make another point, and this is the scope of analysis. When you define the problem, I think you have to be very explicit about how widely you are going to range. For example, take our earlier Honolulu International Airport example. Do you consider what happens to the airplanes when they get to Los Angeles or to San Francisco as part of your problem? Are you concerned just with the baggage facilities (which

would be a very narrow definition of the problem) or with the entire airport (which would be a medium-sized definition of the problem) or with all the airports in the Hawaiian Islands and with the access roads (which would be a large definition of the problem) or with the entire Pacific airlines business (which would be a very broad definition of the problem)? You've got to draw the line somewhere, and you have to be explicit about how large the problem is. Wherever you draw the line, that will also act as a constraint.

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Participant: The major category is health. We define our problem as infant mortality. At what stage do we put that in the total health category?

Taylor: Well, I am the analyst responding to a decision-maker's perceived problem. The analyst can do no more than respond to what the decision-maker tells him. If he is a very creative guy, he might break out of that box into which he has been put, but you would be lucky to find an analyst who would be willing to do it. That's why communication in the beginning is very important. The decision-maker sets the ground rules for the analyst. Under the ground rules, he would consider only infant mortality. He would be getting at that problem only. If he were given the problem of how to improve health on Indian reservations, then he wouldn't just be limiting his remarks to this one element. But that is the problem as posed to the analyst, and here he is like a puppet reacting, you see. This is what happens in the real world. The analyst responds.

Participant: Would an analyst in the organization be going through the assumptions and the steps outlined there, and when he comes upon a lot of problems, go upstairs to consult with his boss which might lead to a change in his analysis?

Taylor: This is what happens at the end when you reformulate the problem. You may have started off thinking you are solving the right problem, but as you generate alternatives, as you dig into the available data, as you look at your objectives more closely in the light of the constraints of your model, etc., you might find that the problem isn't what you originally thought. Maybe the real problem actually is way deep, below the surface. You may be analyzing the 10 percent of the iceberg which is above the water, when the 90 percent below the water can sink a ship. This is very true of government programs. For example, you may analyze the incremental portion of your program when really the problem is with the on-going part. It may be that's where the true scope of the analysis ought to lie. Tomorrow, when we talk about the bureau of mines, you will see that this, in fact, is the case there.

To continue with our Indian example, we go out and gather the data, if there are any available, which will help us actually construct the model. We weigh the costs of the various alternative programs that have been suggested to reduce infant mortality against the benefits, and the benefits come from the relationship that our model tells us exists between the program and the reduction figure.

Then we come to the testing portion and there, suppose, we find the doctors are wrong. Suppose that visits during the third month of pregnancy to the central clinic will not in fact reveal 100 percent of the defects. Let us suppose that they reveal only 90 percent. What effect would this have on our conclusion? We may find, as we ask ourselves this question, that the real problem had been hidden from us from the beginning. If this be the case, we may have to recap the problem and do the whole thing over again.

Participant: Can you comment on evaluation of analysis?

Taylor: How do you recognize a good analysis? If I were the department head or the legislator looking at what purports to be an analytical document, the first question I'd ask

is, "Is this understandable to a layman? If we assume that we are all informed men of good judgment, can we as laymen read this piece of analysis and understand precisely how the analyst reached his conclusion?" In other words, to be specific, I would ask, "Are the assumptions clearly spelled out? Did the analyst state the objective in such a way that we can measure whether or not his conclusions address themselves to the objectives? Are the data that he used clearly identified as to their source and as to the probability of their being correct? Where is he unsure? Where did he dream up something? Where did he use hard facts? Where did he use estimates? If there is a technical matter in the analysis, is it relegated to an appendix?" The most important attribute of a good piece of analysis is, I think, clarity. The analysis should be clearly understandable to the layreader, to the guy who has to make the decisions. The second important attribute is a minimum of human value judgment and a maximum amount of logic. Can you, for example, turn the analysis over to another analyst and have him reach roughly the same conclusion, using the same available information and assumptions?

One thing that might be worth re-emphasizing at this point is the relationship between the analyst and the decision-maker, and here I'm really talking more about the executive side. If a department head requests a piece of the analysis to be done by his staff, it would not be unreasonable to expect the staff to carry on from that point. But, there must be a constant dialogue between the top man and the staff analysts. A tremendous communication problem is involved. Just to put down on paper the logical sequence in which the analyst did some thinking is very hard to do, and if the analyst doesn't get from the decision-maker or the department head his perception of the problem, what he considers to be the objectives, it's very hard for the analyst to really pinpoint the objectives. If the analyst doesn't get from the top man at least a rough clue of the alternatives that he considers feasible, then the analyst is indeed groping in the dark. So there must be communication between the consumer of the analysis and the analyst at all stages, particularly during the problem formulation stage, the first three or four steps here.

Participant: Will you repeat again what we have been discussing this afternoon as it affects legislators?

Taylor: As legislators, you are going to be seeing the results of analyses. I think it behooves you to examine the results critically. Just because a piece of document is labeled analysis or systems analysis doesn't mean that it is, in fact, analysis. I think that if you have a flavor for some of the steps that should be taken in doing such analysis, I think you would be in a better position to appraise the quality of the analysis and therefore the validity of the conclusions that the analyst comes up with. As I said before, you wouldn't be doing the analysis, but you'll be seeing the results of that process.

Tuesday, January 30, 1968

ESTABLISHING OBJECTIVES AND OUTPUT MEASURES

Warren Law

It's been a long day. I used to teach at Southern Methodist University in Dallas, and I remember a college man there who went on a lecture tour one winter and came to a small town in the Texas Panhandle on the day it had the biggest blizzard of the twentieth century. When he got to the lecture hall, there were about eight people there. He finally asked one of the people at the assembly whether the fellow thought he ought to give the lecture or not, and the man said, "Well, when I call my hogs and if only one of them comes, I feed him." So he gave the lecture, and in fact he got carried away and gave it at great length, forgetting that there weren't many people there. At the end, the people started promptly to applaud. That much he didn't expect from eight people, and he was kind of curious as to their reaction, so he asked this man what he thought about the lecture and the fellow said, "Well, when I call the hogs and only one of them comes, I don't give him the whole load." I have a feeling that today we're giving you the whole load.

I am here under some false pretenses. I'm not a program budgeter. My favorite story of World War II is one which probably or possibly involved General MacArthur. When he was inspecting the paratroops, he stopped at every twentieth man to speak to him, as generals like to do to show that they're human. He asked the first paratrooper, "Do you like the paratroops?" and the man said, "Oh, yes, general, I love it." Then, the general asked, "Well, what do you like about it?" and the fellow said, "I love to jump." This struck the general as a rational answer, and he asked the same question on down the line and got exactly the same answer: "I love it," and "I like to jump." Finally, in the last rank, he asked some fellow if he liked it and the fellow said, "Yes, general, I love it." Then, the general asked, "You like to jump?" and the fellow said, "No, it scares me to death. When they open the door and the sergeant has slipped out backwards, I break out in cold sweat." MacArthur asked, "Well, why do you like the paratroops?" and the fellow said, "Well, I like to be around folks who like to jump."

I like to be around budgeters, and I've been around them a long time. Not that I want my daughter to marry one, but I really like them quite a bit, and I've learned some things about program budgeting. But, I'm not one. I'm a teacher of businessmen or would-be businessmen.

One thing I've learned, and that I think may be the only optimistic note of the day, is as Mark Twain said about Gardner's music, "It's not as bad as it sounds." Really, when you finally understand what program budgeting is, its style is very simple. I know that some of you are new legislators, and I think this is an inauspicious way to start a new legislator off by pointing out what's going to happen to him—he's going to be innundated with these analyses, he's going to have to read them. I know that some of you will wonder whether you would have run for office in the first place if you had known this was going to happen. It really isn't so bad. I suspect that in a rather short period of time, this insidious new method of managing government is going to creep throughout the governments, including the State of Hawaii, and if that is a Cassandra-like prediction, why I regret it, but I have to face facts.

I am staring out the window and remember that it was about waist deep in snow when I left home last Saturday, and I recall Joey Lewis, the comedian, state, "I've been

rich and I've been poor, and take it from me, rich is better." I've lived in Boston and I've lived in Honolulu, and take it from me, Honolulu is better.

Objectives

I'm going to say as little as possible about *objectives*, largely because I don't know anything about how you set the objectives of the government. This is extremely difficult. It sounds so simple, until you decide you're going to do it. You have to start, clearly. Before you can measure what has been accomplished, you have to know what you were supposed to accomplish in the first place.

Object of government. What is the object of government? It requires some kind of political philosophy to decide what you ought to be doing. I suspect that the Democrats and the Republicans will have different views as to the objectives of the State of Hawaii, and we can be sure that the Democrats will have several views as to the objectives. I always remember Will Rogers' statement, "I'm not a member of any organized political party; I'm a Democrat." And I know, based on my life in Texas, that you get a lot of views out of one party. I really have no advice to give you as to what the proper objectives of the government should be.

What is it that you're trying to accomplish in government? This is a painful question. I'm sure that if you ask Bill Buckley his judgment as to what the government should be doing, his views would not coincide with Arthur Schlesinger's set of objectives for the government. I've heard Buckley. In fact, not long ago, after he had demolished almost every federal program that had been listed, somebody asked him what he thought the federal government should be doing. He thought for a long time, and then he said, "Maintain lighthouses." That's the only thing he could think of.

We ask ourselves this same question at Harvard Business School, and we face the same problem in businesses. We used to say, "Well, it is much more difficult to run the government than business, because businessmen know what their objectives are. The objective of an automobile manufacturer is to manufacture automobiles." We now realize that it's not nearly that simple. I suppose you can say that the objective of a business is to make profits, but then the question is, do you want to make more profits now at the expense of smaller profits in the future, or larger future profits at the expense of smaller profits now?

Alternative objectives. You have to decide what you're trying to accomplish. Otherwise it's impossible to ask the obvious question, "Are we doing a good job?" What job are you trying to accomplish? What are the alternative things that you could be doing?

That word, *alternatives* will be tossed out a thousand times here in the next couple of days. I'm convinced that when two program budgeters meet each other and one of them says, "How's the wife?" the other one says, "Compared to what?" They always seem to want to know what the alternatives are, and there are always more alternatives than you probably realize.

I recollect a friend of mine, who is a professor at Harvard. He's written rather widely on water economics and at present is one of the government advisers. He's now giving advice on water pollution control measures that are being debated in the federal government. One of the alternatives that they are debating occurs to me. It's just not a field that I'd pay attention to, but it may very well be that we can't clean up all the rivers—that there are certain industries that have to pollute rivers. One of the alternatives being considered is to have two clean rivers and one dirty river. Locate the industries that have to pollute on the dirty river. It may be better to have two completely clean ones and one filthy one than three that are moderately polluted. It may very well be. That its certainly an alternative, is the point.

It's the easiest thing in the world for us to stand here and say that you have to think through what you're trying to do and consider alternatives, but it's the hardest thing in the world to do.

I note that in one of the publications which you will read, I'm sure by tomorrow afternoon, there's a tentative chronology for establishing a planning, programming and budgeting system. The first step, which is to decide what you want to do, it allots two months. It says to take two months to decide what the object of your government is. That sounds like a lot of time, until you sit down and start trying to decide what you're trying to accomplish.

Just take one of the obvious examples—what is the highway department for? Why do you have a highway system? At first it seems simple—to build roads—but you realize that there's nothing handed down from Mt. Sinai that says that you should build roads. Why do you believe that you should build roads? Presumably, it has something to do with the movement of people and the movement of goods or perhaps with national defense or with developing underdeveloped areas, or even conceivably for destroying a monopoly, or at least destroying the railroad monopoly—it doesn't exist in Hawaii but does in some parts of the United States. What are the objects of the highway department? I was pleasantly surprised and amused to see that you have a rather significant part of the interstate highway system here in Hawaii. My mind begins to boggle at what this really implies. Is there a ferry that links you with the next state or is it one of those dotted lines on the map which is an incomplete part of the giant federal interstate highway system, or what? At any rate, you have to decide. What are you trying to accomplish?

Explicitness in stating objectives. This morning we were all told by Mr. Haldi that he makes a distinction between objectives and goals. I think that there is a distinction. I happened to be reading last night an official United States government publication on PPBS which said that for the purpose of this paper, the words *goals, aims, purposes, missions* or *functions* may be substituted for *objectives.* Now, as I understood Haldi this morning, his definition simply is that if it's vague it's a goal, if it's explicit it's an objective. This suits me as well as any other definition. I certainly would agree with him, however, that probably at the top it has to be fairly vague. This is the nature of a political platform or a document of this kind—it comes out sounding like a Boy Scout creed.

I saw on television the other night a satire on a political campaign in which the presidential candidate said, "I'm against inflation; I'm against deflation; and I'm for flation." This is understandable. But when it comes to measuring outputs, literally measuring them, then I agree with John Haldi that there has to be some sort of reasonably explicit definition of what you're trying to accomplish. You cannot say, "Our object is to control crime." You can say it, except that it is very difficult to decide how close you came to controlling crime. If you say, "The object is to reduce the incidents of major types of crime by 10 percent," then perhaps you have something that you can later compare an expenditure against to see whether you came reasonably close to this objective.

Objective influences behavior. This matter of establishing objectives, although this is about all I'm going to say about it, is political, and it leads to some very important differences in the way the government behaves. Rather than saying that the objective is to reduce the incidents of major types of crime, if you should say that the objective of this law enforcement expenditure is to solve by arrest three-quarters of the major crimes committed, it may not sound like you're saying anything very different from the first statement of objective. But, when you begin to judge how well the police department performed, and if the police know they're being judged against the latter statement of objective, they will solve by arrest three-quarters of the major crimes. That is, they will arrest the number of people equal to three-quarters of crimes committed. If you say, on the other hand, "The

object is to reduce the number of crimes," they will behave in another way. You can go a little bit further and say, "to solve by arrest and conviction"—I like this as a better objective than "to solve by arrest three-quarters of the major crimes," because the difference between arresting somebody and having him convicted in court is rather significant, as we found out in the State of Massachusetts in curbing the number of crimes.

Simply formulating an objective will, in fact, cause the agents of the government to behave in different ways. One of the most obvious, but perhaps one of the most important things I can say, is that subordinates will behave in a way to produce the results that you are measuring them by. If you measure them by some other criterion, they will try to meet that criterion. If you believe that the object of the school system is to increase the number of graduates, you will get a lot of graduates of the school system. If you believe, however, the object of the school system is to enable people to pass certain tests, that's a different matter. I've been a teacher for twenty years, and I no longer delude myself into believing that graduation and ability bear a necessary correlation. The point I'm trying to make is so obvious that it doesn't stand any more elaboration, but I do have some things to say about output measures.

Output Measures

Eventually, after planning, programming and budgeting creeps insidiously into the Hawaiian budget, you will receive, as you've already been told, at least two types of documents—one will contain a list of programs and a column for years 69-70, etc., with the dollar amounts for each year that the administration hopes to delude you into voting over the next five years. This is a financial plan. This is house money you are going to spend for police or whatever the program is. At the same time, this will be accompanied by another document set up in exactly the same format, except that, rather than any dollar amounts in the columns, there will presumably be some outputs, something that you're going to be buying over the next five years for that amount of dollars. Ideally, of course, what you're trying to measure is something that is related to the objective.

This kind of measuring outputs is extremely critical and extremely difficult, and I have very little advice to give.

Kinds of output measures. There are several kinds of output measures. There is a category of output measures that I will call *indicators.* Magnitudes, for example, are in this category. In a health program, a magnitude measure might be the number of beds in newly-constructed hospitals in each year or the number of physical examinations that will be carried out, the number of miles of road you plan to construct or any sort of such crude output measures.

Another kind of indicator is some quality measure. Rather than the number of miles of road, if you decide that the object is not to construct miles of roads but to reduce driving time, you could conceivably have as your output measure an average driving time of 30 minutes from one end of the island to the other for the first fiscal year, an average driving time of 25 minutes for the next year, and so on.

In most cases, you will find, I feel reasonably confident in predicting, that most of the indicators will be magnitude—physical magnitude—the number of deaths, the number of policemen that will be on the beat, or the number of countings on this or that. This is simply because it's easier. It's easier to count policemen, and it's easier to predict. For a given sum of money, I feel reasonably certain I can predict the number of policemen I can put on the beat in each of the next five years. I'm not at all sure I can predict with as much accuracy what the driving time will be in each of the next five years, or what the crime rate will be or some other measure of the output of this expenditure.

Proxy measures. I can't object to a measurement because it's easier; I'd be pleased myself it it's easier. I simply want to remind you that in most cases, this is not exactly what you hoped to buy. That is, when you spend money for police protection, the real object is to reduce crime or do something that is at least one step removed from the numbers of policemen. The number of policemen you're buying is but a proxy for what you're really trying to accomplish.

If you don't feel reasonably comfortable that the number of policemen is a proxy for what you really hope you'll buy, then you'd better search more vigorously for some other output measure than this particular one. Just to pull one out of the air, conceivably, you may prefer to have some crime rate index. We do, in fact, have a crime rate index at the federal bureau of investigation. This measure certainly is better, at least in concept. It's a better measure of what you're trying to buy. You can say, for example, that you want the crime rate index to go down from 100 this year to 90 next year, 80 the following year and so on. The difficulty with this kind of output measure is that it requires a prediction of something that is much harder to predict. I can tell you approximately how many policemen I can buy for a million dollars next year, but it is harder to assure oneself of producing a certain crime rate index. In fact, I may tell you that I'm going to produce a crime rate index of 90, simply because it's what you want to hear, but I'd be a fool to tell you this if I know that you're going to judge me by it. On the other hand, I wouldn't mind being judged by this, if I'm the one who is going to calculate this index. This is one of the major problems of trying to get some quality measure, rather than just a physical counting of something.

Definitional problems. Even if you feel reasonably comfortable that this ought to be a fairly good proxy for what you're trying to accomplish, there are quite often very serious definitional problems. Suppose you had some sort of anti-poverty program and you said that the output is, in the first year, a reduction in the percentage of the population living at the poverty level to 40 percent and the second year to 35 percent. This obviously begs the question. What is "poverty"?

Redefining terms is one of the classic ways to solve most problems. Simply by changing the meaning of the word, you can change your goals and objectives. We solve much of our balance of payment problems by redefining *balance of payment.* It is now easier to achieve balance than it used to be because *balance* has a different meaning than it used to. I understand there's some debate between the Republicans and the Democrats as to what is *surplus* here in the Hawaiian government. What is *victory* in Vietnam? There is a considerable debate over that one. What does *substandard* mean, if we are going to eliminate 1,000 substandard dwelling units each year?

I assume that we'll be able to solve these problems, and clearly, one of the first steps is simply to achieve an accepted set of definitions. The City of New York, for the first time in its history, feels reasonably confident that it understands what's going on in its police department, largely because one of the first steps the new commissioner took when he came in was to make all the policemen use the same definition of a crime. If a guy hits this fellow over the head, now they don't call it assault and battery; they will call it something else, so they'll know that there were this many cases of this kind last year. Then the second step, which was a little bit harder, was to make sure the policemen reported accurately. For instance, in the old days, the New York police department judged the ability of policemen by the number of crimes they prevented, let's say, on New York streets. It's easy to prevent crimes—you just don't report them when they happen. It lets you have an entirely misleading picture. It's only in the last three months of the last year that the police department has felt reasonably confident that it can compare what happened in the last quarter of last year with the last quarter of 1966, because all the policemen were

counting the same things and reporting them by using the same definitions. A rather modest step forward, but it makes a significant difference in knowing what is going on.

At any rate, most of the output measures, at least at the beginning, will be just physical quantities of some sort, and my only warning is to make sure that this is reasonably close to what you really are interested in measuring. I remind you that you will get the kind of performance that is measured by the things that you are watching, and it may not be what you want to accomplish.

Unmeasurable outputs. Now, there are some problems, even if you are reasonably confident that you have some output measures that you are willing to accept, and I only warn you of some.

There are some objects of public expenditure for which I think I can describe the output, but I couldn't measure it at all. One of the classic examples is the legislature. Another is what in business terminology is called *overhead.* I know how much money I'm going to spend on it (overhead), but I really cannot measure the output. I could count how many bills were passed by the legislature last year, but this would be an absurd quantification of the unquantifiable.

I want to relieve your minds of one thought at the very beginning. No one is going to measure the output of a legislature. It cannot be done. It is not done in any planning, programming, budgeting system that I know anything about. Nevertheless, this sort of problem could suggest—simply applied to all kinds of other expenditures—that you have to be alert to make sure that a lot of things aren't lumped under the unquantifiable just to conceal them. The amount of a company's overhead could stagger the imagination of any businessman in town; if you don't have to allocate overhead to any of the programs and you don't have to measure the output, you can get the darnedest amount for overhead that you're ever seen. If it is possible to attempt to allocate these costs, why I would urge you to require it.

Question the numbers. I would also urge you, and this is one of the other caveats which I would certainly want to emphasize, that you not believe the answers. That is, I think you can have these resources allocated as best they can, but you should remind yourself that this is a crude, a rough, approximation. If you believe the figures, you are misguiding yourself.

My favorite joke about accounting comes from one of our professors of financial accounting. He says the way that you hire an accountant is by asking one simple question, "How much is two and two?" If the applicant says, "Four," you don't even consider him. If he says, "Well, it depends on how you put the numbers together," you ask him the next question, "What do you mean?" If he replies, "Well, two over two is one, and 2.2 is two and a fifth," then he has some imagination. But if you ask him, "How much is two and two?" and he says, "What answer do you want?" then you've got yourself an accountant. Well, there's a great deal of truth in this, of course.

A part of the art of being a legislator, competing with the administration, is to try to guess which numbers are false and which numbers are reasonably accurate, and whether a rather significant expenditure that probably ought to be allocated some place else is hidden under a category that nobody can attack.

The FBI allocates a significant part of its budget to tracking subversives, because who can deny J. Edgar Hoover all he needs to protect the country against subversives? It begs some of those definitional questions I mentioned earlier as to exactly what a *subversive* is. I've been told by some critics of the FBI that the FBI is careful not to define a subversive as a member of the Communist party on the grounds that more than half of the party members are employed by the FBI to watch the rest of them, and, if it weren't for their salaries paid by the FBI, the party would have been bankrupt long ago.

What I'm saying is simply that you will get numbers, if you demand numbers, and if you demand them to the second decimal place, you will get numbers to the second decimal place. What I want to warn you against is simply that you should not believe that you are getting absolute accuracy when it is impossible to get absolute accuracy.

I'll also remind you of what Allen Schick said this morning. He suggested you budget over a rather short period of time. I really don't care over what period of time you budget, as long as you don't believe the numbers out here. We have plenty of empirical evidence to suggest that whatever the world is going to be like in 1984, it isn't like the number you put down here.

The other day I was making some judgments about the problems of the Presidency. I started reading some of the President's speeches made in 1900, 1910, 1920 to see whether the things he was coming to grips with and warning the nation about were in fact the problems that the nation was facing 10 years later. Without exception, there was not a decade in which the problems at the end of the decade were the same as the ones he talked about at the beginning. Ten years, in the life of the nation, is a rather short period of time to be looking ahead, but it's very difficult. I'm not blaming the President; I'm merely saying that within that 10 years, all the things he had wrestled with had either been solved or forgotten, and there was an entirely different set of problems.

If you're budgeting 10 years ahead, I admire you, but I simply don't want you to believe that the numbers out there are hard facts. It is at best a guess—perhaps the best guess you can make.

Finally, and this is based on my knowledge from business, one of the most difficult parts of the art form here is to know whose numbers they are. Allen Schick was laughing this morning at a fellow in the legislature who said, "Just tell me which bureau it is, and I'll tell you what they're trying to do." As a matter of fact, we submit budgets in the Harvard Business School, and if you tell me who submitted it, I can tell you whether it's high or low. You'll take some time of course to learn the biases, but human beings are either optimistic or pessimistic, and each has his own weaknesses for guessing high or low.

I was in Israel last summer, evaluating some Israeli balance sheets. They are hopeless. Banks, for example, insert after every asset item, this phrase, "net of hidden reserves." The balance sheet doesn't tell you what the size of the reserve is; it just warns you that there is something deducted there. I asked people, "How do you evaluate these financial statements?" Their answer was the same as the one heard this morning, "Everybody knows what's going on and you don't pay any attention to financial statements." To a certain extent, this is ludicrous; and yet, I've got to emphasize that it helps to know who put those numbers down there because some of them need adjustments upward or downward.

Trade-off. Another point I want to make is that these physical outputs cannot be summed up in any meaningful way. Suppose you get a health budget. It's got 1,000 beds and 200 doctors and 97 nurses and various measures of that kind in different programs. You can't add up these measures and come up with a sum, and it's very difficult to make trade-offs. This is, again, a problem. What is the coefficient between a hospital bed and a doctor? One doctor works 10 beds or five beds?

To defend against this sort of questions, of course, presumably an analysis of this kind took place in the halls of the administration before it submitted the budget to you, and it decided that marginally, the first thousand dollars spent on hospital beds is just as productive as the last thousand dollars spent on positions. I say "hopefully" based on such analysis.

Again, a part of the role of the legislature is to ask these questions. You should ask yourself, suppose I took $1 million out of here and put $1 million there, I'd buy 10,000

more hospital beds, but I'd give up 500 doctors. Does my intuition tell me that we'd be better off with hospital beds than doctors? If so, then your job would be to criticize that aspect of the budget and vote against it.

Trade-offs are very difficult, and, certainly, when the outputs are physical. Would you rather catch three counterfeiters or one murderer? It may cost about the same amount of money for the FBI.

Associated with this, is this problem. Where do I put the police expenditures on drug addiction? I assume that's a police function, as it is in most cities—that is the policeman chases the drug addict. It's quite possible to construct a rationale that the police expenditure on drug addiction comes close to the expenditure on alcoholism, and expenditure on alcoholism in most PPB systems comes someplace under health rather than under the police function. So I'd put drug addiction up here perhaps and I'd allocate that part of the police budget expense on the drug problem to the health sector, and I'd have some kind of output measurement—the number of drug addicts, caught and cured, or whatever I decide is a logical output. But, how do I trade off drug addiction versus alcoholism? Would I spend another $1 million to reduce drug addiction by 5,000, but I wouldn't spend it to reduce alcoholism? That obviously is your problem, and since these things are not summable, they are not automatically convertible one into the other.

The point of this circumlocution simply is to drive into the ground a rather simple idea. You ask yourself what you're trying to do, you try to devise some physical measures of accomplishment. You try to compare later how close you came to it and ask yourself, for another million dollars, how much more can we accomplish? Is it worth it?

Once you recognize that this is all there is to it, you're in the role of a man in a Moliere play, the would-be gentleman who happily finds that he's been speaking prose all of his life. Program budgeting is very simple. You've been doing it in a sense for years, but not, perhaps, in the rational way that we hope you will do in the long run.

Interdependencies. The other problem that I have no solution to is that interdependencies sometimes are so heroic, that I'll leave that up to the program budgeters. The space program, for example. I find it hard really to envision that one of the objects of government is to put a man on the moon. And yet, you can say that one of the objects of government is to advance technological knowledge, and there's a lot of spillovers from the research that we're putting into that. One of the objects is to defend us, and surely out of the space program we're getting some defense capabilities. One of the objects is to improve the image of our nation with the rest of the world, and the first man on the moon will do that. There is a lot of objects of government, but then, if I try to break down the space program and say how much effort will I put under the program of defense and how much on scientific advancement and so forth, I don't have any idea. And I doubt that program budgeters do. It may be that you end up with a program—space. But, what is the goal of space? The cost of the program is only $4 billion, or was, until we found another goal—fighting a war—and maybe space is less important than putting a man in Vietnam.

When you go home this evening and look back on the day and say how much did I learn, you'd be embarrassed—we'd be embarrassed—to realize how little you did learn. On the other hand, I'm reminded of the guy who first invented the wheel. After a while someone said, "Gosh, it's so obvious, and it took you 50 years of carving that piece of wood into different designs to find that a round one would roll better than a square one." Most of the significant breakthroughs, in retrospect, look sort of childishly simple. The recognition that the earth revolves around the sun took a couple of thousand years and explained a lot of things and made life simpler. PPB is not very difficult. It will make your life simpler, and it will make the government more efficient.

Multiple-measures of output. I simply want to repeat in the last few minutes, however, that in these output measures, what you're really looking for are some criteria for evaluating what you're getting for your money. You almost invariably will have to have a table which enables you to look at the budget on one or two pages and get some relative magnitudes, even if these are not exactly what you're trying to buy. If you can see that you are buying a thousand the first year and two thousand the second year, you know you're getting twice as much of something there, and it'll give you some feeling for what is taking place. But combined with that, there certainly will have to be, in the long run at any rate, some sort of criteria for evaluating the programs.

Here, you will find that almost certainly there will be more than one criterion. You can have a long list of things you'll want to measure every year and compare—the number of crimes cleared by arrest and conviction, the number of complaints by citizens if you have a police review board, or even think of some index number of community feeling. I guess it's quite possible to take a random sample of the population and ask, "What do you think about safety in the streets?" and to find over a period of time, that in the first year, 98 percent of them have said, "I'm scared to go outside at night," and in the second year, 94 percent of them have said, "I'm scared to go outside at night," and thus to know you made some progress. I'm the last man in the world to argue that public opinion sampling is absolutely accurate.

There will often be multiple outputs because you have multiple objectives. For example in highways, you can have objectives of speed, safety, comfort, and you would want an output measure for each. For "speed" you may want a measure of the time it takes to get from one point to another. For "safety," you may want the number of accidents per mile or per thousand cars or per some meaningful figure.

You can think of a series of measurements that would somehow or other give you some handle on the output of an expenditure. If the expenditure is on some sort of public safety, you could think of six or eight things to measure rather consistently—following the same definition—to get some evaluation of your success in what you're getting for your money. You could measure average traffic travel time from point X to point Y and decide, if this were one of the objects, whether you're getting enough for your money.

"Averages" in measures. I warn you in passing, however, that the use of "averages" can lead you into rather ridiculous answers. Average times or averages of all kinds conceal sometimes as much as they reveal.

I read in the papers that the average delay between departure and takeoff at La Guardia Airport is nine or ten minutes, or something like that. I can assert from my experience of hundreds of flights that between five and six p.m., you taxi out on the runway at five and you get off the ground at six. The fact that somehow or another you can get off the ground in two minutes at two a.m. in the morning doesn't help very much, and perhaps the object of spending money on La Guardia is not to reduce the average time from nine minutes to eight minutes. Nine minutes is quite satisfactory. It may be to reduce the time between five and six p.m. from one hour to 30 minutes. Measuring these things, and it cannot be said too often, is a matter of deciding what you really want to measure and making sure that it is roughly representative of what you hoped to buy.

Staffing

The last comment I make—I'm sure somebody already has made it—is that, if the members of the legislature are going to analyze the work of the analysts and to criticize the documents that are submitted to them, either they're going to have to get higher salaries, which I doubt is a politically feasible solution, or they're going to have to have a staff. Most certainly, if you ever have a reasonable PPB system in the State of Hawaii, the

legislature has to have some people who at least can evaluate what it's getting from the other side, not in a spirit of, I hope, opposition, but in a spirit of some creative attempt to reach mutually satisfactory answers. I'm going to stop, because we've got two more long days ahead of us.

Wednesday, January 31, 1968

IMPLEMENTATION OF PPB IN STATE GOVERNMENT

Allen Schick

The first part of this morning is devoted to *implementation of PPB in state government*. We're moving into an area entirely devoted to conjecture, because, as some of you know and all of you I suppose sense, PPBS has not really been introduced yet into any of the state governments. Thus, there's no cookbook or handbook that can be handed out to you as a sure guideline for pitfalls to be avoided and successes to be staged. I can only offer suggestions concerning the major problem areas of implementation. I intend to speak for about a half hour to three-fourths of an hour and then John Haldi will join me over here, and we'll field questions and comments from you as they come in.

PPB as an Integrated System

One of the problems in implementation is that there is a tendency to try to simply add PPB to what already exists and to avoid what is likely to be a difficult, painful, controversial task of re-examining the things that you are now doing. PPBS, in terms of staffing, in terms of information, in terms of organization, in terms of the relationship between the various systems which exist, has a choice. It can be an integrated system or it can be one of several disparate systems which have no connection with one another.

The oldest method of administrative reform in government has been to leave the old system untouched. If you follow this traditional route, the price of PPBS could be that there would be two different systems which would have no connection with one another. You would have the old budget system producing the justifications—producing the incremental increases in the existing programs without any review of them—and you would also have the PPB system struggling to introduce some analysis into government. You'll have two separate systems, much like two railroads, one called, *PPB*, and the other called, *existing budget*, running along parallel lines which, like in the old geometry, never meet. What you will have will be some additional people—and they can add up quite quickly to 50, 100, 150, I don't know how many—and an additional layer of information which is required. It's also likely to mean an additional layer of control as viewed from the bottom up by a person who has some front-line responsibility for a project.

I suggest that if PPBS doesn't integrate itself into the mainstream of the existing budget systems, before long it will lose vitality, and people will lose interest in PPB. They'll see it as just another administrative burden, as just another way of presenting information, and as something done by academicians who have no realistic contact with government.

To be meaningful, then, PPBS must be integrated with other systems. Integration is going to require a re-examination of some of the things we are currently doing. What are some of the things we need to re-examine?

Integrating capital program, operating budget and the general plan. Yesterday I suggested the need under PPB to connect the capital and operating budgets. In addition to these two budgets, you have the state general plan. I think that this three-part system which currently exists is sensible; it ought to be continued, but not in isolation from one another. They ought to be integrated. Some of the kinds of integration which I think would be desirable are as follows.

I think it would be desirable to expand the concept and scope of the general plan so that it encompasses software—the social products of the state as well as the physical facilities. Account not only for the use of land, but account for the productivity of the state as well—that is, account for the kinds of services which are performed and the kinds of objectives which we're striving for. This is one way of allowing the general plan to address itself to the same problems, to the same sectors that the capital improvements budget and the operating budget address themselves.

One question which I'm going to have to sidestep because I don't know the answer, and the answers are going to differ hopefully in each of the 50 states, is whether the integration of these three planning systems—the budget, the program, and the general plan—requires any alterations in the organizational structure. Right now, the way I understand it, there are different units which have responsibility for the different segments. There is no reason why this cannot continue, provided that there are suitable connections or linkages among the various organizational units.

There's nothing impure or impossible about retaining the separate organizational units. Indeed, I can think of one very great advantage. If you merge them all together, almost inevitably, the general plan will address itself more and more to the immediacies of Hawaiian life, and it would become more and more impossible for the general plan to maintain the distance, the remoteness, which it needs to look ahead. The general plan is not a reference book that you pull down daily from your shelf when you make decisions. The job of the general plan is to look 20 years or more ahead. In addition, for people to really think 20 years ahead, let's face it, they've got to be up there in the clouds. They can't be people responding every day to the fire alarm, to the deadlines, to the routine business. They can't be too preoccupied or totally preoccupied with today. So that you have to give them that breathing space, so to speak, so that they can look far ahead. In this sense, it would be justifiable, at least in terms of the general plan, to continue the organizational separation.

The same remarks do not apply, however, with equal force to the connection between the operating budget and the capital improvements program. There, it's true, you still have the choice as to whether to integrate organizationally or to keep them apart. But, because the capital improvements budget addresses itself to a smaller and narrower time span than the general plan and because hopefully the operating budget will expand its time frame roughly equivalent to that of the capital improvements budget, it should be possible to combine them organizationally. It's not necessary, but it should be possible to combine them, without losing the forward perspective which currently exists in the capital improvements program.

Even if they remain separate organizationally, however, I think it will be important that there be a linkage between the two—that when the capital improvements program is prepared and its first year segment is voted by the legislature, you have information about the operating impact, both in terms of costs and benefits, of the capital improvements program. For example, if you project in the capital improvements program a new health facility to be opened in 1971, you are entitled to know, even if it's prepared in a separate unit of the administration, (1) what the cost is going to be, annually or over a period of years, to maintain that health facility; and (2) what social benefits, in terms of objectives which have been outlined for the state, will be produced by that health facility. In this way, when you make your decisions concerning the capital improvements program, you will know what its operating impact several years ahead is going to be. You will not be confronted, as I suspect many legislatures among the states are confronted, with a *fait accompli*—that is, with a situation such as the following.

An agency comes and presents you with a budget which shows 50 new positions and $5 million added to the budget. You ask where this came from, and the agency says, "Well, five years ago, you voted a new facility. By golly, we finally built it, and we're just about ready to open it." You, the legislature, have very little choice in such instance. Surely, you're not going to let the facility lie idle; you're not going to want it to be unstaffed; you are going to want to provide for the maintenance and the operation of that facility. It is important to integrate the capital and operating budgets in order to avoid this kind of confrontation.

Nevertheless, you might want to separate, physically, so to speak, the capital improvements budget from the operating plan. For one thing, the capital improvements program might justify a different system of funding—you might borrow for it, you might rely on different taxes, you might have certain earmarked funds or you might have some other, different way of providing the money for the capital improvements program. I don't know enough about Hawaii whether you do. A second reason is that the capital improvements program, from what I've heard, involves consideration of politics of a different kind than the operating budget. You do trade-off, so to speak, your capital improvements program. Some people might be critical about it, but I think it can be justified that you have a somewhat different political environment for doing the capital improvements than for your operating budget.

Integrating the information systems. A second kind of integration which is needed in implementing PPBS is an integration of the various information systems of the state. Yesterday, when you looked at the post office case, I think you sensed that the post office had a multiplicity of information systems which peacefully co-existed with one another only by virtue of the fact that they had nothing to do with one another. Maybe similarities among the information systems breed contempt, but it is important to bring the systems together. The same thing that happened in the post office happens in the government as a whole and within every organizational unit. You tend to have several informational systems which don't have connections to one another.

If you're going to introduce PPBS and all it means is still another informational system, I don't think it's worth the effort. I don't think you will make a go of it. I think that no matter how difficult it is, you're going to have to re-examine your informational systems, not over a single year, but consciously over several years—five, 10 years. It would be folly, I suppose, to require that the introduction of PPBS await a total revamping of the informational system. You'll be waiting for some millenium which will never come. But the two have to be linked together.

Let me say something else about information which is not related to the linkage problem, but it's a very serious problem in PPB. You may have suspected this problem from your discussion of the post office yesterday. People, such as myself, who introduce PPB have a tendency to behave like generals. There's a tendency, for example, in the purchase of airplanes, to insist on getting all of the most sophisticated electronic gear on every aircraft that we're going to fly. Likewise, there's a tendency, in purchasing information, to take the requirements approach and to insist on getting all the information we can get. New York City is moving ahead in PPBS in some areas, one of which is housing. I saw an analyst in New York City recently prepare a 27-page specification of the information which would be needed in order to do the analysis which he wanted to have done. He had no sensitivity to the cost of the information, to the availability of the information, to the difficulty of achieving access to the information, to the problem of gathering too much information.

Despite the fact that you need new information, I'd like to see this approach taken: "I'm going to make a go with the least information available. Moreover, I'm going to

make a go scrounging around using whatever we've already got." In the post office case, although the missions program structure was not adopted, clearly, had it been adopted, it would have entailed a greater information problem. But, it would have been possible to salvage information which already was in the post office; it would have been possible to redirect the information already in existence to new uses, to new clients, to new purposes. The same applies to every department of the state. Don't sit down in advance in a perfect world without getting your feet wet yet and say, "This is the information I want. This is a purchase order, a requisition for information." You'll never get it because the cost is too high, it is unwarranted, and if you got it, you wouldn't know how to use it.

I think that if you are attuned to what information you already have and seek to use that which you have, you will accomplish two important things. *First* of all, PPB would get off the ground more quickly; it will get through its growing pains faster. *Second*, since you're beginning with the existing informational base, you'll have some integration of the two systems that I talked about a moment ago. The two won't be separate.

Let me speak a little—perhaps more than some people want me to—about how to make your information choices. If you have a good information system, you can display your information in several ways. You can always structure it in more than one way; you can reconcile it in various ways. You people now are arguing about a vertical information system versus a horizontal information system for the department of education. Clearly you can have both. You can't decide in both frameworks, but you can have both, informationwise. Since the state legislature is not now confronted with making actual budget decisions in either framework, but is still deciding in the old framework, it can afford the luxury of having both and of testing and comparing them. It so happens that I probably prefer the vertical approach. I probably favor it, but to be dogmatic about it and to insist that that's the only way of doing it is going to leave PPBS its first casualty. You have to recognize the multiple ways of displaying information.

The Strategy in Implementing PPBS

Let's move now from integration to strategy and tactics in implementing PPBS. Here, not only am I an amateur, I'm an amateur in a room with professionals.

Implementing piece-meal versus across-the-board. We live in a world in which different people have different perceptions of what makes sense and what does not make sense regarding the implementation of PPBS. Different tactics or strategies might be proposed and argued for or against. One of the points of controversy might be, at least one of the problems that Hawaii might face up to, is whether to move into PPBS on a piece-meal basis, incrementally, or across-the-board. Should you try to do it all at once, covering the totality of the state; or should you try to do it selectively in one area, and if the experiment works, extend it to still another area, until over a period of years you encompass the entire state?

There's no short answer to this, but there are pros and cons on both sides of the ledger. If you're for an across-the-board strategy, I would not be surprised if you find that the cost of this approach is some superficiality, at least at the start. If you impose PPBS everywhere in a system which has had relatively little analysis, in a system in which analytic data are scarce, you're likely to find that PPB is given the *once-over-lightly* treatment. It's like the Flat River in Texas, a mile wide and an inch deep.

On the other hand, if you go for an experimental strategy, the experiment might wither without breathing life, without transferring itself to any other agency. I'm sure you are all familiar with the federal grants-in-aid demonstration and pilot programs. You know that often the demonstrations don't demonstrate anything, that the pilot light goes out without anyone smelling gas or noticing anything. Any time you label something

experimental, it means you can lock it away in a little corner and let those guys engaged in the experiment do what they want to because they're not going to harm anyone, they're not going to have any impact. Sooner or later they'll get tired of playing their game and they'll even give up, and we can continue in our own classic way.

One way of avoiding either extremes is to combine the advantages of a piece-meal and a selective strategy. I think that in terms of the structure of PPBS, it would be desirable to impose it on the entire state, recognizing, however, that the structure itself is just a format which alone won't make much difference. It is, however, an explicit indication that you are eventually going to operationalize the structure throughout the state. Simultaneously, with this across-the-board imposition of a structure, it would be desirable to select target areas in which to introduce analysis—analysis in the real sense, not experimental and not demonstration. As you accumulate experience and capabilities you might decide to introduce analysis in other areas. In this way, you'll have an oasis of analysis in selective areas, and you'll have the opportunity to advance analysis and to develop it within the entire state.

One thing I would like to say about selecting an area for intensive analysis. You shouldn't select an area which is trivial and safe. If it's trivial, after all, it doesn't mean very much; people don't care very much about it. You should select an important area—important in the sense that people care and argue about it, that the legislators are not indifferent to it. It also should be an area which has a significant budgetary impact. It can't be the smallest program in the state. Perhaps it ought not to be the largest. But it has to be something which carries its own weight in the budget—large enough in terms of the budget and in terms of the interest of political leaders and the population. An analysis in such an area will then mean something.

Developing the technology versus actually doing analysis. A second problem of strategy is whether you should be concerned primarily with developing the technology of PPB or with the doing of analysis itself. These two are not necessarily opposite to one another, but in a number of governments they seem to be treated this way. There's a tendency to take the very easy approach and to install the hardware, and to be impressed. Everyone's impressed. You have a whole core of new words and new documents, and everyone calls this progress. The tendency is to neglect reaching the main event—the **doing** of analysis.

You may have seen it in the post office case, and, when you review the other cases this afternoon and tomorrow, you will find that analysis is difficult. It's controversial, so people tend to avoid it. Once we have a program structure, somehow we delude ourselves into believing that because we've united the relevant pieces under neat categories, that the pieces will interact properly with one another. This doesn't happen. If an analysis is not done, if you don't make a commitment to analysis—that is, to developing new ways for making your budget decisions, whether on the legislative or the executive side—then PPBS will simply be a large empty house which has no use. I would urge that, no matter how difficult it is, you begin to require analysis,

Who should do the analysis. The third question of strategy pertains to who should do the analysis. Here I'd like to draw a distinction between people who are analysts and people who think analytically. I would like, in an ideal world, to see everyone thinking analytically. Of course, this doesn't mean that that's the only thing that you do; I'd like to see legislators think politically as well.

The state, if it goes with PPBS, will probably find it desirable to establish certain analytic staffs—whether in the department of budget and finance or outside of it; whether close to the governor or more removed from him. You might also have a little analytic unit in each of the largest departments—a unit consisting of a couple of people to carry

the ball for the department head or the superintendent or whoever's in charge of managing the store. The legislature might also want to have a small staff of its own, either attached to the legislative auditor's office or not.

Establishing staffs, with analytic capabilities, however, is not enough. Particularly on the administrative side, just about everyone who has a substantial share in the making of programs or the making of a budget must think analytically. All of these people have to be sympathetic to PPB. They have to understand it. They can't regard it as an imposition or as something which they are apprehensive about. They have to think analytically. If not, you're going to have a very unfortunate situation. The analysts will either try to snow everyone by using their jargon which is meaningless, and think that because no one understands them, they'll win their way. Another possibility is that the analysts, since no one understands what they're doing, simply will be off in left field, outside the mainstream of budgeting.

Regarding the legislature—and this is half true of Hawaii's from what I've seen of other state legislatures—there's still another apprehension. I've observed in state legislatures and city councils that as the administrator, mayor, or the governor improves the budget system, the legislature begins to withdraw from budgeting. In other words, the legislator is cross-pressured in terms of the time that he can invest; he certainly can't match his resources concerning the budget against those of the governor. He begins to feel inhibited about even asking questions. He's afraid that he'll get his head chopped off, or that if he asks questions, they'll give him a whole slew of statistics and he won't be able to determine whether they're the right ones or the wrong ones. I've seen this happen in Los Angeles. As it changed its budget system, there was a massive withdrawal of the city council from its involvement in the budget.

The legislature has to think analytically. It has to be able to call an analyst's bluff; it has to be able to read the analysis and to ask questions. This means that you, the legislators, have to become *consumers of analysis*. You don't have to do the analysis yourself; you don't have to be analysts. I think that would be an unwarranted imposition on any legislature. But, you have to use the analysis performed by the analysts. I would reiterate what Graeme Taylor said yesterday, that anytime you get an analysis which is written in the mumbo jumbo of the analyst who did it and is not in language that you can understand, you should return it right back to him. Frequently, it's likely to be a cover for confusion. Often the analyst doesn't know what he is talking about. If he can't clarify in simple words what he is saying, then, perhaps, he has nothing to say. Or, even if he does have something to say, you can't buy it unless you know what it is that he's saying. You are not going to take a pig in a poke just because he used fancy terms like *analysis* or *models* or *constraints* or things of that sort. So, for the legislator, his job is to indicate a concern for analysis.

With respect to the governor and his top administrative staff, if you have analysis done only in the departments, the tendency of the departmental analysts will be to come in with supports of the things that the departments are already doing. I think it is necessary, therefore, for the governor's staff to do analysis also, and not to be totally reliant on what is being done in the departments.

Training people for PPBS. This leads me into a related area which may not be of great concern to the legislature, but I think it ought to be—that is, the training of people for PPBS. There are several things about training which ought to be said.

First of all, if knowledge about PPB penetrates only the top level, then I think very quickly, it will die. Anyone who is a manager, whether in a private corporation or firm or in a government organization, quickly perceives that he has a certain kind of dependence on the people below him in order to know what's happening. He also knows that there are

ways of managing and controlling that dependence, partly by training, partly by regulations and rules, partly by a certain *esprit de corps* which is developed. All these things don't happen if PPBS stops at the top of the department.

For PPB to penetrate downwards, I don't believe that the *trickle-down* theory will work in this instance. I think there's going to have to be a conscious effort and a program to reach the people at the lower level, to get them to participate, to get them to feel that they are not threatened, to get them to feel that this is not just another administrative chore that some guy upstairs got a wild idea about. This means that these people are going to have to be trained. They are going to have to be introduced to it. Maybe *training* is the wrong word. At least there are going to have to be various programs to inform them about it.

You get fudged data, not because people lie, but because it's been demonstrated in government and in industry that when a person has no awareness of what the data are to be collected for, he's careless about gathering the data. He says, "Here, I don't have any information; let me put in something." As Warren Law pointed out yesterday, he's likely to put in what he thinks his superior wants to hear. What he puts in is, thus, unreliable. The important thing, then, is to train the people below.

The *second* thing I would like to say about training is that you ought to train people on the job. If anyone thinks he can go out with a large sum of money to hire ready-made analysts, let me say that (1) these guys, like me, are overpriced; (2) there aren't very many of them; and (3) this just comes to mind looking at the smiles—if you import these guys who have no knowledge of Hawaii and its programs, it is going to stir up hostility between the new men and the old men—there will be all sorts of conflict within the state. The new men frequently don't get off their cloud; they insist on remaining up there and dictate to you down here. I think that on-the-job training is the best way, and it can be very useful.

Training cannot be done simply by talking about PPBS. The best way to train analysts is to have them actually do analysis. I think that, at the end of this three-day session, no matter how much we succeed in reaching the goals of the seminar, very few people here will feel that they grasp PPBS entirely. As I explained to some of you yesterday, there's an analogy here with sex education, which is also in vogue today. The problem with sex education, of course, is that you can't learn it unless you do it. As a rule, it's the same thing with PPBS; you can't learn it unless you do it. You've got to get involved in it. You can't just talk about it, you can't just sit back and draw things on the blackboard and participate in discussions. You have to plunge in and do it.

In addition, to the extent that you may feel necessary to spark your offices with analysts who are new hires, I would strongly recommend that, rather than getting people of the higher level who possess all the sterling credentials, you get very young people who are right out of school. These young people are bright and attentive and they're teachable. It doesn't matter what backgrounds they have—they might be engineers, they might be scientists, they might be sociologists, they might have a whole variety of skills which span the totality of the programs at the University of Hawaii. I've heard it said by people like David Novick of the Rand Corporation, one of the pioneers in the PPB field, that they would any time take a young fellow right out of school from any field and give him on-the-job training rather than hire a guy with all the sterling credentials. To my mind, it would be better to hire these bright, young people at the entrance level than to hire a dozen at the highest level, because the latter already claim they know everything there is to know.

Organizing for PPB. To me the important thing is not that two guys or two groups of guys do analysis, so long as they talk to each other and there's some flow back and forth.

Regarding who should do PPB and how the various people already involved in budgeting and accounting should relate to one another, I suspect if I say too much, I'll be opening up a Pandora's box, but I'll say a little.

Executive. Right now, in the executive branch, you have a number of different state units involved in PPB. I see no reason why the department of budget and finance cannot have the lead regarding PPBS. I don't see any reason why, on the other hand, they must have the lead. You can argue either way. To me the most important criterion is that the agency which is involved in PPBS, particularly in the planning aspect of it, has to be close to the governor. To me that's the number one criterion. If that description fits the department of budget and finance, whether today or under a different system, that's great. If it describes a different unit, maybe that ought to be it. But you cannot have leadership in PPB divorced from the governor.

Legislature. We might also ask a question about how does the legislature organize for PPBS. You already have your legislative auditor's staff and it might be reasonable to vest this already existing staff with whatever additional responsibilities you decide to take on. There is one problem, the resolution of which I don't know, and that is that purists in financial management might insist that the agency which does your post-auditing should not be an agency which has substantial involvement in decisions before the budget is adopted or before the appropriations are made. The reason for this argument is that if the post-audit agency has a great involvement in making budget decisions, it will lose some of the independence that it properly ought to have when it does the post-audits. The post-auditors must not be committed to anything; they should have no axe to grind. So, this is the question that has to be resolved. It can be resolved, I might say, both within the legislative auditor's staff or by having a separate unit. Either way would be suitable.

Legislative-executive relationship in implementing PPBS. Another area of strategy concerns something that I know almost nothing about, and three days of reading the headlines in Hawaii didn't give me all the assistance that I wish I could have received. This area concerns legislative-executive relations in PPBS.

As I explained at lunch, the most complimentary thing about PPBS is that people are fighting about it. The PPBS is in a position like that of the Hollywood starlet. She says, "I don't care what they say about me, as long as they say something," and that seems to be the case here in Hawaii.

Hawaii, to my knowledge, is unique among the states to the extent that there's a great deal of legislative initiative and legislative involvement in PPBS. This means that Hawaii might and hopefully will circumvent one of the great problems which has confronted state after state in other reform endeavors, and, that is, often the administration tries to do something without any involvement of the legislature, and the legislature, not being aware of it, ultimately refuses to lend its support, whether financial support or other kinds of support.

Generally, the formula for almost all the administrative reforms or budget reforms in government is for the governor or the administrators to do it by themselves—an *ex parte* apparatus, to use the language of the lawyer, in which the administrators think they're the only party to it—and then ultimately they try to thrust upon the legislature the fruit of their work. Legislative reaction might be one of indifference, or the legislature might be frightened and its reaction might be to beat it away, squash it—all of which are not optimal responses. Here in Hawaii, because of legislative involvement, I think that this kind of thing might be avoided.

One of you yesterday, when you were dealing with the post office case, I recall, asked the question, "What did Congress say about the program structure?" and Jim Kelly answered it partly, but the whole story is that until recently the Congress had no involvement

in it. The bureau of the budget, for what probably were justifiable reasons given the Washington situation as those compared to the Hawaii situation, provided almost no information to the Congress about it. Of course, there was a lot of publicity, but that only frustrated the Congress more, because when you hear about it and read the publicity, but don't see any performance, you begin to wonder what's happening.

The legislature is involved in Hawaii. Its involvement in PPBS probably ought to increase in terms of the kind of capability and the kinds of interest the individual legislator brings to the budget when he votes on it. Certainly, it ought to increase with respect to the role of those legislators who are members of the ways and means and appropriation committees; they have the most intensive exposure to the budget, and presumably they will become equipped over a period of time to subject it to newer kinds of and more rigorous tests.

In getting involved, however, the legislature ought to recognize the limits of its involvement. It is never the job of the legislature, over the long run, to prescribe the total accounts or budgets. You take that away from the governor and you might think that you're just taking away a little technicality. But, you know better than that. You know that you're really depriving the governor of some of the big roots of political and administrative powers and responsibilities, that by prescribing the total budget system for the departments, the governor in the long run will lose control over his departments. You already recognize, after all, in the traditional budget system, a certain separation of roles. The governor recommends the budget, and you chop it or you adopt it, you change it or you accept it. This doesn't mean to say that there's no mixture within these roles. I'm quite sure that, before the governor comes in with his recommendations, he consults and argues with the leading members of the legislature. He wants to win them to his side, or he wants to find out what they're hearing and what they're saying in order to avert certain problems that might occur later on. He certainly realizes that it's not advantageous to spring any surprise when the budget finally is made public. So, even though the governor recommends, at least certain legislators have a role in that part. And the same thing should happen regarding PPBS.

Implementing PPBS should be a partnership effort. The executive should move or try to move in PPBS without preempting the proper sphere of the legislature or, in turn, without being preempted by the legislature. There's room for each. The executive, I think, is going to have to be allowed by the legislature a great deal of discretion in deciding how to implement PPBS, and the legislature is going to have to be allowed total discretion by the governor in questioning the administration about how it goes about implementing PPBS. I think that regarding this particular aspect, I would leave it for future questions; we can then move into it in greater detail.

Environmental Factors Influencing the Introduction of PPB

I have a problem which has just come to me from listening to others, because I haven't listened to my own words, and that is, you are probably thinking that Schick is telling you that PPBS is just a soft job—you move it in and you just get it accomplished without any sweat, without any conflicts, without any difficulties. If I want to be pessimistic about it, I can "out-pessimistic" anyone in this room. We can have a little contest going around the table inviting each one to put up the liabilities or the obstacles or the shortcomings and I can match one for one. I don't think that would be very profitable, though. We know what the difficulties are. We know that what ultimately happens is not going to be anything close to a Xerox copy of the concepts which we mentioned in certain discussions.

In the introduction of PPB, certain environmental factors might be significant. One is the question of whether your budget is expanding—I don't mean in terms of the amount of money, but rather in terms of programs. Are you at a juncture where you're adding new programs, or where, because of political or fiscal reasons, you're retrenching?

In a retrenching environment—a very severe illustration would be a depression—you might have to cut back on existing programs in order to achieve some balance of income and outgo. Under that circumstance, it's likely to be very difficult to introduce PPBS. You see, PPBS pretends to be neutral as far as what's happening—whether the budget is going up or down—but that's really not true. Analytically it's neutral, but politically it favors expansions of the budget. The reason for this is that, unlike the traditional budget systems, PPB facilitates—I don't want to say "forces" because you can't force legislators to do anything—attention to benefits. It facilitates attention on all those opportunities you'd have, if only you'd spend this amount of money, and on all those opportunities that would be lost, if you deny the funds which have been recommended. In this sense PPBS tends to be expansionist. If the environment is expansionist, then it certainly would be more fortuitous for PPBS. If you're more programmatically interested, then the environment is more favorable to PPBS.

I commented as an aside yesterday that Ohio was the one state which to my knowledge retreated from a well-developed performance budgeting system to the very crude, line-item system. Without going through the whole story, one of the pieces is that performance budgeting was introduced by Governor DeSalle. He was a Democrat and he was programmatically interested. He used the budget as a vehicle for publicizing the new programs which he wanted introduced. A couple of years later, Governor Rhodes replaced him. Rhodes is a Republican. No conclusions are being drawn here, and I apologize to the Republicans in the audience, if I seem to be doing that, but even by Republican standards, Governor Rhodes is a relatively retrenching governor. He wanted to cut down on programs, and in the first six months of his administration, he cut out 2,000 jobs. In the next six months, however, he added 2,000 jobs again. That's a different kind of bookkeeping. The point is that Governor Rhodes recognized that line-item budgeting, because it shifted attention away from programs, was more favorable to his political needs, to the way he wanted to move. This is not the whole reason why Ohio should be backward, but it indicates some of the political factors that influence the introduction of PPBS or any system of budgeting. I'm sure you can supply additional illustrations.

Inter-Governmental Relations

There's one last area concerning implementation that I want to touch on before we get to questions, and that is inter-governmental relations. Hawaii, like every other state, finds that a good deal of its budget is constrained by decisions made in Washington. Although you are free to a remarkable extent from the kinds of special funds and earmarked funds which are familiar in a good number of states, you still have the problem of federal funds, federal programs, and federal decisions being tied into your decisions.

Unlike most states, however, from what I've heard, you don't have quite the same state-local problems that most states have. You're relatively small geographically, and, for a variety of reasons, the state gets involved in different programs which in most other states are in the domain of the local units of the government. This means that PPBS has a better chance here. In a lot of states, the state administrator or budget director wonders, "Why should I do PPBS? Why should I, for that matter, do any serious budgeting? The state is simply a transmission belt—getting money from the federal government or getting money from taxes and passing it on to the local units of government. We have relatively few programmatic concerns. We're responsible for the university, the major correctional institutions, the mental health institutions and transportation. That's about it." No other

state, for example, has a similar state involvement in public education that Hawaii has. In addition, you have relatively few local units of government. You don't have the thousands with which other states must cope. The New York City metropolitan area alone has over 1,500 separate units of government.

You do have something here which could create a local problem, but for the fact that it has been turned into an opportunity. Because of the variety of cultures in Hawaii, you might expect that this would give greater vent to local interests. But, I think Hawaii has turned these cultural differences into an opportunity by providing the state with a mechanism for integration. In New York or New Jersey or California, there are ethnic or cultural group differences. Each little interest gravitates to its geographical enclave—and, in the case of the poor and the Negroes, it happens to be the ghettos. In the past, the states didn't become involved with these cultural group differences, and this has caused an awful local problem. You have run-down cities. You have congested areas. You have a problem of getting a wealthy community of WASPS, as we call them back East—white, Anglo-Saxon, Protestants—working together with a community of a different ethnic stock. Until recently, the states have been totally uninvolved in this. Now the states recognize that they have to move in. We've had a Watts; we've had a Newark; we've had a Detroit. It's been a shock treatment that we've had. In Hawaii, because of what must have been a very sensitive recognition many years ago of its cultural variety, the state had an involvement in it. So, a state-local problem, to my mind doesn't exist here to the extent that it exists in many other states.

Moving over to state-federal relations, the problem presents itself in this way. A person can only plan if he has freedom; a person who has no freedom whatsoever cannot plan at all. In the state-federal area, the problem is that the tune is being called in Washington. This problem expresses itself in several ways.

First, decisions concerning what federal funds to be made available to the states are all made in Washington.

Second, there is an understandable tendency on the part of the states to throw in whatever shares are required to match federal contributions in order to attract the larger portion of the state-federal funds from the federal government. What's the incentive of doing any analysis here? If a guy can show you that if you throw in $500,000, you can get $1 million back, that seems to be an open and shut case—you throw in the $500,000.

Third, the federal government has its own regulations for grants-in-aid. These regulations do not necessarily conform to what you would want to do under PPB. If you want to get a transportation or recreational grant from Washington, you have to fill out certain forms—you have to go through the procedures which are prescribed for you in Washington. These are not necessarily PPBS procedures. More often than not, I suspect they are antagonistic to the spirit of PPBS. You have to fill out the forms properly; you must make sure that the i's are dotted and the t's are crossed. You get the money, if Washington decides to give it to you. Regarding such programs as HUD, until recently at least, they were on a first-come, first-serve basis. When the money ran out, Washington said, "The till is empty; come back next year or, better yet, scream to your congressman."

To the extent that you are inhibited, controlled and constrained by federal grants-in-aid programs and policies, you are prevented from planning. The federal government calls the tune from 5000 miles away. It prescribes the accounting systems that you use for grants-in-aid programs.

Now, I don't have any answers here because the answers have to come at least, in part, from Washington. But, I would hope that at least selectively a state agency, with the encouragement of the legislature, would be able to go to Washington and say, "We want to have a grant program for next year approved and administered via PPBS. We want you

to have confidence in us. Rather than the traditional submission, we want to substitute, at least on a trial basis, some other submission—an analytic document, a plan. Hopefully, you will provide us funds on this basis." If Washington turns you down, that means that the federal government is preaching PPBS on one side and preventing it on another. But, I'm optimistic that at least some agencies, perhaps HEW in some of their grant programs, might be sympathetic to this kind of approach, particularly if you indicate that it's a trial, if you indicate that you're giving them alternative documents which you believe are going to be more useful for both yourselves and for them. In the long run, of course, you'll have a better way of deciding how much state money to place alongside the federal money; you'll begin to have a way—and I think this might be the most important long-term benefit, at least nationally, in all the 50 states—of getting around the organizations of federal grant-in-aid programs.

There are 400, 500, 600 different grants-in-aid programs. Multiply that by the number of projects, and you get thousands of grant things in a single year. Thousands and thousands of papers exchange back and forth every year. If the federal government can say, "Boy, we like what you're doing, go ahead and do it, and afterwards give us a performance report on what you did and we'll use that to decide next year's funding," that's an advantage enough for introducing PPB in state-federal relations. The highest payoff is when they finally say, "Well, look, you have this analytic document. It addresses itself to a plan which deals with problems which go beyond this single grant-in-aid program. We have 20 grant-in-aid programs for Hawaii which deal with the same concerns. Can you strap them all together?" I know I'm dreaming here. (Maybe some people think I've been dreaming for more than a day. It's the weather and the climate and the other things.)

Anyone, with only a little imagination and a little amount of time, can tally up the hundreds of obstacles to PPBS—why it can't work and why it won't work. But if you ignore the obstacles and try and make PPBS work a little, you'll find that in a couple of years, although you wouldn't have reached what some guys a couple of years ago predicted, you'll have a better system than you had a couple of years ago. Now, let's relax a little and get some questions.

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Participant: You mentioned in your article, *The Road to PPB*, that the traditional budget is oriented towards the status quo and that new programs have a hard time getting in. You mentioned that the existing programs absorb the largest portion of the annual incremental spending. This is the traditional budget. Now, in order to introduce the PPBS concept into the traditional budget, how do you start? Where do you start? At what level?

Schick: I suggested yesterday that you select favorable areas for starting. In selecting the areas, as I indicated yesterday, you take your signals from a crisis, a new program, a new legislation or legislation which is expiring. Having started in these areas, you'll find that much of what I wrote about will still exist—that is, that the existing programs will still consume the major portion of next year's budget. But you will also note that they won't consume as much as previously. Perhaps 10 percent of the budget will have been subjected to analysis, and because it's been subjected to analysis you've come up with some new answers. The new answers might mean as well that some of the old programs are discarded or adjusted. In any one year, or in the first year of really having a go with PPBS, you might find that 90 percent of it is under the old system and 10 percent is under the new. But, over a period of years, there will be a spread in the amount which is enveloped by analysis.

Participant: The question I'd like to ask you is, assuming that you are to a degree familiar with what we've done in our state, our attempts in the area of education and language arts and also the work started by the administration covering the entire state, what would you say as to the approach that was taken? Would you say that the combined effort by the legislature and the department of education in language arts was *proper*—or if that's the wrong word, *responsible, effective, sensible*?

Schick: From what I have seen, I would say that what has been done is responsible. There's no question about it. I think the people who have done it deserve a lot of credit. The question now is, what should be done in the future? Here I think you're likely to have two things happening simultaneously—the executive, the governor, moving in directions that he thinks are most profitable, and the legislature, moving or continuing to move in the areas that it thinks are most profitable. If I were a wishful thinker, I would say there would be no collision courses, but there might be some. I think I would be trespassing on your property if I were to tell you how to avoid the collision.

Senator Doi [Chairman, Senate Education Committee; Chairman, Subcommittee on Education, Senate Ways and Means Committee]: The governor, I assume, will say that the PPBS format is good for its internal management purposes. The legislature wanted to use the PPBS format for its budgetary function. For this purpose, the legislature went into the department of education. It has worked well with the department and came up with its format in one area. The legislative request to the department of education was prompted by the fact that we wanted a better format, a better budget document submitted to the legislature for our own use. We asked that the language arts area be included in the format. We think we've done rather well in our working relationships here. In the meantime the governor has asked that his committee begin work on the entire state. You and I know that it will take years and years, maybe ten years to complete this statewide project. I think the work of the legislative interim committee has been more intensive and has completed an analytic report in one area. The governor's work up to now—and if I'm wrong somebody in the audience correct me—has covered the entire state but has not yet come down to the analytic level. I don't think there is at this point any possibility of conflict. I think that the legislature should continue to finish with the education area and that the administration should be in communication, of course, with the legislative group, and that the administration should go on and continue on the course it's taking and possibly select areas for analysis as you suggested. Then, after about two or three years, when the department of education is completed and the administration is further down the road in its analytic studies in several departments, I think we will have the advantage of these two experiences. I think all along the way, if we are in communication, we would gain from the experience of both.

Ralph Kiyosaki [Superintendent of Education]: I see no conflict. What we've done or are trying to do is to take a very intensive look at one program activity in the department of education. We are also looking at the total educational scheme. Some of the advice I've heard yesterday are very relevant. For instance, we are finding great difficulty in describing our programs in a way which expresses our missions. I am still having difficulty getting out of the functional orientation with my own staff. As you indicated, our effort surfaces a lot of insecurities on the part of people because they generally try to describe a job rather than the department. We need to look at the big purpose for which my department exists. That is a great area. I don't want to lock in the support service personnel until we know very definitely what our programs are. However, I think we can also be continuing our project of subjecting our programs to greater analysis. It's a matter now of making sure that we integrate our efforts such that the instructional program does get support from our business office, etc.

Haldi: I'd make one comment on Mr. Doi's remarks, and that is I think it's wishful thinking to make a statement that you will continue with the department of education until you have "completed" the analysis. Analysis in the field of education will not be "completed" in my lifetime or yours. In fact, the developments which we now see coming down the road in the form of computer system instruction, audio-visual instruction, new types of methods, new types of schools, new types of classrooms, new types of learning centers, are going to take years, decades, to test, shakedown, and what not. They may change the whole configuration in the school system in the next two generations or so, and I do think it's a little bit too ambitious, unless you have just a specific project for which you want to finish the analysis, to say, "We're going to continue until we finish the analysis of education." You'll wind up getting in bed, so to speak, with the department of education and losing your role as an independent critic—the traditional role of the legislature to sit back and look at the executive branch. I think somewhere you've got to say we're going to go to this point and then we're going to stop and let them go on their own and we're going to shoo down, so to speak, into the traditional role of the legislature of constructive criticism.

Schick: I will just make a couple of comments which are not in response to anything that I've heard. There are executives in Hawaii who say there is not going to be a conflict. You can say that, but there are two big problems with total legislative involvement in the department of education. *One* is that I think every legislator here will agree that, over the long run, the governor has to control the system of accounts for its departments—and it's not simply a matter of the mechanics of accounting. It fuses every area of political and administrative responsibility leading up to the governor.

The *second* thing that I would say is that the department of education doesn't happen to be just the department of education. It is the biggest department in Hawaii, unlike any other state, so that, again, the governor, rightfully, and this applies as well to the superintendent, will want to have a great involvement in it.

Having said these two things, I'll add a *third* thing—that is, that I've seen some of the work done by the special analytic group in the department of education—I haven't seen the full work, and unfortunately I will not be here Friday to hear the formal presentation. I will say that I rank it among the very best that I've seen any state or locality do. It has demonstrated promises. For this reason, I think it will be unfortunate to have it voided simply on the grounds of administrative purity so to speak. Moreover, I think anyone who is attuned to the process of change in government or in life would recognize that anything which is restricted to a particular enclave automatically dies. Thus, if you say, "You people have done some good work in language arts and you can continue plowing that field but don't move beyond that," very soon, no one will want to harvest anything there any more.

Hence, and because there's no conflict, I think it will be desirable to continue the department of education experiment—not to allow it to consume the whole department of education or anything even coming remotely close to that, but to allow it to branch off to some cognate areas. If that should be done, I would regard it, as an outsider who doesn't know the situation well, as a fairly optimal solution.

Doi: I hope this isn't a debate, but I think I should point out some things here that moved the legislature into this area.

You see, we have an elected school board and the legislature here was concerned about developing a working relationship. We're conscious of the weakness of words to try to define that relationship. Simply put, the board of education is an elected board. Because it is elected, we wanted to give it a meaningful flexibility in handling the education budget. We, therefore, extended to it a lump-sum budget a couple of years back and

provided for no ceiling in personnel, no lapsing of funds and freedom to match new federal dollars.

With this flexibility, however, the legislature felt that we needed good accountability. We felt that by using PPBS, we would get this accountability. So, the PPBS program was invoked. At that time, the administration did not have a PPB format. And we thought we'd start in this area. This is not an experiment. Maybe the phrase "complete analysis" is wrong, but what I had in mind was that we'd like to see the format completed for the entire department. I buy your idea that analysis could be forever, but all we want to see is a format for the entire education department. Possibly, the administration by then would be through with several other departments and would be putting together the entire departments of the state on the PPB format. Then we would have a format for the entire state. But I think time would allow for this.

Participant: You've been very kind in saying a lot of nice things about Hawaii. But, we're always curious as to where we stand in relation to the other states. We are a paradox. We're so old fashioned that we're new fashioned. Many of the things we have, we inherited from a kingdom via the revolution, the provisional government, the republic, and the territory. Now we're a state. For example, the management of our education system by the state has its roots in Hawaiian history. So also our tax system, which is centrally run. Would you tell us, given our unique position, how we compare with the other states in the climate for acceptance of PPBS?

Schick: I'm very glad you raised that question. I haven't been gratuitous in my compliments to the state on two counts. *First* of all it's justified, and *second*, Hawaii, as far as I can see, is extraordinarily well suited for PPBS on a statewide basis. I'll give several concrete reasons.

It's obvious that despite the old traditions that you have, you have a relatively new structure of government. As hard as it is to change an administrative setup in Hawaii because of its tradition, that doesn't compare with how difficult it is in some of the older states on the East Coast which I'm very familiar with where you cannot change the slightest iota without engaging in years and years and years of battle. That's one reason why you're well situated.

A second reason is the role of the state. Because of what you've mentioned and other things that have been said, the state in Hawaii is not merely a transmission belt between Washington and locality. It has genuine statewide functions—activities which it conducts, of which education is foremost. For this reason, something like PPBS would not simply be a vacuous exercise in which you are constrained above by what Washington does and below by what the localities do.

The third reason pertains particularly to budgeting, and here I'll explain my reason by speaking first about the old fights which the Communists and the Bolsheviks had around the turn of the century. That's when they were in the same stage as I am now—a little revolutionary and a little idealistic—and they were debating whether to have a proletarian revolution. If you're still a peasant society, you have to move first some peasants to a bourgeois, capitalist status along the road to Communism. Remarkably most of them said, "Yes," and, therefore, they predicted that Germany would be the number one candidate for a Communist revolution.

The question is whether you can skip over stages. This applies to budgeting and is why I'm generally, relatively pessimistic about PPBS nationwide. You know before PPB, the previous budget reform, which we alluded to in a different context, was called performance budgeting, and most states and localities don't even have that. They don't have information systems equipped for what is a much less complex, less sophisticated system

of budgeting. Hawaii is certainly among the most advanced of the states, and here I can speak with some confidence. I'm aware of the budget systems of at least 48 of your sister states, and Hawaii doesn't have to confront the problems of the Communist revolutionaries. You can skip a stage. You're pretty well advanced regarding performance budgeting, and, therefore, while it's a large step to move beyond that, PPBS is certainly possible.

Participant: Do you have an example of an old budget compared with the budget under PPBS?

Schick: Well, the number one area of course is the department of defense because it has the most experience in this thing.

Participant: I mean a budget for a division or section of an agency.

Schick: Of sections, of agencies, yes. Let me give you an illustration. In the state of the union address this year, because of Vietnam constraints, almost no new programs were proposed. I think there were only about two of them. As a matter of fact, the President was hitting the bottom of the barrel when he had to tell us that there will be a hundred new FBI agents and a hundred new U. S. attorneys. There were two major new programs. One major program was housing, about how it was developed, I don't know very much; the other was the maternal and child health care which was the direct result of a PPBS study.

Haldi: I think I can answer your question a little better. The entire federal government has two budgets now, each agency has two budgets. The agencies prepare one for presidential review along program lines, and they prepare another for congressional submissions along the traditional lines. Unfortunately, I don't have the presidential submission to show you, but I do believe it's summarized in the budget which has been issued today—in the budget address which was given on Monday.

Participant: I think there might be just some simple example of one working . . .

Haldi: I didn't have the numbers in it, but I tried to give an example on one of the slides yesterday where I showed the health budget by program categories, and I showed the traditional categories now used by the State of New Jersey.

Participant: But do you have the narrative?

Haldi: We have available in Washington, for public distribution, a sanitized version of the program memorandum prepared in the department of defense on military airlift and sealift, which is one of the better ones. It took about five years evolving. Some of the classified numbers have been cut out of it. Of course, it has nothing to do with state government, but it illustrates how McNamara cites alternatives, alternative levels of funding, alternatives to programs. It points out in a couple of places where certain generals took disagreement with McNamara's decisions, and how he took into account the uncertainties involved. It shows what would happen to the different outcomes, say, if there were two wars, in two theaters as opposed to one, and what the responses of system would be. It illustrates a number of things like this that are discussed generally or in general abstract terms in PPBS materials. Of course, military airlifts and sealifts are peculiarly defense-oriented.

There is another program memorandum which is available. Again it's a peculiarly federal government program. It was prepared for a sample country called Aerolon in the U. S. information agency. Again, if you have something like education or health services or sanitation in mind, I'm sorry but I don't have on hand any particular sample that would be applicable to a state program.

Participant: Another question I want to ask in relation to your statement that we submit application for federal funds along the PPB system. Isn't there a danger that the

federal government might simply reject such alternative submissions with a consequent loss of federal funds to the state?

Schick: I think I might have been misunderstood. I intended to say that we request *permission* for an alternative submission. Clearly, if you do it without permission, the response is likely to be what you mentioned that it would be turned back, sometimes at a loss of funds for the state. You should do it only if you get advance clearance to do it.

On the federal level the reason why the budget is submitted to the Congress in the traditional form is largely, as we indicated, because the Congress has been left out of the picture. On the federal level, PPBS was only introduced two years ago; it has been picking up steam in state and local governments only in the last half year or so. There are a few states that have made sample PPB submissions to the legislature—in other words, not real submissions. They have said to the legislature, "This is what it might look like, compared to that." They are not real budgets. Wisconsin and California come to mind. New York City is now working on PPB, and it has done more than merely work out samples; it is working in four areas: police, fire, housing, and health. The U. S. office of economic opportunity has a demonstration program in the application of PPBS, involving 12 or 13 community action agencies. These are both rural and urban agencies, including one agency that is statewide.

Participant: In your CIP-operating, integrated budget, how do you show the differences in funding? or do you separate CIP and operating at all on the basis of funding?

Schick: Certainly, you might want to keep the funding separate on the justifiable grounds that something that is a capital project ought to have a different funding basis than something that is operating. That's legitimate, beyond question; you ought to have separate funding identified for each.

How close the other kinds of integration are, I tried to indicate that that depends on you. To integrate CIP and operating, you don't have to have both in the same marriage bed, so to speak. They don't have to be totally together. You don't have to have one budget. You can have two separate budgets to retain the advantages of each, but they should synchronize. They are not prepared in ignorance of one another. That's what is important.

Participant: Is *appropriations* synonymous to *budget format*? Are you talking about a *budget format* or are you talking about an *appropriation format?*

Schick: In most states and localities the budget and appropriation formats are the same. In the federal government, they are not. In most states, and this might apply to Hawaii, the categories of appropriations are relatively similar to the budget categories. In the federal government, as John Haldi pointed out, this is not true. So, in the federal government, there is need for a crosswalk from the program structure to the appropriation structure.

Participant: How can PPBS be used at the university? Is there a relevant use when the outputs are difficult to quantify?

Schick: Almost two years ago, I saw a document prepared by the vice president of the University of Hawaii, Dr. Takasaki. I believe I saw his name tag here, but I didn't meet him. At the end of the document, which was called, *Training Guide on Program Budgeting,* there was a dialogue consisting of an exchange of letters among various officials of the university concerning the relevance of PPBS for the university.

I would say that I think the university is one of the best places to start PPBS. It has its own identity crisis today. It doesn't have the same kinds of outputs as other agencies, but it can begin to re-ask itself the question of what it is trying to do in education. PPBS can stimulate rethinking about this. That's the way I would like to see it applied at the university.

Participant: Why did the State of Ohio revert to the line-item-budget?

Schick: Let's spill the beans. Suppose you have a program budget. Analytically you're supposed to be neutral, but it has a potential for not being neutral. Think of what this thing does. It spotlights benefits for the first time—all the good things that you can accomplish, if you spend money, and all the things that you would fail to accomplish, if you deny the funds. This is why some state departments tend to be recalcitrant. They don't want to be pinned down to what they're supposed to accomplish.

Well, in Ohio, Governor DeSalle introduced a performance budget, it wasn't a PPB submission. But it was very complex. He failed to make a distinction between what was necessary for the manager and what was necessary for the legislature. The legislature received the budget which was in excess of 1,500 to 2,000 pages, in seven volumes, with alternative A, alternative B, etc. The legislature didn't want to read the *Bible*, as they called it.

Two years later, Governor Rhodes came in, and he came in, as you will recall, as a retrenchant governor. He decided he was going to abolish the state library for example. Ultimately he didn't. But there were other things he did. The state house has a carousel display going on now for two years. This is the state house. You wouldn't believe it, but the whole place is consumed by industrial exhibits. *Profit* is not a dirty word in Ohio. Each month there's a different industrial display of products manufactured in Ohio. The month I visited the state house, it was mirrors. The display said, "If every person in Ohio and every family purchase a mirror, this would provide thousands of new jobs in Ohio." I went in to see the governor. I must have been in a dirty mood that day. I said, "Governor, did you buy your mirror?" He looked at me and said, "What do you mean?" So I explained.

Governor Rhodes recognized that by getting away from the program budget, it was helping to retrench. Programs are no longer being spotlighted. The governor could cut the budget without revealing the program that he was cutting. Another way of saying this is, suppose there's a depression in the future. (This is by way of casual prediction.) If there's a depression, such as in the 1930's, and the state has to retrench, I suspect that there will be at least a temporary reversion to line-item budgeting. I think I gave you too much of a story and too little of an answer.

Participant: I think Dr. Schick made a statement that more effort should be placed on developing the operational side of PPBS rather than on defining the program structure. Does it mean more analysis or what are you talking about?

Schick: More analysis. Let me explain what I mean. I've seen so often two things happen, both of which are undesirable. Sometimes guys work up a program structure in two days and then they discover the wheel. Then, what do they do? They flip cards or toss a coin—should we go here or there? On the other hand, there are guys who spend not two days but two years arguing about a program structure—"Does it go here? does it go there?" The reason why we have a program structure is to facilitate analysis of a program. If we don't get to that, the structure means little.

Participant: There are different information needs for different purposes—managing, planning, and so on. How can you take care of these different needs in an integrated PPB informational system?

Schick: You can do it in two ways. It's actually one way. *First* of all, you have to look at what the old information is and get rid of some information; don't just add new information. *Second*, do what John Haldi described yesterday as a *crosswalk* in which the rows added this way and the columns added that way. That's a technical way of doing this, but it's easy to do. Let's think in terms of a coding system of information. You're all

familiar with this. I'm sure you've looked at charts and wondered why there are 50 digits in a coding system. Each set of digits is read by the computer as a different way of assembling the same information. If you want to be able to separate and combine that information in different ways, you simply will have to expand your coding system, have more digits to accommodate it. If you don't have a computer, it's very costly to do it manually. A computer can do it instantaneously at very low cost.

Participant: Can we have a good PPB system, if it is implemented only at the highest level of government—say, the governor's office?

Schick: You can't. I'll tell you why. Well, let me give an illustration from the Soviet Union. Russia doesn't have a competitive market system. How do the Russians make sure that their market system is efficient? In 1956, they set up what they call indicators in factories. For example, they selected volumes of cement produced as a success indicator. Those guys who are responsible for producing cement said, "Well, my job is to match that success indicator. I'm to give the leaders what they want." So, the cement factories stopped producing anything more than one kind of cement. They said, "Each additional variety of cement we produce cuts down the total quantity of cement which is produced." So, they stopped producing more than one kind of cement. Now, look at what American cement factories do. They diversify according to the different building purposes, and so on. This is one way of answering your question.

Another way of answering is that if the guys lower down don't have any involvement in this, they'll begin to fudge the data. I don't mean that they will be dishonest, although it might happen. But there's something that's even more serious. They'll be careless. They'll say, "I don't know what the boss wants; I don't have the figures. Let me take a guess and put this down," or, "What does the guy want to hear from me? What does he expect me to say?" and they put that down. You know the problem.

You've got to get PPB down to the lowest level that has discretion in making programs and in making budgets. I don't know what that lowest level is in Hawaii. It probably varies from department to department. But you have to get it down that low or else it's going to fail.

Participant: Will you expand on what you said about the vertical approach versus the horizontal approach in education?

Schick: In crude form it's this. A horizontal structure in the department of education looks at grades or aggregates of grades. Thus, the structure might be composed of kindergarten through the third grade. That would be one category. Fourth through sixth grade would be another category; junior, intermediate school, high school, college—these would be roughly a horizontal structure. A vertical structure doesn't look at it grade by grade, but looks at a particular thing that you are trying to accomplish through all the grades—let's say, language arts. Language arts from kindergarten through the twelfth grade—that's a vertical approach.

There are pros and cons on both sides here. In favor of the horizontal approach, clearly two things come to mind: *First*, that's the way you organize your classrooms, your schools, your department of education. In addition, because you're organized that way, you have a lot of data along the horizontal approach—you have data as to what happens in a classroom. The *second* advantage of the horizontal approach might be that you can see the whole student—what happens to him in a single grade at a single moment in time without cutting him up among several programs.

In favor of the vertical approach, I suppose one would argue *first*, that the job of the education department is not to make budgets. Its job is to build curricula; curricula are the key aspects of every school. You can't look at curricula horizontally because if you

do, what happens in the first grade would be totally unrelated to what happens in the second grade. The argument is that you're making your curriculum list, vertically, and you want your budget to be a policy expression of that. The *second* argument, which swings away from me but should not from yourself, is that the vertical approach is opportunistic –it is the most useful. Remember that there are many alternative ways of developing a program structure. The most suitable program structure is the one that is opportunistic– the one which is most useful for you. It so happens that in Hawaii, probably unlike a lot of other states, a program such as language arts is one of the big areas of state concern. You make a state policy out of this. It's not simply a matter of teaching English as you might have, but for the sake of the state of tomorrow, a process of group relations, a process of culturation. Probably there are few policies in this state which rank as high, which deserve as much attention, as language arts. For this reason it would seem to me desirable that you have a program structure which enables you to see that policy in budget terms.

But, again, at this stage of the game, you ought to have both structures, since you are still making budget decisions in the old framework; you can afford to have both.

Participant: Would it be possible to begin with the vertical approach and then having looked at the subjects, then look at education from the horizontal point of view?

Schick: Yes. You would have to do that anyway. In the long run, you must. Even if you know what you're doing in language arts, you still want to know what you're doing for each student in total, and if the department of education has a good information system in the future, it should be able to supply you with both kinds of information. PPBS doesn't change this, precisely because you make the curriculum on the basis of a vertical approach and you build classrooms on the basis of a horizontal approach. You need both kinds of information.

Participant: You stated that there aren't too many people who know much about PPB and that we train our own people. But if we don't have people who know about PPB, how can we train our own? Isn't this like the blind leading the blind? What can you suggest?

Schick: I don't have an answer, but I can offer a few suggestions. One, to reiterate what I said before: training is going to be of critical importance and it's something that should not be done casually. You're going to have to have a training strategy which means a conscientious try to train people. I believe that it has to be connected with their work experiences, not necessarily to pull them into the classrooms, although that might be part of it.

You speak about the blind leading the blind, but it's also true that in the country of the blind, the one-eyed man is king, and so you might think in terms of a modest importation of people. As a matter of fact you have them already. I've met some of them here–the vice president of the University to Hawaii, who two years ago wrote what I still regard as one of the finest expositions about program budgeting. You have other people whom I've met at the university. You have people in the state government–in the central analysis unit, in the department of planning and economic development. You have legislators today who have some knowledge of PPB.

Let me just share with you something that Mr. President of the Senate is aware of. On Monday, we met with some of your legislative leaders concerning preparation of the seminar, and John Haldi was the one who asked this question after a couple of hours of discussion, "What are we having the seminar for? Look how much you people know." Anyway, it's not the blind leading the blind in this state.

Participant: What kind of training programs can we have if we are to meet our deadlines in implementing PPB? What sort of action is needed to integrate PPB with the current system?

Haldi: The federal government has training programs designed to accomplish various purposes. It has set up a three-fold training program. It has a two-day course, a three-week course, and a one-year program. The two-day course is called *orientation*. The real idea of a two-day course, when you get right down to it, is to give people exposure to PPB. It is designed, *no. 1*, to give them a chance to ask those questions that are burning them up, and *no. 2*, to expose them to terminology. That's about all you can do in two days.

A three-week course is called a *training course*. But, anybody who thinks you do real training in three weeks is naive about the educational process. The three-week course, incidently, is designed chiefly for middle managers, people who are sometimes consumers of PPB products in one form or another or people who are asked to supply inputs but do no analysis. The course tries to change people's attitudes more than anything else. It tries to help them acquire a healthier attitude for PPB so that they won't be totally negative about it.

In the one-year program, people are sent away to any one of seven universities for a year. It is a real training course designed to try and produce what the federal government calls *junior analysts*. The assumption is that all who enroll in the course have a bachelor's degree; some people start a little further ahead.

Senior analysts, the federal government tries to hire. They are people with Ph.D.'s or who have work experience equivalent to that. They are hired from wherever they can be gotten. They are stolen from another agency—this goes on in Washington all the time—from consulting firms, from universities. You get them where you find them.

Schick: There are other things. In addition to the kinds of programs which John Haldi has just mentioned, there's a new kind of program just emerging in Washington. The department of health, education and welfare is now beginning on-the-job training, in the sense that it's taking program people from the public health service and the other components of this sort and actually giving them a course. People in the department are giving the course. You know what these guys are doing? They're writing analyses. I was shocked at first when I learned that high people in the department of HEW—someone like Gardner—give attention to the course. The course is designed for a period of six months—approximately 35 sessions over six months. The content of the course is doing analyses. That's the sort of thing I mean by *on-the-job training.*

I want to mention another thing. It seems to me that there's a shortage of consumer analysts. There's a bigger shortage of consumers of analysis than of analysts themselves. One of the most important things that is needed in PPB is a boss—a bureau head, a department head—who shows that he wants and appreciates analysis. Here, I think, the legislators have a critical role. You know the legislature in Hawaii cannot make PPB work. We all recognize that. It can, however, kill PPB. One way that it can kill it is by showing that it doesn't want analysis. If it doesn't want to be a consumer of analysis, before you know it, no one will produce it any more. Being consumers of analysis is a very important role for the legislature.

The next thing I want to talk about for a moment is the deadline which you mentioned. How long should you take to implement PPB? What timetable should you follow? You should recognize that if you set it five years ahead, that means that nothing is going to be done right at the moment. Then a footnote to that—you should recognize that a failure in a deadline means no one is going to take deadlines seriously.

Haldi: I don't think we fully answered your question, did we? You asked—would you rephrase your question and tell us what you said? You said, "How do you integrate the old with the new?"

There are different levels at which you can try to integrate them. In the legislature, one way in which you can integrate the old with the new is what you've done, as I

understand it, to two departments—namely, the department of education and the University of Hawaii. You went to lump-sum budgeting in these departments. In lump-sum budgeting, you don't have to worry about a crosswalk because you don't have line items. Lump-sum budgeting is a rather simple way of getting around the need for a crosswalk between programs and line items.

Now, even though you may have lump-sum budgeting, you've got a lot of managerial problems. How does a guy who's got a widespread department with divisions and so forth manage his unit with a lump-sum budget? He, of course, has a lot of problems which lump-sum budgeting doesn't alter. He's got an accounting system, an allotment system and everything all worked out based on the amount each unit gets for travel and the number of job slots he has in his department, and he has to decide whether he is going to continue to run his department this way or whether he is going to run his department in some different way. One different way is to set up program managers. In fact, where people have program responsibility, you have centers of programmatic responsibility. For example, in a university you have various schools—the graduate school, the school of business, the school of medicine, the school of dentistry, the school of veterinary sciences, the library school and so on. You can give lump-sum budgets to these schools and you can leave it up to the guy who is running the school to decide whether he wants to spend $200,000 on a new computer or whether he wants to hire two or three more professors. Alternatively, you can control the spending from a central budget office within the university or even the state. There are a lot of managerial problems. So you've got the crosswalking problems at different places within the hierarchy, you might say.

The department of defense faced this problem. Up until July of last year, the defense department had PPB at the headquarters level only. If you had gone out into the field unit, such as Hickam Field or even the Pacific Headquarters Command, and asked the people there about PPB, you'd probably have gotten absolutely blank stares, unless some guy had done a tour of duty in the pentagon. Until last July, PPB had not reached anywhere outside of the pentagon. Field allotments, field budgeting, field accounting were all run on the old system. DOD had to have a crosswalk for a number of reasons. At headquarters level, it generated the budget in PPB terms and then reviewed it with the budget director and the President. Adjustments were made to the budget by cutting it back or increasing it. Then, the defense department had to crosswalk the PPB budget back to the traditional budget format consisting of personnel procurement categories, by services, because the Congress considered the defense budget along this traditional line in making appropriations. The defense department had to crosswalk the PPB budget to permit it to give allotments, assignments and so forth, to all the field installations in the department of defense by positions, personnel, travel pay, and so on. So it was only at the headquarters level that things had been brought together in the PPB structure for about six years.

Wednesday, January 31, 1968

PPB AND THE LEGISLATOR

John Haldi

Is Hawaii Big Enough for PPB?

I would like to pose a question which hasn't been posed and which should be posed; and I would like to answer it. Before I do that, let me just make an analogy here.

You have cost accounting in the manufacturing world. Cost accounting is a "system." Now, if a man has a little shop, and he sits there carving or making pottery himself, he doesn't set up a cost center and keep an elaborate set of cost accounts on himself. He doesn't need to. He knows what it's all about. Likewise, if a man is running a little mom and pop type retail store, he's got everything under his eye. He doesn't have a big elaborate IBM inventory card system. He walks up and down his two or three aisles and takes inventory, sees what's being bought every day and what people check out by the cash register. He doesn't need this big elaborate inventory system that the bigger organizations have.

One could then ask this question, is there a critical size in which a PPBS system becomes practical, and does Hawaii have that critical size? This is a question that was not asked, but is perhaps worth asking, because among other things, there are costs in setting up a PPB system—the cost of converting and, having converted, the cost of maintaining the system in anything more than just a perfunctory, routine way.

Bigness Breeds Boondogglers

Let me say that governments by and large, as they get bigger, have ways of coming out with programs and projects which can kindly be characterized as *white elephants,* sometimes as *boondogglers.* Enormous amounts of money can get involved in such *white elephants* or *boondogglers.*

Hawaii, fortunately, doesn't have, as I see it, a lot of the problems that a lot of state or city governments have. In the area of air pollution, you've got the whole Pacific Ocean to clean out the air system for you. You know that you don't have New Jersey right next door to you, like New York does. In waste disposal—that's a polite word for sewerage and solid wastes and other things—and in water pollution, again, you have the whole Pacific Ocean coursing by the islands all day, and I rather imagine you have no real serious waste disposal or water pollution problems of any type. In addition, fortunately, the population and the City of Honolulu are of a nice size; they're not nearly so big. For these reasons, you don't have the kind of problems other states and cities have.

Breaking out from Hawaii, however, let me cite some examples of the classic problems that besiege states and municipalities these days and the kinds of boondogglers they get involved in. San Francisco is today bogged down in a rapid transit system. Atlanta, too, has a bunch of nuts down there pushing a transit system. These rapid transit nuts are also pushing a new subway line in New York City. You can just predict that these things are going to lose money. You can predict that they're going to cost at least 50 percent more than what they say they will cost. They always do. Cost estimates are notoriously wrong. San Francisco is tied into something like $1.2 billion now in this thing called *BART*—it's a pretty bad word around San Francisco. It has botched up the whole city, and it's quite clear now that this thing is going to be a *white elephant*, although it came with all the great onrush and all the promises of the great inventors.

New York City has fantastic waste disposal problems now, because no planning whatever was done six or seven years ago.

Then, there are the water supply problems. Take the California water plant. Its cost is $1.7 billion or something. Perhaps you know about this California water plant. It starts off way up somewhere and takes water all the way down to San Diego. I know a number of water people, those economists who study water regularly. There seems to be an absolutely unanimous agreement among these people that California has devised the second most expensive way to supply water around the state. The only other more expensive way is desalting ocean water. In the language of the water people, California is bringing in something like $30 water—that's $30 a foot—to Southern California, when it can reclaim water down there for something like $8 to $12 a foot. There's also a general agreement among all the water experts, including the special man appointed by the Supreme Court, special master or whatever he's called, who's heard the whole Arizona and California water cases, that there will not be a shortage of water under the existing supply either in their lifetime or their children's lifetime. The kindest thing you can say about the California water project is that it's at least, at a bare minimum, 20 years premature.

Now, what's the interest for 20 years on $1.7 billion, the cost of the California water system? It's a lot of money, just in interest alone. I don't know why California's governmental system dredges up these multi-billion dollar wastes, sometimes in a single stroke. Somehow in California, the political system seems to generate incredible pressures and the state seems to have ways of getting itself into this sort of thing recurrently. There's massive spending of money in ways which, with any kind of analysis or hindsight, would be rather clearly nonoptimal.

Again, on the city level, I was reading in this little booklet, which I think all of you have, on the Proxmire committee hearings, the statement by Mr. Frederick O'Reilly Hayes, budget director of the City of New York. He makes a statement here that New York City has a program called the *More Effective Schools* program, which has been in effect for two years. He says the evaluation shows that some of the control schools outrun the *More Effective Schools.* Yet, this *More Effective Schools* program costs $578 more per student per year. Mr. Hayes' concluding comment is, "The city may ultimately be driven to accept an expansion of the program that the evaluation will not support." It's an interesting development and not unlike a good many others that we face. There are political pressures that are being generated to spend $578 more per year per child on a program that doesn't even do as well as the control schools do.

These boondogglers are just on the state level. I can cite a number on the federal level. Start with Mr. Enthoven's testimony before the Jackson committee. Mr. Enthoven testified, talking about PPB, that there was a tremendous Congressional pressure, which you may remember, to develop the B-70 bomber. The analysis simply didn't support it, and Secretary McNamara fought off this pressure. But, if you remember, the Congress kept appropriating money to get started on this thing. Had the defense department gone ahead and accepted the Congressional pressure, which I think was bi-partisan, it would have meant at least a $50 billion waste of money on that program. The plan was obsolete. It would be obsolete today. That's one such program.

Somehow the political pressures just push you into these things at the cost of hundreds of millions, billions of dollars. This is the type of thing more than anything else that I think a lot of the proponents of PPB would like to see avoided.

Hawaii Is Big Enough for PPB

As I said, if you're running your own shop or when you're in a very small locality, you don't need PPB. Again, to take an extreme case. In a little town out in the country,

you've got a three-man police force. The guy who has the day shift is the head of it, and the guy who has the evening shift is the lieutenant, and the guy who has the graveyard shift is the low man on the totem pole. We don't need a PPB analysis for the police department in this case.

What if you have a 10-man police force, do you need PPB analysis? What about a 20-man police force? What about a 10,000-man police force? Where do you draw the line? Where do you get into this PPB analysis? It's a good question to ask, because analysis is not cheap as has been pointed out before. Analysis is oftentimes not that good either. Analysis can make a lot of mistakes. If you get a bad analysis, full of mistakes, then you have wasted a lot of money. So it's a point well worth considering at all levels—where do you get into this type of thing?

I would say that the State of Hawaii is particularly projective with its growth rate of the last 20 years. The future looks very bright for Hawaii, and its population is already much greater than that of a number of other states like Vermont and New Hampshire. It has probably crossed the threshold of getting into PPB. I think it definitely has.

How Far Extend PPB?

While I think Hawaii has crossed the threshold of getting into PPB, I also think a point worth considering is, how far shall you spread it?

An extreme case that came up on us in the federal government was the national battle monuments commission. The question was, should the commission be included in the list of those agencies required to do a PPB submission? The answer, of course, always came out, "No." They were at the very low end of the totem pole. We raised the same question with respect to some of the smaller agencies in the federal government, like the civil service commission. On the first round, the civil service commission did not make a PPB submission. Of course, in these smaller agencies, you're dealing with only $200 million or $300 million a year. In the context of the federal budget, that's not a lot of money. At any rate, that's a point that might be worth discussing later on when we have the question and answer period.

Uses of PPB Hardware

Now, I'd like to review just a little bit. I want to make a few points. Ultimately, before I finish today, I want to talk about analysis and the legislature. But, I'd like to make a few points, first, and then lead up to the legislative role in analysis in the PPB system.

We talked about the various components of PPB. Let me just write them down on the blackboard, to refresh our memories. These are the basic component parts, the structure, the apparatus, the hardware of the PPB system: the *program structure*; the *output measures;* the *program memoranda*; and the *program and financial plan*, which lays out all the programs in a multi-year framework.

Uses of the Program Structure

Yesterday you went through the case of the post office, and you talked about how the program structure for the department generated an awful lot of heat. Defining program structures can take an awful lot of time, and it can generate an awful lot of heat among various groups. If you just follow the organization structure right down the line into departments, divisions, bureaus, offices, or whatever you have, you'll probably wind up with the same old thing you had or something so close that one will question whether it's worth the cost. If you scramble them up—every office, every bureau, every division—the programs

will be spread all over the place, and you'll get a lot of resistance. This question then is, do you change or don't you change?

Suppose, however, that you spend a lot of time working on the structure. When you have finished, what have you got? You've got a new way of looking at the same thing. Remember that little chart that I had up here yesterday? I'm afraid it wasn't clearly readable as I would have liked it to have been. It was something like a matrix. It was a table, with columns. If you added across the rows, you got the expenditures by programs; if you added down, you got the expenditures by inputs, by object class. By adding the total each way, you got the same total down at the bottom. When you get finished structuring, anybody looking at it is likely to say, "All you've got is a new model, but the same old wine." That's right. At that point, all you've got is a new bottle with the same old wine—the wine just turned to vinegar.

Program structure helps to communicate. It is true, of course, that the program structure can be a highly useful way of looking at the activities, much more useful than the line-item budget. There is testimony in that green book on the Proxmire committee hearings by, I think, Mr. Exo from Wisconsin about what happened when Wisconsin converted from a line-item budget to a program budget—there were lots of complimentary laudatory remarks made to the political press by various people that for the first time in their lives they were able to understand the budget when they picked it up and read it. Program budget, then, helps to communicate. It helps to facilitate discussion.

Program structure helps to focus on "efficiency in the large." Let me make a distinction for you. I find it useful for my own thinking. I'd like to distinguish between what I call *efficiency in the large* and *efficiency in the small.* Let me explain to you what I mean by this sort of thing in a government programmatic sense. Efficiency in the large—by that I mean are you doing the right thing? and efficiency in the small—are you carrying it out the right way? Let me try to translate this generality into something more specific.

Every government agency has things like automobiles. Now, you have a lot of questions concerned with efficient automobile usage. Do you replace them at the right time in their life cycle? Do you maintain them in some moderately efficient way, either by contracting out the repairs and maintenance or by running a maintenance shop? Do you get your spare parts in a reasonably efficient way? What kind of inventory system of spare parts do you have for your fleet of vehicles? Is it an efficient inventory system? These are classic questions big corporations have, and governments always have them. They are concerned with, you might say, the input—are you maintaining these things at a reasonable cost in the light of what's achievable and obtainable? This is efficiency in the small.

On the other hand, efficiency in the large raises these kinds of questions. Are you using the automobiles for the right programs? Are you sending the right people out to the right places in these automobiles? Are you doing the right thing for the automobiles? It is possible to be very efficient in the small and totally inefficient in the large. This is the difference between efficiency in the small and efficiency in the large.

By calling something, *efficiency in the small,* I don't mean to minimize the importance of that type of efficiency. That type of efficiency is necessary to have overall efficiency. But, it is possible to have someone to be very efficiently doing the wrong thing, and if you really had to make a choice between very efficiently doing the wrong thing or inefficiently doing the right thing, which would you choose? This is an interesting

question. Most people like to think that they're doing the right thing efficiently, and I hope you are, but it's a distinction worth keeping in mind.

In most big organizations, the efficiency in the small questions can be relegated, and properly so, to lower levels of management; but efficiency in the large questions are the concern of higher management. In a political setting, efficiency in the large questions are called policy questions or program questions. Are we running the right programs? Are we running the right health programs? Should we continue running the health benefits for the people of Hawaii as we are running them now, or should we adopt a medicaid program similar to the ones in California and New York? These are efficiency in the large questions—programmatic type of questions.

A good program structure, then, can be of help in focusing on efficiency in the large. It's a way of organizing your thinking a little bit, of organizing your thoughts.

A program structure, alone, is not enough. A program structure, however, is not a panacea; it's not the end-all. Just because you have a program structure doesn't mean you are going to have efficiency in the large; it doesn't mean you're going to have the right programs; it doesn't mean you're going to serve the right clientele groups; or anything else. You've still got vinegar in there no matter how you package it. With a program structure, you haven't achieved very much in what really counts.

If you read Allen Schick's classic article on *The Road to PPB*, he points out that just packaging things by programs has been tried and sometimes been backed off from for years and years. That's exactly the reason why program budgeting has come and gone over the years. It's frequently been no more than that. You package programs, and after a while the whole thing gets killed by mediocrity. Program structuring then is the first and necessary step, but not a sufficient step.

Uses of Output Measures

Let me briefly talk about output measures—those output measures which accompany the program structure. In my example yesterday of the health resources program, there was a subprogram to increase health manpower; an element under that was training physicians. The output measures for training physicians, I suggested, might be the number of positions trained, the number of manyears of training, the number of people who get M.D. degrees, or something of this nature. You can construct a reasonably good table of output measures, if you work at it hard enough, argue about it enough, and let it filter around for a while.

Output measures pull various plans together. The output measures in the program structure are useful in this sense. They're good managerial tools to help you focus on some things, to help raise a few questions, particularly where you've got a big organization and you've got a lot of people planning all kinds of things.

The output measures are a reasonably efficient way to bring together the plans which have been tentatively approved at the higher levels of decision-making. That is, you can lay out systematically, in an organized way, for the entire organization, all the basic things which it plans to do, which in turn are going to impose demands on the budget when these things are put into effect. The layout doesn't include everything that the agency plans to do, mind you. It includes those things which the agency is going to do and which are going to require dollars—which are going to require the head of the agency either to go before the legislature to request for money, or require the head of the agency to allocate dollars away from one thing and towards another thing.

These measures, laid out in this fashion, give the top guy in a large organization a systematic and orderly way to get the whole picture in front of him in relatively simple terms.

Without this systematic and orderly layout of the output measures, you can have a lot of disarray in planning.

At the defense department, Secretary Wilson never had the various plans laid out systematically for him; he, thus, didn't know systematically how many bombers, how many missiles and how many of everything else the whole defense department had planned. Mind you, the information was somewhere, but was never brought together in a systematic and orderly way for presentation. When Mr. McNamara required this systematic pulling together of the various things the defense department was planning, all kinds of weaknesses were revealed. For example, there were plans for guns, but no plans for ammunition; there were plans for all kinds of troops, but no plans for their transportation.

The University of California has about six or eight campuses now, and there are all kinds of things going on on all these campuses. If it has a nice program structure that ties together all the things it is doing, the top people at the university can get a systematic view of the things being planned for the entire university. But, when Charles Hitch went to the University of California, he found that the chancellor and the regents didn't have any idea what all the university people were really planning, nor did they have a plan which tied the different plans together.

I don't know if the University of Hawaii is large enough or not to have this kind of disarray existing within the organization. I don't know whether the department of education is large enough or not. I'm just not familiar with the scene here. Those are, however, your largest two departments, aren't they, in the State of Hawaii? Budgetwise, I think they are; I don't know in terms of people.

Similarly, the post office department found that it was very revealing to just lay out what it planned to do over the next few years. There were all kinds of idiocies in the post office plans which got revealed when the post office laid them out. The post office has a unit called the *bureau of operations* that runs all kinds of post offices. It also has a *bureau of research and development* that tries to develop things for other parts of the post office. The bureau of research and development could never get the bureau of operations to reveal what type of equipment the bureau of operations was planning to buy so that the bureau of research and development would know where to focus its research. By laying out the plans of all bureaus within the department, this disarray became evident.

Incidentally, I might note that in a large organization, one program structure may not be enough. Take for example the University of California. You might want to have the programs laid out on a campus-to-campus basis; you might also want to lay them out by fields, such as business or medicine, which cut across all campuses. You can have a series of displays.

Output measures tell you what's not being planned as well as what is being planned. The layout of the output measures is also revealing in that it tells you not only what's in the mill, but also what's not in the mill. Laying out what it is you're planning to do tells you also what's not in there; it tells you what you're not planning to do. This is significant.

Over at the department of defense, there were all kinds of generals and all kinds of planning groups running around with all kinds of plans. The first year Mr. McNamara served as secretary, he kept a little book behind his desk and laid out in it all those things planned by all these people and referred to him—bombers by different types and different numbers, missiles by different types and different numbers, etc. The people in the defense department used to refer to this little book as *McNamara's book.* When budget time came, the defense people found that those things which weren't in the book weren't included in the budget. There were no dollars for them. A hard realization came home when they realized that. They began to realize that the little book contained the plan that

Mr. McNamara was going to the President with, and that those things not in that plan were not going to be recommended to the President. They began to realize that they had to get it in that plan before their pet project got any further assistance, and that if they tried to do an end-run around Mr. McNamara to Congress, they were in for trouble.

These then are the things that your output measures help you do. They help to bring planning into a reasonable sort of array; they help to eliminate some of the disarray that can exist in a large organization. They serve as a useful vehicle for communicating around the organization on what's going on. They also help to reveal what's not being planned.

Output measures don't answer all the questions. Output measures, however, are not magic. They don't begin to answer all the questions. Let me tell you some of the things they don't do for you. I am going to borrow from the federal government area—just a couple of very small pieces of an area—to get the point across of what output measures don't do for you.

The atomic energy commission produces a lot of physical outputs. It has a structure that looks something like this. First, it has programs just for producing uranium and radium, and it has a weapons program and a reactor program. The reactor program includes the basic land use reactors and the water reactors. The water reactors are the navy polaris-type deal. The land use reactors are divided into various types—air cooled, sodium cooled, and so on. The outputs here are all simply reactors. The AEC has another program which I think is called water desalting—desalting the waters of the ocean.

The AEC lays out for each of these programs what it thinks it's going to produce and, on the financial side, the costs of producing the products. That layout gives you an idea of what AEC is doing. But, for the life of me or any of us, it doesn't tell whether AEC is making the *right* reactors or whether it is doing the *right* type of research. As a matter of fact, the people at the atomic energy commission are characterized and generally referred to as *a bunch of nuclear nuts.* When it comes around to the water desalting program, they've got programs for water that deserts the world. They're comparable to some of the programs that the computer nuts try to force on us.

The computer nuts want to build a new information system that's going to be monuments to them, I think, and nothing else. I know of a guy who wanted to tie-in a computer system with PPB. I think the computer would have been the size of the U.S. capitol. There would have been something like 2,000 on-line tapes and four stories for 60 billion bits of information and 2,500 disc files on line, all tied in with it—an unbelievable information system. I felt what in the hell is anybody going to do with all that information. The budget director doesn't even have time to read six pages related to a $500 program. So, I asked this computer guy, "What are we going to do with all this information? Who's going to construct the six page information sheet that the budget director and the President need to understand a big program?" His reply was, "I haven't thought of that."

Output measures, then, don't begin to tell you whether you're doing the right things or not. They do not tell you whether you've got good quality or poor quality. The simple display which lists output measures by program elements doesn't tell you anything more than what is being planned (and, by reading between the lines, what is not being planned). But, simply telling you what is being planned is not the whole story. A planner may have planned to produce tomatoes at $5 apiece, but that's not going to be apparent from a simple table of output measures. He might tell you he's trying to produce reactors at $2,340,000 apiece, but this doesn't tell you whether the reactors are good reactors or bad reactors, or whether you need the reactors at all.

One other thing I should mention about output measures. There's a tendency on the part of people not to give you good output measures the first time. You go into a bureaucracy and you feed instructions down the line and say, "Tell us what the output

measures of your unit should be," and they will send back all kinds of stuff. Usually, they'll describe their jobs efforts—the number of letters typed by the secretary and these sorts of things. You'll never get the functional type of description. You're looking for end outputs, but they had never thought of outputs in this way before. They don't even understand the instructions as you want them to be understood. So you get tremendous problems here.

Uses of Program Memorandum

A program memorandum can be a very inciteful document, if the people who write it want it to be an inciteful document. It can also be the blandest piece of paper; it can be just about as appealing as a good dish of flour and water, if they want it to be that way, and this is not hard to do. All they have to do is to take the old budget justification material and edit it a little bit in a new format. A program memorandum may not be worth the paper on which it is written for at least two reasons.

Program memos are written by people who are biased. In the forest service, the people there wake up each morning, look out and say, "Ain't trees grand." That's one of the functions of being in a governmental unit. You're not working there for the money. If you were, you ought to have your head examined. You're there because you believe in whatever it is the department's trying to do. If you're a geologist, you'll work for the U.S. geologic survey because you believe in geologic mapping and producing better geology. If you're a fish biologist, you'll work for the bureau of commercial fish because you believe in doing research on fish. If you're a lawyer, you'll work for the department of justice or any other investigating units because you believe in trying cases, doing investigations and so forth. If you're a forester, you'll work for the forest service because you believe in trees. If you don't like trees, you shouldn't be in the forest service, that's for sure.

The program memoranda, like the budget justification materials, tend to be written by people who fundamentally believe in what they are doing. They have fundamental beliefs in their program. If they didn't, they wouldn't be in the program. So they have a bias to start with, sometimes a very strong bias.

A program memo may not reveal everything. Another thing is, the bigger the governmental unit, the more potential there is for conflict, if you will, between the Congress or the legislature and the executive branch. The executive side doesn't want to show the legislature anything that is in any way critical of anything that the executive branch is doing. Consequently, if there's any fear whatsoever that these program memoranda will sneak through the back door into some legislative staff, the people in the executive departments want to make darned sure that they can stand the light of a full public hearing.

For the foregoing reasons, program memoranda can be totally inoucuous. On the other hand, program memoranda can be highly useful documents if they are written the right way. What does this mean for the legislature? What it means is that you've got to reject these documents that aren't prepared right.

Analysis aids the legislature in asking the right questions. Now, how do you determine whether or not a program memorandum has been prepared right? You determine this, not by your performing analysis *per se,* but by asking the right questions. It's very important that you ask the right questions. The right questions are those concerning policy and programs—"Why do we need the reactors?" "Why do we need these kinds of reactors?" "What are the alternatives?" Mind you, they're not questions concerned with object classes, like travel and personnel.

You get at the right questions through some kind of analysis and some kind of evaluation. This is where the real meat of the PPB system is—it's in the analysis and evaluation. Now, it's possible to ask the right questions without having a program structure, without having output measures. Of course, it's also possible to have a program

structure and output measures and fail to ask the right questions. The question that's not asked is a question that will not be answered. The program structure and a layout of the output measures facilitate asking the right questions, but the best help, the best aid, that I know of towards asking the right questions is having available to you some kind of analysis.

Analysis and the Legislature

This brings us to analysis and the legislature asking the right questions. We might as well face it. Let's take the bull by the horns. I indicated very briefly yesterday that analysis in PPB means strategic analysis. I want to spend some time developing the ideas of strategy as they relate to state programs.

The Meaning of Analysis

Analysis means change. We talked about alternatives. Allen Schick said that you want to say over and over again, *alternatives, alternatives, alternatives.* To be very blunt, when we talk about alternatives, we're talking about, among other things, alternatives to the status quo, and any alternative to the status quo means change. I want to emphasize the word, *change.* The PPB system is very much oriented towards a change in the entire system.

If there's any feared word in a typical government bureaucracy, it's usually *change.* The older it is, the more hidebound it is, the more traditional it is, the more the word, *change,* invokes fear and threat in the hearts of the rank and file—maybe not the leaders, since the leaders are usually much bolder than the people they are trying to lead.

Let's take education—that seems to be a hot topic these days. There are all types of possible programmatic changes here—changes in the curriculum: new math versus old math, more math and less reading, more math and less art; more technical schools versus more academic type high schools. These things generate a lot of heat in most people, and if you try to change what's going on, you're going to get a lot of people excited. It's inevitable in the process of change. People don't like to change. Thus, frequently, change encounters opposition. You know that as well as or better than I do. The whole idea of striking out with analyses is, the better the analysis, the more likely it is to recommend change and the more likely it is to recommend change which is feasible and meritorious. Yet, regardless of how meritorious it is, change is not likely to appeal to 100 percent of the people. I've rarely seen a proposed change that did appeal to 100 percent of the people.

The kind of change we are talking about are many times basic, fundamental change—not simply changing typewriters to get newer typewriters, not simply changing vehicles to get newer vehicles, but basic, fundamental change in direction and the way the program is run. This is why there is inevitably going to be a certain amount of resistance to the PPB system. To the extent that the PPB system really digs into the old-line programs and dredges up tradition-bound areas that are ripe for suggestions about how they can be improved or how they can be changed, there is going to be a certain amount of conflict about the whole thing.

The job of the PPB analytic staff is to come in and do analysis where analysis has not been done before—to do high-level, policy-oriented, strategic kind of analysis, where alternative programs and alternative policies are prepared and decided upon; to do the kind of analysis that is going to bring about changes and get people very excited.

If you set up a PPB staff and fund it for a few years, and after 5, 6, 7, or 8 years there's been no change, no improvement of any consequence in any analysis which it may have done, then you would want to ask that staff to justify its existence. On the

other hand, if there have been changes as a consequence of what that staff has done, it probably has run into a certain amount of flak and friction trying to get those changes instituted and implemented. As I said yesterday, the real payoff in this thing is getting more and better goods and services delivered to the people of Hawaii. Thus, if you don't get some basic changes implemented in your program somewhere, your analytic staffs are simply not doing the job they should be doing.

Analysis means conflict in plans. Moreover, there's bound to be a certain amount of conflict among the planning groups themselves. I think good planning inevitably has a certain amount of intrinsic conflict, if you will—intrinsic, in the following sense. Let me define this in a city-state setting. This whole example came to me from reading the New York Times one day. I read that there are three little cities out in Long Island somewhere. They are adjacent to each other; and they are relatively small communities. Apparently, because of the way the city limits evolved, one is about 80 or 90 percent colored, and the other two are about 80 or 90 percent lighter. Each community has its own little school district, its own school system, and its own principal. Each community is trying its best, within the sphere of responsibility it has, to improve its schools. The people in each community are trying to design a curriculum, curriculum materials, and methods of teaching for their respective student body groups. The colored community, particularly, is trying to design a special program tailored for its underprivileged, by developing new materials and methods and so on. At the same time, the NAACP, an organization outside the school system, has filed a suit in court to wipe out the school district lines and to force the three communities to have a common school system with bussing or collection at some central, large school. Now, if the NAACP plan is accepted, clearly all the other plans of the people for special curriculum within each school are going to be obsolete. You'll have to throw these plans out and start over again. If, however, the NAACP plan is rejected or fails, then we need the type of planning that these other planners are now doing.

Planning, by its very nature, has its overlapping—I don't want to say *duplication,* because *duplication* sounds like doing the same thing. Everybody in Hawaii loves everybody else and that's great, and I hope this continues, but honest men can differ over what the right course of action is. Analysis may help narrow the differences; it may help to improve the ultimate outcome, the ultimate resolution. But, people who are intelligent and of good faith are going to differ over the best way to do things.

It's because of built-in conflict that all plans cannot be simultaneously developed and accepted. This, however, is a part of good planning. It is having different people striking out at different levels with different overviews, and different directions, looking at things. This is the type of planning that so frequently is lacking in the government.

The Role of the Legislature in Analysis

Legislative attitude. The legislature can either be enormously important in sponsoring and furthering, or it can be equally effective in killing the type of analysis and planning that PPB calls for. The legislature, I think, really has this power.

Perhaps Allen Schick can comment on the state government when I finish on the federal government level, but I've known the people in the federal bureaus to say, "The budget business is all a game. We know that the congressmen and their staff don't give a damn for this type of planning. We know what they want to hear in order for us to get our money, and getting our money is all that we're after in the budget process. So, why should we go through this exercise? Why should we send them a document which has any implied criticism on anything we're doing?"

That is true. Many of the legislative committees in the Congress don't really give a damn about any kind of analysis. They are not interested in asking these types of questions, "Why don't you do things different?" "Why don't you do things better?" They don't care. Because they don't care, the bureaus don't care. In many parts of the federal government, the bureaus are stronger than the secretary. The secretary is just in the President's cabinet. He has lots of prestige and rides around in a big Cadillac limousine; he gets invited to give talks. But, he has no control over these bureaus. They can tell the secretary to go take a ride in his limousine any day they want to. This is because the chiefs of the bureaus frequently have very strong ties with the Congress, and they can do an end-run around the secretary anytime.

Your attitude towards the programs, your attitude towards the type of documents you want to see forthcoming, your attitude towards attempts at analysis are going to be tremendously important in either furthering the effort or killing it dead. If you as a legislator do not care about analysis, if you don't want to be bothered with reading it, then there's not likely to be much analysis forthcoming from the executive side.

A few people at the top may from time to time push a special study for special reasons. This has been done throughout the history of state government. But here we're talking about institutionalizing analysis; we are talking about having continuing, on-going reappraisals every year, not every part of every program every year, but some parts of some programs every year. We're talking about institutionalizing fundamental, strategic analysis in a way that's never been done in the state government before. We're talking about institutionalizing a group of people, making permanent a group of people, who are going to study ways to make fundamental changes in our organization. I expect that these people will always be shot at and will continue to be shot at from within the organization. They'll have enough troubles justifying and maintaining themselves within the organization that they're trying to change. If the legislature essentially thumbs its nose at these people, they'll be as good as dead.

I think this is one of the fundamental differences between PPB and what's gone on before. It's not that state governments have never made a plan about anything, that they have never analyzed anything—that would be a most unjustified criticism. State governments have always either formed a special gubernatorial commission or a special legislative commission or brought in a special consulting firm to do a study of this, that, or the other. Studies historically have taken place from time to time, here and there and now and then, but not on a regular, recurring basis and not as a part of a regular annual submission. You've not asked before for annual submissions of self-critical, penetrating documents, which really try to look into what's going on and to evaluate what's good and bad. I haven't seen any of the justification material that has come to the legislature from state agencies in this state, but I've seen enough justification materials for me to be confident in making you a bet as to what it's like. I could be wrong, and I'm willing to be proven wrong. But I'd be willing to put my money where my mouth is and bet as to what the justification material accompanying the budget submission is like. Anybody wants to make a bet? I'd bet 10 to 1 that I'm right. This, then, is the real foundation of PPB—the performance of some meaningful, strategic analysis.

View programs and budgets together. Before I got here I made a list of a number of things that the legislature can do to improve its budgeting process. I found out when I got here that you're already doing them, so I can just check these off. One of the things I listed was, *create a commission on state goals or equivalent.* I'm told you already have a good statement of statewide goals, and each year the legislative auditor's group is going to check on the various programs to see whether there are programs to meet the goals and to see whether each program is fitting into the overall statement of goals. I think that's very good.

Another item I listed was for the legislature to so organize so that you bring together in the legislature, in its decision-making process, two things. *First,* bring together all appropriations to get what I call the whole fiscal picture.

People used to ask me, "What's Congress doing about PPB?" That's an impossible question. The Congress rarely acts as *the* Congress. It's a collection of committees. Each one is full of prima donnas, the most prima of the donnas being the chairman. The committees all act independently of one another; they don't act with a unified voice on budgetary matters at all. They have no way of bringing the budget to some kind of a head and then weighing the budget, if you will, against the income. This has led to the current impasse with Mr. Mills. As chairman of the ways and means committee he says, "I don't like the way the budget's done," but he's really powerless. I don't know if he's a member of the appropriations subcommittee, although I'd guess he is—he's been around long enough. But he has no real power.

There's no mechanism within the whole Congress to get a congressional look at the entire budget and weigh that against the income of the country and decide whether the taxes need to go up and the budget needs to go down. The Congress has no real mechanism for bringing these things together in any kind of a reasonable way. They appropriate the budget all right; by the end of the year they have a budget. The Congress starts in January and usually begins to send out appropriations bills sometime around April, but it's not until November, when it winds up, does it know how much in total it had appropriated and what the budget is going to be.

You may have read about the office of economic opportunity people going without paychecks for a while until the Congress got around to a special appropriation. On the first of July, it started voting some kind of special enabling legislation to allow those agencies whose appropriations hadn't yet been voted on to meet the paychecks until the Congress got around to the appropriation bills for those agencies.

It's only when the Congress has adjourned that you can add up all the separate bills and get a congressional budget. It just comes out piecemeal, spread over about a six-month period, normally.

My advice to the legislature is, don't let yourself get into this box. My understanding is that you have a 30-day session, so that you can't spread your budgeting over six months and that you do have a way of bringing the whole budget together and looking at it *in toto* and making a much more rational decision than the federal Congress does.

Second, bring together the capital budget and the operating budget, so as to enable the legislature to make trade-off comparisons. As technology in the various fields develops, there'll be an increasing number of things where capital expenditures can be substituted for personnel. The only way to consider the capital expenditures is by looking at what it does by way of replacing personnel and other operating costs. That's the whole reason for making a number of capital expenditures. To look at one (capital or operating) in a vacuum from the other makes no sense whatsoever and is a totally irrational way of making decisions. I take the position, as Allen did earlier, that for funding and for other purposes, it makes perfectly good sense to separate your capital budget from your operating budget. But, for a number of decisions, the capital is simply a replacement for operating people. If you don't look at it that way, there's no sense in buying it.

Insist on analysis. The idea of an analysis is to improve the dialogue which takes place. Now, in an area like the department of defense, the dialogue which takes place is primarily around the budget. But, a lot of other dialogue, naturally, of non-budgetary matters come up in government all the time. In one way, these are not related to the PPB system, but in another way I think they are related to the PPB system. They don't require dollars and cents, or the dollars and cents implications are not in proportion to what you

get, so to speak. I think that the spirit of PPB, which is the spirit of studying carefully, is not to make seat-of-the-pants judgments, but to bring a collective wisdom to bear where it can be brought to bear.

The point of all this is that before you pass the basic enabling legislation that sets up programs, you should insist on having some analysis behind them. Before you start budgeting for the programs, the basic legislation which outlines the programs should be analyzed to see whether there are better programs available or whether there are loopholes in this design.

The government is forever designing programs that seem to turn out, with a little bit of retrospect, to be relatively bad programs. Even congressmen have a knack for designing bad programs. Frequently, I think this happens because the programs are not really analyzed beforehand. You cannot correct bad programs with good budgeting. You just can't do it. Many times I've seen people sit around and worry about how many dollars to allocate for this thing which is a bad program to begin with. You can get your foot in a bear trap at that point. That's a real problem. The spirit of PPB says, "Subject much of your basic legislation to analysis before it gets to the budgeting stage."

Let me give an example. New York State has got itself in one heck of a problem right now over its medicaid program. It set the program up, it got started down the road, and then suddenly it found out that it was spending an enormous amount of money—far more than it thought it was going to spend, far more than it had available to spend. So, now, New York is in a politically unpleasant position of having to cut back the benefits to the various beneficiaries. In this year's proposal by Governor Rockefeller, the state proposes to cut out a lot of benefits to a lot of beneficiaries. This is not politically the most desirable thing to do, I suspect. It tends to reverse the trend of this welfare program. New York should have been able to foresee this if it had done some good analyses. The whole medicare program is an incredible boondoggler, really. I've heard Otto Eckstein and others say, "How did this come about?" They really would like to demand, if they could demand such a thing, an audit of those things. How did we get ourselves into a situation where the primary thing the program seems to have done so far is just to pour money into the pockets of the doctors and the medical profession? It's not at all clear that we're getting out benefits anywhere in proportion to the money that we're putting into the medicare program.

Ask the strategic questions. It's easy to criticize government programs on the surface, but to take your role as a legislator seriously, you need to give credit where credit is due. Public programs have not evolved out of total stupidity or total ignorance. They have been evolved by people of good will, trying for a long time to get government support for their programs in one way or another, even if the programs were for their own interests. But, by just asking the right questions, we can seek a certain measure of improvements in government programs.

If you start off with the assumption that you're doing everything right, then the question is, why have PPB? But, if you take the assumption that we can still make improvements, now and next year, that there will be evolutionary improvements as time goes by, then you need to start by asking the right questions.

Any government program, no matter how mundane or how relatively small, has associated with it a number of strategic questions, if you want to ask the questions. I don't want to take the example of the B-70 or the minuteman missiles or the polaris program. I want to take as an example a program that costs about $3.7 million a year. That's not big money even by state standards. The program I have in mind is that little program called NACI—national agency check and inquiry—run by the civil service administration.

Just about every mistake in the book has been made in this NACI program. The mistakes are classic and they were predictable. If you apply for a job with the federal government, your application form is sent over to the civil service commission for a NACI check. The people in this program go through a card file to see whether your name is in the file. The names in the file are secured and updated from hearings had before the House Un-American Activities Committee, and from reports received from the FBI and the CIA. They also mail out, I think, 11 questionnaires to the people you list on your application as references. They also mail out questionnaires to the police department, to the places where you've worked in the past, to the schools and universities which you've attended. They ask if any of these people know of anything about you that indicate that you're not a loyal American citizen, that you cannot be trusted, and so forth.

Now, the civil service commission did a study on the NACI program. I want to give the commission credit, for this was a self-instituted study in the days before it was required to get into PPB. The commission said, "Let's stick our little toe in the water, and see if we like the temperature." The civil service people weren't in Hawaii, where you know they would have liked the temperature. So the commission stuck its little toe in and did this study on the NACI program.

It assigned the study to two people who had been associated with the program for years and were totally and thoroughly wedded to the way the program was being run. This was the commission's first classic mistake. You can predict that people who are totally and thoroughly wedded and committed to a program the way it's been developed and run, are not going to be particularly critical or imaginative about dredging up alternatives to anything.

The commission's second classic mistake was when it prescribed the classic government procedure in making the study. It said it wanted a thorough reappraisal of the whole program, but gave these guys about three weeks on a part-time basis to do the study. You can predict, on the basis of that, that you couldn't get anything very effective out.

The two guys started out first with objectives. You can almost predict that people who have been with a program for a long time, on their first try in defining objectives, are going to come out with objectives which are awfully fuzzy. And, indeed, the objectives were fuzzy. The analysts came up with two objectives—one, to keep security risks out of the government, and secondly, to keep undesirables out of the government. They were a little bit vague about what *undesirables* meant. I suppose if you read between the lines it meant alcoholics, prostitutes, homosexuals, and various people that fit this description.

If you've got more than one objective, you've got to be a little bit precise about which objective is dominant and which objective is secondary and how important the secondary objective is, compared to the first objective. But here, no matching was made; the analysts just said "Here are our objectives."

Now, the interesting thing is that the analysts wrote in their analysis, as a historical note, that the government somehow existed from its founding until the year 1949 or thereabouts when Mr. McCarthy was holding hearings. How the country existed without a basic check program from 1776 to 1949 was not alluded to, but it was quite clear in the eyes of the writers that the republic would flounder for sure if the NACI program didn't continue. It would have been interesting had they indicated that, because of Mr. McCarthy, a retroactive check had been made on all the employees of the federal government when NACI was first instituted and how many security risks and how many undesirables they had found. But, nothing like that was included in their writing. In fact, there was no indication of whether or not the program was a total flop and whether or not it should be written off. As a matter of fact, it wasn't written off; it's now a permanent part of the institution of government.

After stating the objectives rather fuzzily, the analysts studied alternatives. One of the alternatives that they studied—and this is a fact—was, should we continue sending out 11 questionnaires or could we reduce it to 8? They admitted that they had found that sending questionnaires to references supplied by the applicants usually didn't produce very much useful information, which I imagine you can suspect, except they had been doing it, mind you, for about 20 years. It took them that long to discover that they didn't get much useful information back from the references supplied by the applicants themselves.

The second alternative was—and this was really the only other alternative they came out with in the whole study—should we continue maintaining the large file index of names manually or should we buy a new electric rotofile? Through evaluation, they determined that the cost should go down from $5.46 per check to $5.37 per check if they had a rotofile.

This is not a case method, so we won't draw out what some of the real alternatives might have been. But some interesting questions come up. Remember the two objectives: to keep undesirables out of the government and to keep security risks out of the government. Now, if the primary objective is to keep security risks out of the government, why does every new secretary hired by the bureau of sport fisheries, for example, get a NACI check? How much security information can the secretary in the bureau of sport fisheries compromise? Why don't they save the money and have the check made, if and when the secretary transfers to a sensitive position? That's one question. Another question is, if the primary objective is to keep undesirables out, couldn't we have a sort of a sampling, screening procedure, where we check one out of two, one out of five, or one out of ten or something like that, instead of checking every individual who goes to work for the government? To go back to the question of security risks, somebody told me that something like 40 percent of all people who go to work for the federal government leave after six months. If this is so, why don't we wait until the new employees are in their jobs for at least six months before we check on them, unless they are in security-sensitive jobs?

Well, none of these strategic alternatives was considered by the people who did the study. They didn't ask the right questions. They just assumed that this program that's been around 20 years must now go on as long as the republic continues.

Well, here's a small program with a small amount of money, tied with nothing but government red tape, and only God knows what the output of the program is. Here is a program where they are processing papers almost for the sake of processing papers. There clearly is a number of, what I would call, strategic alternatives—questions that need to be asked which were not asked. The Congress is not asking them. The staff of the Congress is not asking them. The civil service commission is not asking them. The bureau of the budget is not asking them—it doesn't have enough time to worry about a $3.7 million program in a $180 billion budget. But, this is the type of thing where a little analysis would have helped. The civil service commission had two people looking hard at the NACI program for six months at a pay of, I think $10,000 each for the six months, or $20,000. It probably would've saved the government a couple of million dollars a year for the next—I don't know for how long—if a proper analysis had been done. A little analysis might have very well paid for itself.

Mind you, any analysis would be challenged. An analysis would be controversial within the area that it affects. If the NACI program analysis had proposed to wipe out one-half of the program and one-half of those people checking the card file, the analysis would not have been readily acceptable. But, there are strategic issues, strategic questions that ought to be asked, perhaps not every year, but regularly.

Now, what's this got to do with the legislature? I would say this. The legislature should exercise initiative in asking the most important questions, in asking the right

questions, in asking them in the right way, and in homing-in on the agencies. The legislature can provide a service to the state by making the executive branch shape up and by keeping it shaped up by asking the hard, important questions, rather than the piddling little questions.

I don't know anything about your legislature, but I know what happens in the federal Congress. A sort of Gresham's law takes effect. You know what Gresham's law is, don't you? It's an economic law that says you have two kinds of money—good and bad—and that the bad money drives out the good. Well, the little trivial, insignificant things seem to drive out the important things in the legislative process that goes on before the Congress. I've got examples after examples of this one.

Focus on major issues. I'd like to mention something here—and I understand this was a little bit controversial the last time, so I want to plunge into it again—concerning Parkinson's law. Parkinson points out that in budgetary matters, there seems to be an inverse relationship between the amount of debate and the amount of money involved—that the amount of debate seems to be inversely proportional to the sum involved. I'm sure this never happens in Hawaii, but he claims it happens elsewhere.

All too frequently, particularly with an input budget, when people are not particularly happy with the program somehow—when they have some familiarity with it themselves but through one channel or another they receive various communications that make them feel that they should seriously question certain aspects of it and they're having trouble getting at it—they frequently use one device or another to get at it. That device is sometimes effective, sometimes not, and is oftentimes not the most direct method. They take the minuscule little things and argue about them almost excessively, while the big money, the big issues, slide right under the table in the budget-making process. The spirit of PPB, if you want to call it the *spirit of PPB*, starts by asking, "Are we doing the right things; have we got the right programs; are we aiming them at the right people, in the right direction, and at approximately the right speed?" And it works its way down.

The books are full of examples of committees sitting around debating at great lengths on little things and then running out of time and hurriedly voting on the big things—you know, "throwing out the baby with the bath water," as they say. Parkinson likes to point out examples from the universities—he takes the university examples because he's from the university.

At a budgetary meeting at a university, the first proposal is for a betatron. Now everybody has heard of a betatron. Everybody knows that the university down the road just got a betatron. Nobody knows just what the hell it does; only the physicists know, but nobody really can question the physicists. So a physicist gets up and makes about a three minute spiel and points out that X university just got a betatron and says it only costs $7.5 million. Very rapidly, in about five minutes, the budget committee votes $7.5 million for the betatron. The next guy who gets up is a poor English teacher, and he tells the budget committee that he needs a new chalkboard; he's gotten an estimate that shows it's going to cost $59.75. Since everybody knows something about chalkboards, all members of the budget committee question this, and they finally resolve this after 20 minutes by telling the English professor that he really ought to go out and get two more bids for chalkboards and then come back and see if they can resolve it. The next guy that gets up proposes a new coffee pot for the faculty lounge. Now everybody knows how coffee ought to be made; they all drink the stuff. After 30 minutes the budget committee finally adjourns with nobody being told to do anything, much less getting a new coffee pot.

There are many examples on the federal level of the federal government sitting around and asking all kinds of little questions about little parts of the budget and then turning around and voting the whole thing. One great case—I'll cite it again, although I cited it earlier—is that of the committee which is concerned with the budgets of the treasury, the office of economic opportunity, and the executive office of the President, including the bureau of the budget. I think they probably deal with 10, 15, maybe 10 billion dollars of expenditures. The committee members sit around for 20 minutes in full committee to argue over whether the customs bureau should get a new speedboat for the San Diego Harbor or not. Now, there are a lot of interesting questions that they could ask instead of that. They could ask, for example, "Why does the customs bureau spend 80 percent of its time inspecting a group of tourists who are 99.4 percent honest?" "Is this a good way to allocate the time of the masses of people in the customs bureau?" "Why do we have an inspection procedure which is medieval compared to what they do all over Europe and other civilized countries of the world?" But these questions never get raised. These would be, I would say, some of the more interesting questions on which the committee could spend its time discussing and quit worrying about the speedboat in the San Diego Harbor.

They did the same thing at the post office. They spent, I don't know how long, debating whether the post office should have a $2 million program to train people to handle labor disputes because they have 13,000 bargaining units in the post office. They finally struck out $2 million and trained local supervisors to deal with labor unions. Then they turned around and voted an increase of 7,000 positions for delivering the mail, referred to within the post office as *massaging the mail.* You can imagine what those positions cost. You know that if you've got more mail, you've got to have more deliverymen. It's as simple as that. No alternatives, no questions of whether the post office is using the most efficient means to deliver the mail or not. There is an interesting projection being kicked around inside the post office. It hasn't been shown to the congressional committee yet. The projection says that if the mail keeps increasing at the current rate and the post office's efficiency keeps going down at the current rate—the productivity has been going down about 2/10 of one percent a year over the last four or five years—by the year 2013, every able-bodied man in America will be carrying mail.

There are many documented cases in the defense department. One of the classics is this. Years and years ago when it had a $50 billion budget—it's $75 billion now—the Congress spent a considerable amount of time wanting to know why a new airfield that was going to be put up in Arizona was going to have three underground fueling hydrants, and why it couldn't get by with two underground fueling hydrants. There were lots of other questions like, "Do we need the airbase?" "Why don't we buy missiles instead of airbases?" and all kinds of things like this, which should have been, I think, much more appropriate questions at this high decision-making level.

Mind you, sometimes it's possible, as a strategy in budget review, to go into the details. But you do this with a purpose in mind. If you have a purpose, that's all right. Now, I know one budget director in one state who takes a budget from a department and he picks an item, usually more or less at random, unless he sees one he knows something about, which requests an increase. He takes the justification and tears into it like a tiger. He raises every question he can raise about it, he uses every trick he can to put the department head on the defensive about this increase. He asks the programmatic type questions: "Have you examined what you're already getting?" "Have you looked at ways of trying to get more from your current employees without just adding people to it, without adding dollars to it?" If he's successful in demolishing the argument or the reasons given for the increase in this particular item, he then uses that to deny all increases requested by this department until it comes back with a good explanation for all of them.

Well, that's a sampling device which has some merit. But, what I object to more than anything is the guy who picks on only one item—glances at one item—and then says, "Well, it's almost time to adjourn, shall we take a vote on it?" and then they go home. You don't really accomplish much that way except that maybe you leave one little item out, and then, as I say, "you throw out the baby with the bath water."

Well, the spirit, then, of program budgeting is to start off with the major issues and to ask yourself the really major questions. These questions have to get churned up by analysis.

Let me just give you one little specific example of how thinking about something throws new light on it. The bureau of narcotics in the treasury department started doing PPB. The narcotics and customs people used to take great pride when they found a large cache of dope coming into the country—they felt they had done a great thing. This was one of their output measures—how much of this stuff they apprehended. If they got a really large cache, they thought that this was great. As they sat around looking for evaluators, not an output measure, but an evaluator of this thing, they began asking themselves what you might call the hard questions. Some bright guy thought for a while and said, "You know, when you get a large cache, that means that the guy who is bringing in a lot of dope into the country is putting all of it into one little place—he's putting all of his eggs in one basket. If you were a smuggler trying to get dope into the country, would you put all of this umpteen million—let's say, $5 million worth of goods—in one place? What must be his opinion of the enforcement system if he's willing to risk it all by putting all that dope in one place?" The answer came out, of course, that the guy with all this stuff probably doesn't think much of the enforcement system. So, now, whenever they get a large cache rather than a series of little ones, they really ask themselves, "Have we got some loopholes in our system here?" rather than patting themselves on the back and going away quite happy about the whole thing. Now, they take that as an interesting sort of danger signal.

As they did some analysis, the narcotics people also came up with another interesting thing. They asked themselves, "How can we measure the efficiency of the system, not in output measures, but by some evaluator?" Somebody came up with the idea that's kind of interesting to me. He said, "Well, you know, if we're successful, the price of dope on the black market should go up." So, they started collecting statistics on the price of dope at major centers such as Los Angeles, New York, San Francisco, and various places like that. This turned out to be a pretty good index of the efficiency of the apprehension system. It not only turned out to be a good index, but it also turned out to have other usefulness. Once, a petty diplomat was apprehended coming across the Canadian border near Montreal with a rather sizable amount of dope. Within two days after his apprehension was known—at least through the grapevine—the price of dope jumped in Los Angeles and only in Los Angeles. This, of course, led to a line of investigation which ultimately netted quite a number of arrests. By having available to them statistics which they never would have had if they had not started on what you might call a PPB evaluation of their whole apprehension program, they would not have been able to make these arrests.

How to ask the right questions. How do you ask the right questions? This is important. I've looked at a lot of government programs, and I've worked on various programs. The people that run government agencies are really not as dumb as, maybe, I'm implying that they are; I don't mean to imply that they are. They are people of good will. Their programs have been evolved sometimes, as in the case of the post office, over years since the founding of this country. The people who evolved them got where they are today not out of total ignorance. Consequently, to make sophisticated criticisms and to ask sophisticated questions—questions that can't be brushed off with an answer because the question is naive—requires an examination of the analysis; it requires somebody to sit down and pull out the information that is available about the program and the department and work it over, sometimes spending weeks on the rework.

From my experience with programs in the federal government, I can tell you that even in cases of relatively simple programs, relatively uncomplicated programs, programs which we as laymen can understand, it took us a considerable amount of time to get to the point where we could ask really sophisticated questions which made the agencies and the program people *squirm*—if I may use that term. The first questions we asked usually turned out to be, with just a little retrospect, very naive—they were questions of the type that anybody familiar with the program could brush off quickly. In one case, it took a graduate student and I working together approximately three man-months to produce a paper on the timber program of the forest service which really got at asking the right questions—questions which the forest service couldn't answer with off-the-shelf, pre-packaged answers; questions which the forest service people had to take home and do their homework on before they could come back with some answers. If we had gone off and shot from the hip with a bunch of questions about our first impressions of the timber program, they would have been awfully stupid questions.

Encourage competing analyses. I want to say a few more things about analysis. It's been said over and over again, in many of the readings you've had in different contexts, that the purpose of analysis is to improve the dialogue which takes place, both in the legislature and in the executive branch at the high levels of decision-making. The analysis should not govern the decisions which are made in any automatic or routine way. There's no reason in this world why you as legislators should become captive to the analysis. I've never seen an analysis yet which was above any kind of good, reasonable criticism.

What you can do and what you should do in many cases is to sponsor competing analyses—that is to set up an arena where people can compete to see who can do the best job, who can do the smartest job. There's a lot of money at stake in programs. Analysis is a relatively cheap thing to undertake in many cases, particularly if the analysis is done with a pencil and paper and a blackboard.

Mr. McNamara, when he has a major decision to make, when the defense department is going into what is called a *major buy*—a major buy is at least $1 billion; sometimes it involves several billion dollars—typically gets at least four analyses as a check on each other. For example, in the airlift-sealift area, when he's going into a major buy of airplanes or ships, he gets an analysis from the air force, an analysis from the navy, an analysis from his own staff in the office of the secretary, and an analysis from an outside group such as the Rand corporation or one of the so-called *think* organizations.

Mr. McNamara has found, among other things, that no analysis is perfect. The air force is very, very good at telling you what's wrong with ships. Its analysis will tell you better than anything else what's wrong with ships and why you should buy airplanes. Of course, the converse is true for the navy's analysis. Presumably, his group in the office of the secretary tries to be impartial between them, but his people are human, too, and these people have served time in the navy or in the air force. The fourth analysis from the *think* group is intended as a check on them all.

(I might add incidentally, that the analysts in the air force are responsive to the generals at the top of the air force, and the analysts in the navy are responsive to the admirals at the top of the navy. The generals or admirals review the analysis before it goes forward to the secretary; the analysis, therefore, does not go around the top decision-maker, but rather through the respective services' decision-maker. If the generals or admirals are not happy with the way it reads, they send it back down to their analytic groups before they send it up to the secretary.)

After he gets all of these analyses, Mr. McNamara gets all the people together and, in a very polite way of knocking heads together, says, "Now, there are certain conflicts between these analyses. Why don't you two go off and write me a paper which resolves as many of the conflicts and different conclusions as possible and highlight the others?"

This sounds like a simple assignment, but you can spend weeks or months, writing this paper, trying to resolve these conflicts. In the end, I think the type of decision that comes out, the type of decision on which hundreds of millions or even billions of dollars swing, is considerably more informed than the previous process which was relying totally on intuition, on judgment, on insight.

When conflicts are resolved to the extent they can, Mr. McNamara writes what's called, a *draft of program memorandum.* Typically, the program memoranda are written in June and July to be submitted to the bureau of the budget in late September or October. He circulates these draft memoranda among the joint chiefs of staff, not among the analytic groups, and says, "This is what I have tentatively decided for next year. Please give me your best response," and he gives them about a month to think about the proposals in the memoranda. Any one of the joint chiefs can write back on any memorandum and say, "I don't like the analysis behind it. On the basis of my judgment as a military commander in the field, I don't care what the analysts say, I don't care what they all say, I think you are making a mistake." They have that authority. Mr. McNamara then takes the responses into account. He may go with a program or he may not go with it; he may change his decision. In any event, then he rewrites the memoranda and submits his final draft of the memoranda which go through the usual process.

Staffing for PPB

Legislative staff. I would suggest that as legislators carrying out your legislative functions of critics of the executive branch and of shapers of programs, you need some kind of good staff help to assist you in asking the right questions. You need a staff to do some work for you, to help you do some digging.

It's just not possible for a legislator to take a submission home, read it the night before or spend the whole weekend on it and come back and ask questions which a good administrator can't answer right off, just like that. It just isn't possible. Government programs are too complex, there are too many objectives, there are too many other considerations to ask the really inciteful questions just *boom, boom, boom.*

Similarly, it's easy enough for the legislature to generate alternatives; but, alternatives have to be thought about. They have to be analyzed. They have to be kicked around. You need some staff people to help you sift your own ideas first. Otherwise, you are going to generate things which might, with maybe 30 minutes of thinking or maybe 2 days of thinking, turn out to be obviously pretty bad or obviously pretty infeasible.

You ought to have an analytic staff which has a capability, not of doing comprehensive analyses of all departments each year, but which has at least a viable *threat capacity,* if you will. By *threat capacity*, I mean this. If you don't get good, critical studies out of the departments, you should be able to turn your legislative auditor's group on to the programs of the departments, maybe next year, maybe year after next. Every agency should know that sooner or later its programs are going to be subjected, not only to an audit to see if it is overspending or something like that, but to an analytic evaluation—to a critical, searching evaluation; one that really digs in to see whether the agency is doing the right thing, whether there are alternatives which are being overlooked which could improve matters, and so on.

The legislature needs good staff assistance, if it is to be effective in this thing. Otherwise, all the initiative will be on the side of the executive. If you don't have a good staff, you'll always have one hand tied behind your back. This is what generally happens in the federal Congress. They are so understaffed that it is really pathetic—the size of the staff compared with the size of the problems they are trying to cope with.

I'm not an expert in the organization or shaping of legislative staff help. I don't know whether the staff should be responsive to the ways and means committee and to the appropriations committee only, or responsive to the entire legislature. I'm not going to say. But you are going to need good staff help.

The staff doesn't have to be a huge one, particularly for the State of Hawaii. It does not have to be a tremendous staff. It should be a staff, (1) of good quality, and (2) of some minimum size, big enough to be a cohesive unit to keep itself together. If you have too small a staff you won't be able to hold on to your employees. It should probably consist of at least eight or 10 good analysts, because if you have a staff of four or five and you lose two for some reason, you're darned near stripped. The staff may, from time to time, want to hire some outside consultants. You want to consider giving the staff money for this from time to time.

You, of course, have got to utilize the results of the work of your staff. If the legislators don't want to read the analysis, or don't want to be bothered with the analysis, or don't want to concern themselves with the major issues, then these major issues are inevitably going to go by default. The decisions on these issues will either not be made at all and the government will kind of rock along this year the way it did last year—and that means by 1975 you'll be doing things in just about the same way you did them in 1935—or the entire initiative will be left up to the executive branch. Either there will be no change, or the motivation for substantive changes will come from the executive. There is no reason in the world why the legislature cannot and should not have some initiative in the matter of proposing solid, constructive changes in the way the government is run. The best way to do it, I think, is to have yourself a good, analytic staff to play the role of a devil's advocate of your various programs.

Executive staff. Moreover, talking about the roles of analysis, you need to have analysis done in various places in the government. You need to have analysis done within the departments in the executive level. The departments are going to have to have analytic capability. If you do analysis elsewhere, the departments are going to have to be able to respond to that analysis—even that analysis which may be done by a central executive staff, such as the central analysis group, which has been formed recently. So you will need analytic staffs in the departments.

Somewhere in the government, in at least one place—and I would suggest in at least two places—you're going to need other analytic staffs. It's been my experience that in a government of checks and balances, where the executive branch is jealous of its role and power and the legislature is jealous of its role and power, it's very difficult to get an executive department to surface any kind of analysis which is, in any meaningful way, critical of the programs being run by that department. It just usually isn't in the order of business unless you force it out somehow. One way to force it out is to inaugurate a legislative responses study, which I just mentioned—a study by the legislative staff to check on the study made by the department. A response study, which is critical, might surface the shortcomings in a departmental study. The department can, of course, try to rebut or criticize the legislative study.

There is need, too, for a central analytic staff at the governor's level. The shortcomings found by the governor's central staff may or may not surface to the legislative level. This is a problem you may have to face—how are you, as legislators, going to get information from the executive branch? But, nonetheless, there might be a lot of in-house fighting within the executive branch, and there is need for a central staff to sort of police the various executive departments. Only after the secretary of defense set up in his office a good, competent staff responsive and loyal directly to the secretary, did good studies really start to come out of the services. It's only through this kind of central staff work that you really become effective in this game. I think knowing how to use a good

staff, knowing how to assemble a good staff and how to use it well, was probably one of Mr. McNamara's greatest strengths. It's what has made the office of the secretary of defense into a truly cohesive, functioning office and not three disparate services which it used to be.

Just as a matter of point, in the old days people used to think of the office of the secretary as a place where maybe three or four secretaries and a couple of aides tripped around lightly. That used to be a pretty accurate picture of the office. The office of the secretary of defense now is more than just a little office with a secretary in it. It now has well over 1,000 people in it. This is what makes the secretary of defense an effective administrator. The lack of such a staff is what makes the secretary of interior, the secretary of commerce, the secretary of agriculture—you name it—very weak administrators in general. They have no staff to speak of. They have no staff to rely on. No staff which is loyal directly to them as the heads of agencies.

Misuse of PPB

The other point I want to make is, don't misuse PPB. Don't try to make PPB work in an area where PPB is not the appropriate way, and then turn around and damn the PPB system because it doesn't produce what you want. The PPB system, by the very initial *B* which stands for budgeting, is concerned with resource allocation. It's concerned with those areas where more resources mean more of some kind of desirable output, fewer resources mean less.

Now, there's a number of policies and decisions you make at the governmental level which have important impacts on the community and on the state, but which are not directly resource-related. Let me give you a few examples to illustrate how the budget is not the appropriate way to get at a lot of important issues. Regulatory issues is just one of many. Let's take a federal regulatory agency that concerns the state—the civil aeronautics board.

The civil aeronautics board is about to make some kind of route award in the Pacific case which will affect Hawaii, more or less—it'll give you another airline, at least. It's making a number of decisions all the time—great decisions, such as the route award. Let's suppose that the President and the budget director have a meeting one day and they agree, 100 percent, that the decisions which this board is making are bad decisions, that it is making the wrong kinds of decisions. The way to do something about that is not to cut the budget 10 percent or 20 percent; all you'll be doing by cutting the budget is to slow down the rate at which the board is making the wrong decisions. You're just going to get fewer bad decisions. So, that's not really the way you go about trying to change matters. The way to change matters is either to get new people on the board or to change the legislation, or to submit some legislative programs to the Congress. The budget is not the appropriate tool to get at that type of situation. Therefore the PPB system is not going to help you get at that type of situation. There's an awful lot of parallels in other programs. I could draw one in education, if I kicked it around long enough.

There are other programs, though, where the impact of the programs is roughly in proportion to the amount of money put in. Suppose the President and the budget director think that there are too few job corps trainees. Well, then, you allocate more money to the job corps. Similarly, if you think there is too little health care, you ought to allocate more money to health care. In these cases, the budget is the way to affect the programs. It's through the budget, what's called the budget process, that you get at these programs.

Similarly, the program structure is not the way to go about solving all the problems. This one came up once in the area of conservation. Conservation is oftentimes more of a question of what you don't do than what you do. What you don't do doesn't show up

in the budget very much. It's a matter of procedure that you follow. I remember one guy in the corps of engineers who felt that the corps paid no attention to conservation at all when it went in and dredged out rivers and things, destroying all the wildlife in the area—fish and everything else. He's probably right, but you don't get at these practices through a program structure. There is a handbook on how rivers should be dredged. You don't go into the corps' budget, but into its operating manuals to get at these practices.

There's a lot of things that people try to use PPB for when they shouldn't. It's like trying to use the monkey wrench when you need a screwdriver. I hope that you people realize that PPB doesn't apply to every problem that faces the entire state government.

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Participant: Has anyone ever dared to propose to Congress that it should institute PPBS?

Haldi: Oh, yes, I proposed it. Other people propose it all the time. Congress can't even collect itself to act on this proposal. Other congressmen have proposed it, but there is a sort of a void, you might say.

Incidentally, if you have carryover questions from Allen's talk this morning—we had a meeting earlier and we agreed we'd both field questions at this session—don't feel you should limit yourself to questions about what I said.

Participant: (Inaudible)

Schick: I would make two comments about it. I think it's justifiable for legislators, and understandable as well, to adjust themselves to things that they have an understanding of. All people behave that way. One of the things that PPBS tries to do is to expand the range of legislative understanding so that they can ask a different range of questions. So, the rule will continue that you will ask about things you're familiar with, but under PPBS, you ought to become familiar with more of the different things.

A second comment is that, regardless of the system that we have, a legislature is not going to be able to address itself to all aspects of administration. Even if the legislature develops a sensitivity to the big things versus the smaller ones, I think it might, in some context, make sense for a legislature to use sampling techniques—that is, sometimes zero-in on small things. It's not a statistical sample, in the sense that a statistician might speak of, but you sample the totality of the program by looking at a particular area. If that small area makes sense, you have somewhat more confidence that the whole program is operating okay.

Participant: The department of defense, you stated, has an analytic staff in the office of the secretary. Does it initiate studies regarding programs in the various services—army, navy, air force—or does it simply review the studies made by the staffs within the services? What about other departments? Do they have staffs which originate program memoranda?

Haldi: Yes, the staff of the director of the department of taxation originates such a memorandum.

Schick: I don't think that the fact that the department head has an analytic staff limits the head of the department to do the analysis in the sense that he is the only one in the department who does analysis. One of the side benefits of the defense experience was that, as a result of McNamara's utilization of the analyses of the departments of the air force, the navy, and so on, other subordinate levels began to produce better analyses for the secretary. In other words, they recognized the need to do this. So that, beginning with analyses done in the office of the secretary of defense, the end result was a great analytic move throughout the department.

Participant: Let's take an alternative to one of your theories. The legislative mind is somewhat different from the professional analytical mind. Maybe the man who is buying the boat in San Diego is working on ulterior motives. It may be that some philosophy is involved—it may be that the whole appropriation swings on some switch in that philosophy. Rather than condemn the committee for affording too much time on it, ought you not consider that perhaps the boat was a leverage to gain other things—that perhaps there are other things involved? Has this occurred to you?

Haldi: Yes, as a matter of fact, I know the budget director of New Jersey uses this procedure. He takes an item in each department submission to him and tries to demolish the justification for that item. If he's successful in demolishing it, then he usually refuses all budget increases the department asks for in its whole budget and sends it back to the department. If your purpose is to evaluate the adequacy of analysis, then this is one way to go about it. But, if you merely take out this item for the sake of taking it out and then vote for the rest of the budget without questioning it, you haven't achieved very much. This is more the pattern that goes on in the federal Congress. It takes out a particular item, but doesn't use that to get any leverage. If you get some leverage out of it, that's a way of doing it. But the Congress never gets any leverage out of it.

Schick: The opening portion of your question, where you spoke about alternatives, really frightened me. I recall speaking, I think it was in October at the Penn State University, on a somewhat different thing—natural resources and planning system. I spoke a bit about PPBS, and we had a coffee break, and then we had an hour and a half devoted to questions and discussions. The first questioner spoke about alternatives—he had become addicted to it quite quickly—and his question was, "What is the alternative to PPBS?"

Participant: Can you put the analytical staff in the auditor's office?

Haldi: Yes, I think you can. I think in the executive branch, where the budget originates, there is presumably some kind of an internal post-audit. But the real post-audit should be separate from those who originate the program. The analysis performed by an analytic staff in the auditor's office on the legislative side is not an audit to see whether people traveled first class when they should have traveled tourist or something like that as in the usual control-type of audit. It's an audit to see if they delivered the outputs from the programs that they should have, and if they got the quality they should have gotten. It's an audit to raise questions, at least. It's not to supply definitive answers about whether there are parts of the clientele group that should be receiving more services that are being overlooked or neglected by this unit of government, whatever it is. But, it should raise a lot of questions. I don't see that having the analytic staff in the auditor's office would have that much of a conflict of interest myself, but maybe Allen can tell you more about this.

Schick: Well, certainly by doing things on the legislative side doesn't govern what happens on the executive side. An analytic staff can be in the office of the legislative auditor. The question really is where in the legislative auditor's office to locate the analytic staff. I mentioned it before, but the same unit that does the post-audit can do a sort of pre-audit and have responsibility for evaluating programs; but if it has that latter responsibility, the unit will be sort of preempted from doing an independent post-audit. I can tell you that one of the most important things for any state to have is an independent post-audit. It's critical. I think that the way the legislative auditor's office is set up now, it probably shouldn't have it, but it can have it with slight revisions in its structure. By some slight changes in the structure of the legislative auditor's staff, you can provide the opportunity of having both of these things come together. From all I've heard of Hawaii's situation, you have a very good legislative auditor's staff. With a slight revamping of its structure to make sure that the post-audit function is done independently within the whole unit of the legislative auditor's office, you can have both functions in the same office.

Participant: Does PPB mean a change in the legislative structure?

Haldi: Well, as I said, the change would be in the executive branch chiefly. My chief suggestion with respect to the legislature is the one I made earlier, that you beef up your side of things in two ways. First, have a good staff, which will be a viable threat to all the executive departments—a threat in the sense that your staff is going to come in and do an analysis of the department's analyses which really rips them up and down. Secondly, in your legislative hearings ask the right questions. Now, how do you ask the right questions of various people that come before you testifying about their programs? Let them know that you are interested in seeing basic changes and basic improvements in addition to the usual type of efficiency that most government bureaucracies strive for each year—the efficiency in the small type of thing.

As I said, basically, the opponents of change, the people who want to drag their feet, those who want to water things down and those who feel threatened by PPB, will be looking for allies in any quarter where they can be found. This is a classic problem. You can either be an ally or you can be a non-ally. The legislature is very powerful. I'm not saying that you should make changes for the sake of changes. What I am saying is that you should look for different alternatives and have them aired, have them subjected to a fair hearing.

I've seen many reports where proposals for changes were circulated for review. This is the process that kills you in the government, and the word is *coordination.* To coordinate things means that you put a route slip on the proposal with about 13 names on it and send it around to the 13 people. If you've got a xerox machine you xerox 13 copies, and you route one copy to each person and get his comments back. Each guy sort of tells you why it shouldn't be done. Once I was with the post office department. After I left the post office, my successor once came up with a list for changes. I think he got 57 reasons why the answer should be no, or why the changes shouldn't be made. You know they were the classic reason—"We tried it before; it didn't work." No matter what it is, they've tried it before and it didn't work and it will never work.

What can you do about this sort of thing, this sort of mentality, to make it easier? I don't have any magic solutions. This sort of thing is a part of the human system, you might say, the human elements in the system. Once, someone asked President Kennedy, "How does it feel now to be President instead of a senator?" He said, "Well, as President, you give an order, then you follow up, you follow up, you follow up, and you follow up." That's about the way it goes sometimes when you try to get people to do things a little differently.

Participant: Aren't the existing laws sometimes a hindrance to change?

Haldi: That's quite right. This is one of the great cloaks behind which a lot of people will hide. You propose a change and they say, "Well, the law says we can't do it," and, man, that's it, you know. Nobody ever admits that we can propose a change in the law. Law is God-given almost.

Wednesday, January 31, 1968

TOOLS OF ANALYSIS

Case Study: Bureau of Mines (A)

Graeme Taylor

Tools of Analysis

We are going to talk this morning about the *tools of analysis* and then discuss the Bureau of Mines (A) case. We could, if we wanted to, delve deeply into the subject of the tools of analysis. I don't think, however, that that would be possible in view of the limited time we have. An in-depth study of some of the mathematical or analytical techniques that have been developed for analyzing public programs would require more time than is available.

I am, however, going to run somewhat superficially over some of the tools so that when they appear in any analysis that you may receive, you'll be able to recognize them and you'll be able to analyze the analysis with greater skill than you would otherwise, without knowing a thing about these tools.

Relevant Costs

The first thing I want to talk about is the nature of *costs.* By and large, people talk about *costs* as if they are easily measurable and as if there is only one definition of the word *costs.* Of course, as we all know, this is not so. Those of you who are businessmen are very much aware of this. The meaning of *costs* for accounting is different from the meaning of *costs* for PPBS. I would like to discuss three concepts of costs as they relate to PPBS: the concept of *opportunity costs,* the concept of *incremental costs,* and the concept of *marginal costs.*

Opportunity costs. The concept of opportunity costs is a favorite one of the economists. It is defined as the benefit that the resource could have earned in its next best alternative use, but which is foregone by its commitment to this particular use. The real cost, the relevant cost of public programs is the opportunity cost of using the resources in those programs.

Let's take an example. Suppose you decide to build a government hospital on a piece of land owned by the state. I would imagine that state land has a high market value. In calculating the cost of the hospital, you might include this market value, even though the state owns the land or its value is recorded on the books of the state as zero or below market value. The true cost of the hospital includes the market value of the land, because by using it for a hospital, you have foregone the opportunity to sell it and receive money equal to its market value. On the other hand, the opportunity cost might be the benefits you are foregoing from using the land for, say, recreational purposes.

This is a problem in the defense department where the vast acres of government land is essentially free, so to speak. When the department is costing out, let's say, a missile establishment versus an airfield, the airfield often looks better because the land on which the airfield will be built is essentially free to the defense department.

The same thing is true in the use of draftees in the military services. These men get very low pay while serving in the armed forces. It's very likely that among the draftees are skilled technicians who could be getting several hundred dollars a month as civilians. When the defense department costs an automated system versus a manned system, sometimes the manned system looks cheaper, but if you use the opportunity cost of that labor and include the earnings that these people would have made as civilians rather than in the defense services, perhaps the automated system might be cheaper over the long run. Within the defense department, it is true that the actual wages paid to the soldiers, sailors, or airmen, who are manning the system, are the relevant costs. But, from the President's point of view, from the bureau of the budget's point of view, a misallocation of resources might occur, if you ignore these opportunity costs.

In the state government sector, you have to be careful when you're costing out program proposals. You must make sure that no free goods that are being consumed are in fact entered into the analysis as *free.*

Very often opportunity costs and apparent costs are the same, but this is not always the case. You have to be careful when making decisions.

Incremental costs. Costs that have already been invested in the program and which cannot be recovered are irrelevant and immaterial to the decision-maker. Costs already invested are *sunk costs.* The costs that are relevant to the decision-maker are the *incremental costs.* Incremental costs can be explained by this example.

If you have just spent $200 on a transmission job for your car and then the fuel pump fails, you may want to decide whether to sell the car and buy a new one or to buy a new fuel pump. In this decision, the fact that you've just spent $200 is not an argument in favor of getting rid of your car and buying a new one. The $200 for the transmission is *sunk cost* and has no relevance on the decision you must make now that the fuel pump has failed. You must distinguish very carefully between sunk costs and incremental costs.

Suppose, the airports division of the department of transportation had just let a contract to replace certain receivers. Soon thereafter, a new kind of receiver comes along which is actually much cheaper to maintain, much more efficient, much more reliable, and less expensive than the ones the airport division just let out on contract. The fact that it had already let out a contract which is non-cancellable, should not deter the airport division from making a new investment, if indeed, over the lifetime of the new type of receiver, that new set would save money over the one that is on order. It might be kind of hard to explain to the voters why you've just spent $X00,000 in new electronic equipment, but that's a different problem altogether. From a decision-making standpoint, if the new type of receiver would actually save you money over the long run, you should get it. This is the distinction between incremental and sunk costs.

Marginal costs. In addition to distinguishing between opportunity and apparent costs, and incremental and sunk costs, you must distinguish between *marginal* and *average* costs.

Yesterday, Warren Law mentioned that an *average* can conceal a lot of sins. He gave you the example of the flight delays at La Guardia Airport—on the average it takes only a few minutes between departure and take-off, but during peak traffic hours, it takes more than an hour. That example was in connection with identifying objectives. He said that if an objective is stated in terms of averages, you may not be focusing on the right objective. This is also true of costs.

In costing programs, it is not the *average cost* that's important, but the *marginal cost.* Marginal cost is usually defined as the cost of the next additional unit—it might be the one thousandth teacher whom you train or the one thousandth bed which you purchase for a hospital. That marginal cost may differ from the average cost, and it is the marginal cost

that is relevant when you're trying to decide what program level you should have. For example, suppose you have a hospital program. Each hospital unit contains 1,000 beds. You are considering having 1,010 beds. The cost of the 10 additional beds should not be based on the average cost of 1,010 beds. The marginal cost of those 10 additional beds involves the cost of building another hospital. The marginal cost of these last 10 beds would thus be very high—much higher than the average cost of all 1,010 beds. Looking at the average cost would thus be misleading, although it might be more attractive.

The Concept of Present Value

Let's talk very, very briefly about the concept of present value and discounting. The concept here is very simple. It's *a bird in the hand is worth two in the bush* kind of thinking.

Why discount. In program analysis, future benefits and costs are frequently discounted to secure their present values. The reason why figures are discounted is basically that it is very hard to compare program alternatives which have differing patterns of costs and benefits over time. One proposal might involve an investment of $1 million today and a stream of benefits equal to $100,000 a year for the next 20 years. Another investment, an alternative to the first one, might involve the same initial investment of $1 million, but the benefits might tend to be crowded towards the end of the planning period—for example, the benefits might be $200,000 a year for the last 10 years of the 20 year period. Which one do you choose, all things being equal, the only difference being the time stream of costs and benefits? To permit this comparison, the technique that is used is to reduce these varying time pattern streams to the present, and compare them in the present. The device for doing this is to use what is called the *discount rate,* which is exactly the reverse of compounding.

The investment opportunity rate. Each of us can invest money today by depositing it in the savings bank, or by buying government bonds, or by investing it in securities, or by buying and holding a piece of real estate down the road, or by putting it in and operating a business and earning a return. This gives to each of us, individually, an investment opportunity rate.

If I'm not a very sophisticated investor and my best investment opportunity is to buy savings bonds, then my investment opportunity rate is five percent or whatever the going rate is. If, however, I'm a little more sophisticated and by buying the right stocks at the right time, I can perhaps earn a little more for my money—seven, eight, or 10 percent, perhaps more, depending on how sophisticated I am—that would be my investment opportunity rate. If I own real estate in Hawaii, I could probably get a substantially higher return on my investment. Whatever it is, each of us has his own unique, individual, investment opportunity rate.

If someone comes to you with a deal which promises a return of less than your present investment opportunity rate, chances are, being a rational and economical man or woman, you'll turn him down. You will say to him, "I can go down to the savings bank and I can get more than you're promising me," or "My real estate business currently earns me much more than that, why should I invest in your deal?" So your investment opportunity rate acts as a bench mark—the minimum return you would expect from an investment.

In the business world, corporations, too, have their own bench mark. Their bench mark is likely to be that which will recover their weighted average cost of capital.

Applicability to government. What relevance does all this have for the government? Some government programs are clearly of the type known as *public good.* These are programs, such as defense, which only the government can perform. There are other government programs, however, where there are philosophical differences as to whether

government should be involved or whether the programs should be performed by the private sector. In addition, there are programs where private enterprise can play a part, and the debate is over the magnitude of the role that private enterprise should play.

All government programs, in a sense, derive their resources from the private sector through the media of taxation and borrowing by government. When government, through these media, diverts resources from the private sector to the public sector, it is preventing the individuals and corporations in the private sector from using these resources to earn a return. Because of this, I think, it definitely makes sense to use the concept of investment opportunity rate in government. Unless we insist that government projects, in which tax money or borrowed money is invested, brings returns equal to or greater than the average earned in the private sector, we're causing a misallocation of resources. We're causing a warp in the free market. The money would be better left in the hands of the private sector.

Of course, this thesis can be carried too far. The argument that the concept of investment opportunity rate should be applied to public programs is, basically, a valid one, particularly in some of the management analysis and operations decisions that we talked about yesterday. However, when we get into the field of education or social services, or those programs which are clearly of the kind called *public good,* perhaps it might be not quite so easy to apply the concept. Nevertheless, there are many, many dollars that can be saved by applying this technique to the basic mechanics of providing government services.

Mechanics of discounting. How do we discount? Discounting is just the reverse of compounding. If we decide that the appropriate discount rate in the government sector is, say, 10 percent, then we'll look at it this way.

If I invest a dollar today, at 10 percent, after one year, the dollar will be worth $1.10, after two years, $1.21, and after three years, $1.331. What that means is that I'd be willing to pay a dollar today in order to have the privilege of receiving $1.331 in three years, if my investment opportunity rate is 10 percent. Conversely, if someone tells me that he will give me $1.331 three years from now, I can tell him that the present value to me of that money—the present value today—is one dollar.

The reciprocal of 1.331, is, roughly, .751. This is the so-called present value factor of $1 received three years from now at 10 percent. This means, if I invest 75 cents today at 10 percent it will grow to $1 in three years. So conversely, I'd be willing to pay 75 cents today in order to receive $1 three years from now, if my investment opportunity rate is 10 percent.

There are tables which have been constructed and which contain the present value factors for different discount rates and different future periods. By the use of such tables we can multiply the money to be received in the future by the appropriate present value factor, depending on the discount rate we are using and depending on how many years in the future it is, and very easily find the present value of that sum of money to be received in the future.

By discounting the future costs and benefits of alternative program proposals to their present values, we can compare the programs, even though the programs may vary in the timing of their costs and benefits. For example, in the illustration I gave earlier where the government has two proposals for the investment of $1 million, one of them bringing benefits of $100,000 a year for 20 years, and the other bringing benefits of $200,000 a year during the last 10 of the 20 year period, we can discount these future benefits and compare their present values to determine which alternative is better.

The discount rate. What discount rate do you apply? Which rate is the most appropriate for evaluating government projects? This is a matter of great debate. Which discount rate is used is often crucial, as we will note in the helium case.

In the federal government, the corps of engineers has been discounting for a long time. The interest rate it uses is prescribed by law and is a sort of a *moving average.* It's less than four percent and is absurdidly low. The corps of engineers projects are being evaluated today on the basis of this low interest rate. No utility company and no private party would ever dream of investing in a project which earns as low as four percent before taxes.

The Congress has argued that the investment rate that should be used should be as high as 10 percent which, it is claimed, is the average rate of return on money invested in the private business sector of the economy. Other salient issues include the *social* opportunity costs of capital, which is the returns which you and I, as individuals, get for our money.

The debate as to what investment rate should be used for government programs appears to range between five percent at the low end and 10 percent at the high end. The lower the rate, of course, the higher the present values. A good analysis generally will contain alternative calculations using different rates—five, seven, 10 percent—to see what effect, if any, the differing investment opportunity rates have on decisions, and it leaves it up to the decision-maker to decide.

Any questions on the discounting concept?

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Participant: Isn't discounting more apt in the federal government than in state governments? After all, the federal government, but not the state governments, has projects such as building dams and so on.

Taylor: Yes, in this instance it's very true. However, the parallel between the federal and the state government sectors is usually misleading. I think it's true that, relatively speaking, a high percentage of state government activities is much more routine and basically essential than federal activities. In the state, and even more so in the city or county, the services are largely basic—you've got to collect the garbage, you've got to educate the children, you've got to build hospitals. However, even within these basic services, there are alternative means of costing out the programs. As we discussed yesterday, there are several types of analyses. I would think that in management analysis, even within the state or the city or county, there are many applications for the discounting approach. For example, if you're comparing the alternatives of buying a new car and of keeping the automobile for another year, discounting is probably applicable and helpful in making your decision.

Participant: Do you consider the factor of inflation in any of the discounting?

Taylor: Yes. What is usually done is, after the basic discount rate is chosen, you subtract from it an allowance for inflation, so that you are talking in constant dollars. So, if your basic discount rate is 10 percent and you are experiencing a two percent inflation, then you subtract the two from the 10 and use eight. Some people argue just the reverse. They say you should leave inflation out of it until you start working in constant dollars, and at that time adjust the discount rate for the price level. That's a technical point which might be important when you get down to the cases.

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Bureau of Mines (A)

Okay, why don't we start now to talk about the *Helium Case.* If you are Mr. Frank Allen in this case, how would you respond to the assistant director of helium?

A Quick, General Evaluation of the Proposed Expanded Helium Program

What I want to do first is to see if we can make a rough evaluation of the validity of the request for an additional $12.5 million. Is the helium activity at the bureau of mines

justified in wanting to expand the program? Yesterday, we talked about the need to weigh the costs and the benefits. Why don't we just ask a few simple questions and see what the relevant costs and what the potential benefits of the helium program, as expanded, are.

Cost. What are the relevant costs of the program to store helium? If you'll look at the last column on exhibit 5, I think you'll see a table there showing the planned program of helium purchase and storage between 1970 and 1990. Under this program, roughly one billion cubic feet a year will be stored. The case tells us that the purchase price of that helium is approximately $11 per thousand cubic feet. So actually they're talking about spending roughly $11 million a year. (They're not quite going to use up the entire $12.5 million they're asking for.) Although the year of the case is 1967, let's say that the cost represents an equal stream of $11 million a year for 20 years from 1970 to 1990. Eleven million dollars times 20 years is $220,000,000. This is the cost.

Benefits. What about the benefits? First of all when do the benefits occur? secondly, what forms do the benefits take? They certainly have to be measured in terms of their value. The word *value* is a highly loaded term. How do we measure the value of stored helium?

Participant: We've got 196 billion cubic feet of recoverable helium in natural gas deposits in certain areas, and the projection of the demand for helium in the year 2022 is going to be about two billion cubic feet a year. We're talking about a fixed price of $35 per thousand cubic feet which would make helium in the year 2022 worth about $70 million a year. We want to look that far ahead. I suppose we've got to use a discount rate and find out how much it is worth on a discounted basis. Also, I think we have to consider what the cost of extracting helium from the atmosphere, which is now between $1,000 and $2,000 per thousand cubic feet, is going to be in the year 2022. It might be considerably less; it might be reduced by, say 10 percent. On the other hand, perhaps the scarcity of helium in 2022 or inflation might increase the current price of $35 ten-fold. We must consider all these things.

Taylor: We should consider all these things, I agree. You've given us a good start. You suggested that the benefits occur roughly in the decade between 2022 and 2032.

If you look at the graph on exhibit 4, you'll see that if the program is expanded as requested, the availability of helium is forecast for an additional 10 years. Instead of 2022, the availability of helium can be stretched to 2032. It is claimed that if we project a demand of two billion a year as per exhibit 1, then in fact, under the expanded program, we will have an additional 10 year supply of helium. The question is, what is it worth to us to have the availability of that stored helium prolonged by an additional 10 years?

Well, we know that we're going to get two billion cubic feet a year for 10 years. Why couldn't we, in some way, measure the value of that and then compare it against the cost? How do you normally get the value of some commodity like, say, sugar or pineapple?

Participant: By market price.

Taylor: Okay. What is the present market price of helium? The government currently has established a fixed price ceiling of $35 per thousand cubic feet, so a simple way of finding the value would be, as you suggested, to multiply the two billion by $35 per thousand. This gives us $70 million per year. Over a 10 year period, this is $700 million. Actually, it is $735 million, since the quantity is not quite 20 billion, but 21 billion (exhibit 5)—this means the supply will last for 10 and a half years. How does this compare with the cost of $220 million?

If we look at these two numbers ($735 million and $220 million) and if we work in constant dollars and forget about inflation for the moment, this would appear to be

a good deal. By investing 220 million between 1970 and 1990, we're going to get an income of 735 million in the year 2022 to 2032. But you suggest that maybe what we should do is try and compare them comparably, apples and apples, which means that we ought to bring both of these figures back to the present by the application of a discount rate; we can't be sure that what appears on the surface represents a good deal until we discount.

Participant: Wouldn't you have to consider the cost of taking helium from the atmosphere as opposed to the cost of buying and storing ground helium?

Taylor: You're absolutely right. But, we'll check this out later. Right now, I'm anxious to find out, given the expansion program, how its benefits compare with its costs. To do this, we have to discount the costs and benefits, don't we?

Let me use three different interest rates—four, seven and 10 percent. If we discount both the costs and the benefits back to the year 1967, the $220 million between 1970 and 1990 turns out to be $143 million at four percent, $104 million at seven percent, and $79 million at 10 percent; and the $735 million proceeds from sales is $59 million at four percent, $11 million at seven percent, and $2 million at 10 percent. Clearly, in each case, the result is a negative net value. Does this tell us that obviously it is a bad deal?

Participant: Talking about costs, which you mentioned earlier, isn't this case really a case of phony costs? The 92 percent of the helium sold by the bureau of mines is to other government agencies. The $35 per thousand cubic feet goes from one agency's budget to another government agency.

Taylor: Clearly the fallacy here, I think, is in the use of the $35 to calculate the *value* of helium in the year 2022. I think it's fallacious for many reasons. The $35 price has no relation to the value of helium. The $35 price is strictly an accounting, book-keeping sort of device that the treasury, GAO and the bureau of mines set among themselves in order to recover the cost of the conservation program as described in the case (see page 5 of the case). The $35 figure is three times the actual cost of producing helium. The private contractors can produce helium for $11 per thousand cubic feet, which covers all of their capital costs and profits. It's a darn good business. You could say that $35 is sort of high; on the other hand you could ask yourself, what is the cost of the next best alternative source of helium?

Participant: The other way to get helium is to extract it from the atmosphere at $1,000 to $2,000 per thousand cubic feet.

Taylor: It's a minimum of $1,000 per thousand cubic feet. You can say then that the value of storing helium is probably somewhere in between $11 and $1,000 per thousand cubic feet. I'm not quite sure where.

We might ask ourselves this interesting question, what price would the government have to charge for helium in the year 2000 in order to recover the cost of the helium program? If you calculate it out, you'll find that at 10 percent it will have to be $1,250 per thousand cubic feet. At seven percent, it's roughly $330, and at four percent, it's about $80 per thousand cubic feet. Now looking at these figures, if I know that the cost of extracting helium from the atmosphere would not fall below $1,000, I would say, well, this is a good deal, if our discount rate is four percent or if our discount rate is seven percent. It's only when the discount rate approaches 10 percent does it cease to be a good deal. Maybe at around nine percent, we would get a break-even price at which the price charged would have to be $1,000.

So depending on my confidence in, or lack of confidence in, technology to reduce the price of atmospheric helium, I would say that this looks like a good deal, if the

discount rate is not 10 percent. I know that the discount rate should be more than four percent, but I'm not sure how high it should go.

Participant: How did you arrive at $80 per thousand cubic feet at four percent?

Taylor: All I did was compute. I simply said to myself, if I sell two billion cubic feet a year for 10 and a half years (during 2022–2032), what price per thousand cubic feet must I charge to equal the present value of the $220 million cost, discounted at four percent? By calculation, I find that $80 per thousand cubic feet times 21 billion cubic feet in this time period, discounted back to the present value at four percent, equals $143 million (the present value of $220 million cost at four percent).

Of course, the use of the $1,000 per thousand cubic feet begs the question, because technology might very well bring the cost of atmospheric helium down to $80, in which case the price to be charged must be less than $80 per thousand cubic feet. However, I can now phrase my problem another way. I can say, okay, unless technology or advance in technology reduces the cost of atmospheric helium to less than $80 per thousand cubic feet, if my discount rate is four percent, I would go ahead. This raises the question of the probability of getting a reduction in the cost of atmospheric helium through R & D.

The Real Problems: An Analysis of the Helium Program

Now let's leave this sort of nominal problem behind us, and begin to consider the real problems–let's examine the objectives and alternatives to this helium program. Let me hasten to note, before we do that, that in real life, the people involved in this case did no more than to determine whether the proposed, expanded, ground helium storage program was a good or bad deal.

If you were actually a member of a congressional committee, holding hearings on the bureau of mines, and you were told that on the basis of the above calculation, the bureau recommends an additional $12.5 million funding per year in the next 20 years of this program, what would you do? What should you theoretically do first? Remember our analytical process of yesterday?

Objectives. First of all, you would want to know what the objective of the helium program is. What is the objective?

Participant: It says here that the objective is to obtain maximum beneficial use of the natural helium resources of the United States.

Taylor: That's what page one of the case says, but I'm not sure I'd accept that. That sounds more like a goal. Remember the distinction John Haldi made between goals and objectives. He said goals are vague statements, objectives are more precise statements. I'm all for the beneficial use of everything, whether it be water or helium or what have you–even hot air. The question is, how can we rephrase the objective to help us in the analysis?

Participant: The objective is to provide, to insure an adequate supply of helium in the future.

Taylor: To *provide* or *insure?*

Participant: To insure.

Taylor: Okay. Let's talk about this. What do we mean by *adequate?*

Participant: Adequate would mean enough to meet the demand that's likely to occur.

Taylor: I can make a tremendous business standing down at the airport or the pier and selling kids balloons filled with helium. I could have a fancy picture painted on the balloons, and I could say, "Buy our Waikiki balloons." I could use a tremendous amount of helium

that way in the next 10 years. I could sell millions of balloons a year and use millions of cubic feet of helium. Is the government obligated to meet that demand?

Participant: I don't think the government is obligated to meet that kind of demand.

Taylor: Okay. Suppose, I own and run a small machine shop downtown, and I use helium for welding purposes because, although I could just as well use argon or whatever, it's slightly cheaper for me to use helium and I get a better weld. Is the government obligated to sell me helium? Is it obligated to fill my demand for helium? Where do you draw the line? How do we specify what we mean by *adequate*? *Adequate* to what?

Participant: We can use the word *priority*.

Taylor: "An adequate supply of helium for priority uses." All right, we might also use the word *essential*, but for the moment priority is almost as good.

What we're trying to do here is to be a little bit more specific in stating our objective. We've got to be explicit about what we're trying to do. Remember, we said we've got to identify the target groups. It's very important when you design the program structure for the State of Hawaii. I'm sure you discussed it yesterday afternoon, but one of the ways you might design your program structure, is in terms of the target groups that the programs reach. In our analysis, we also have to introduce the idea of target groups, and I would submit that the target group we are most concerned with here is that group of people who have priority uses of helium, people for whom helium is absolutely essential and not just desirable or useful.

Participant: What is essential?

Taylor: It's true, we need to decide what *essential* is. But we can't do it here; we don't know. Without talking any more about this part of the definition, how about this—*low cost*—and this—*future.*

Participant: Aren't we talking about ground helium?

Taylor: What effect would it have on this objective, if we said ground helium?

Participant: This is the ground helium we're referring to.

Taylor: What I'm getting at is that we have to be careful when we phrase our objectives so as not to eliminate any alternatives.

There is just one adjective that I want to insert in here which would give me a better system to analyze and I think the adjective I would like to put in is one which describes what kind of helium but not in terms of *ground helium*, or *atmospheric helium.* The adjective is *cheap* helium or *low cost* helium. By *cheap* or *low cost* I mean at a cost substantially less than the current cost of atmospheric helium as it moves over time. "As it moves over time," because *current cost* will change as time moves on.

We all see the difference between this statement and the statement contained in the case. The only reason we want to dwell on it at all is to just emphasize the fact that it is sometimes difficult to phrase objectives operationally so that all informed men and women of good judgment can agree to it. Now, does everyone agree with this statement of objective, or would anyone care to say our objectives should be somewhat different?

Participant: Are we right in using the word *cheap*? Maybe the rate is not a fair rate to what the helium is worth.

Taylor: This begs the question of value. That very loaded word, *value*, sometimes is not related to cost or price as it should. The end value of having helium is presumably its use in science and use in the glamorous programs of NASA and AC & D who are the main customers for helium. We have to restate that question. Normally price equals value in

some rough sense because where we have a free market place, we bring together the buyers and the sellers. Yes, sir?

Participant: I don't like the word *cheap*. I like the word *inexpensive* or *low cost.*

Taylor: I'd go along with that as long as we understand what low cost is—compared to what? We could write in "low cost compared to atmospheric," if we had enough room on this blackboard.

Participant: We could say *reasonable cost* too.

Taylor: Yes. If I were really writing this out, I'd say something like "at a cost which is substantially lower than the then current cost of atmospheric helium," which is clumsy but more specific.

Participant: You could say the *lowest cost.*

Taylor: Okay, the *lowest cost.* If we say *lower,* we're assuming there are only two circles. To be grammatically correct about it, we should say, *lowest.* Now, what do we mean by *future*? Five years? 10 years? 20 years?

Participant: 2032?

Taylor: No, I don't think we ought to limit ourselves by putting a date on it. I think here all we need to say is probably, "as long as possible."

Now, we may have limited ourselves too much in this statement of objective which we constructed. I'm not sure. There is no one way of setting objectives. The fact that we took this long to do this, and the fact that there is a genuine honest disagreement as to the wording indicates that there can be many different ways to frame an objective.

I think this point should be made—that when you ask the departments to come up with statements of their objectives, and when you get them and begin to scrutinize them, remember that what you've gotten are not derived from what Warren Law referred to yesterday as *Mt. Sinai.* Objectives are framed by human beings. It may very well be that there will be portions of an objective submitted by a department with which you can legitimately, individually disagree. There is no one way of stating an objective, and when you scrutinize other people's statements, remember the difficulty we had in trying to construct one that satisfied everyone.

Alternatives. Without belaboring this point any more, why don't we now go on to the next step, which is to list our alternatives. Let's do it in a brain-storming way; let's get all of them up on the board without discussing each one individually. After we have put them all on the board, we'll come back to them, examine each one against the objective, reject those which are obviously undesirable or unrealistic, and even perhaps modify the objective. What are some of the alternatives? [See table 1 for suggested alternatives.]

TABLE I

SUGGESTED ALTERNATIVES

1. Expand present conservation program.
2. Baseline—do nothing new.
3. Research and development.
   a. Reducing cost of extracting helium from the atmosphere.
   b. Finding other sources of helium.
4. Regulate production of natural gas that contains helium.
5. Control or regulate the use of helium.
6. Let private enterprise do it.
7. Exploration for new helium sources.
8. Recycle helium (purify and re-use).
9. Control use of helium through the price mechanism.

Participant: Here, we're talking about the leak of helium over a great length of time, and the availability of it during the next century is questionable. We know, however, that helium will always be available in the atmosphere. We could for this particular year, stay at *status quo* and then look at it a couple of years from now.

Taylor: Well, what would you do now? What are the alternatives?

Participant: Expanding the current program would be one. The other would be to look for other sources of helium.

Taylor: How can we help technology along?

Participant: Through research to cut cost of extracting helium from the atmosphere.

Taylor: Okay, one is to expand conservation; two is to do nothing new; and third, R & D to help find a cheap way of getting helium from the atmosphere.

If you don't mind, I'll put down two kinds of R & D, one R & D which will be directed toward lowering the cost of atmospheric helium, and the other which will be directed toward finding other sources of helium. *To do nothing new* is the base-line, which is often ignored. By *to expand present conservation program,* I don't mean conserve at the rate of $12.5 million a year. There are many, many levels at which you can conserve.

Participant: We could regulate the production of natural gas, since helium is derived from natural gas.

Taylor: All right. Regulate production in some way. Regulate production of natural gas which is the source of helium, and we know that 15 percent of the natural gas reserve contains helium, 85 percent doesn't.

Participant: Somewhere along the line here, we should decide if we're wasting helium by using it where we could use oxygen or nitrogen as well. Helium is useful in missiles, but there are many ordinary things that oxygen and nitrogen and sometimes argon can be used instead of helium. Could we not, in some way, set this up to get ourselves another 10 years worth of helium?

Taylor: Yes. Good. Control or regulate use.

Participant: There's no place in this report that indicates whether private enterprise was or was not willing to accept the responsibility for this before. How about looking for other sources of helium?

Taylor: That would involve exploration.

Participant: Do we know whether in storing helium it can be done more efficiently to prevent leakage?

Taylor: There are very few losses associated with the present way they store it. The gas-well areas contain a spongy rock and the helium is simply forced down into the ground and it remains trapped under pressure in the spongy rock. When you lift the lid, so to speak, the helium comes back to the surface again. That's how it's presently done.

Participant: And there is no more efficient way of storing it?

Taylor: Basically, no. At least not what the bureau of mines knows. The cost of the structure is very small, and the leakage, the loss of helium, is very small.

Participant: Is there any chance of recovering used helium?

Taylor: Why can't we sort of purify and re-use helium? Yes, that's an alternative.

Participant: Is experimenting on better ways of extracting helium from the air over there under no. 3?

Taylor: Yes. That is included in R & D to reduce the cost of atmospheric helium.

Participant: Do you have to consider why we charge $35 while private enterprise charges $25?

Taylor: We haven't yet, but will when we start considering no. 5 and no. 6.

Participant: Well, that's the rate at which helium is priced, isn't it?

Taylor: Yes, but we will talk about price when we talk about alternatives nos. 5 and 6.

Participant: I thought *to raise prices* in no. 5 was a method of controlling.

Taylor: Right. I'm merely saying that we'll consider the price, the whole price business when we start talking about the alternatives. In the meantime, are there any other alternatives? These are probably the major ones, I think.

Participant: No. 1, it says *conservation*. The alternative to this is what private enterprise does in no. 6. Exploration for new helium sources is not going to be fruitful. *Control on uses* (no. 5) is conservation; no. 9, raising the price is conservation; *regulate production* (no. 4) is also conservation.

Taylor: All right. *Conservation* in no. 1 means continuation of the *present* program where the bureau of mines contracts with the different natural gas operators to purchase helium, where the bureau of mines itself extracts helium from the gas on its way to the burners in homes, and stores the helium in the ground. That's what I mean by the *present conservation program.*

Participant: Oh, *present.*

Taylor: Yes, the present way they are doing it. The present conservation program, but there's no limit on the dollar amount yet specified.

Participant: Should we consider that the price might suddenly double in the light of an increased demand for helium?

Taylor: We should consider that.

Participant: A lot of helium may be needed all at once.

Taylor: Right, we should definitely consider that, but you're not setting that as an alternative, are you?

Participant: I'm not sure. It comes maybe under the heading of defense? Or should it be survival? Or something of this sort? Suppose that we . . . .

Taylor: It might come under this heading here—no. 5—if the President assumes emergency powers to regulate use.

Are there any more alternatives? I can't think of any more at the moment. I think these are the main ones. What is the next step in the analytic process?

The real alternatives. Remember, we talked yesterday about the back-of-the-envelope, the once-over-lightly, kind of run-through. This is all we can obviously do here today. Why don't we do that and sort of very roughly screen these initial alternatives against the initial statements of our objectives and see if we can eliminate any of the obviously infeasible ones. Now, remember what we said yesterday about false alternatives, about straw alternatives, about overlapping alternatives, about implicit assumptions. These are all caveats that we talked about yesterday. Why don't we just briefly run through some of these alternatives. Is there any here that we can eliminate just off the bat?

Participant: No. 2—*Do nothing new.*

Taylor: No. 2? This is in here because of our base-line. The object against which we are going to compare the other alternatives.

Participant: You're not going to get *continued availability* by doing nothing new.

Taylor: Okay, this is one of those unfortunate semantical problems involved. I'm calling it an alternative but actually it's a base-line case. So it's a very special example.

Participant: Control on uses (no. 5) would probably bring the price up rather than to keep it at the lowest. It can conserve, but not necessarily give the lowest cost.

Taylor: But remember our definition of *low cost.*

Participant: By *low,* you said, compared to extracting helium from the the atmosphere at the lowest cost.

Taylor: We may have to change the objective.

Participant: That's what I wondered.

Taylor: We are iterating. We would want to do that, but, on second thought, I want to keep the original statement of our objective as is—*to insure adequate supply or continued availability of helium for as long as possible at the lowest cost—lowest cost* as compared to the next cheapest source of helium.

Participant: It looks all right now.

Taylor: This might be a good place to talk about the operating price of helium. What would happen if we raised the price of helium? Supposing we doubled it or tripled it? What would happen to the consumption of helium?

Participant: It wouldn't change much.

Taylor: Why not?

Participant: Because the government's using it.

Taylor: Exactly, right. In other words, for those essential or necessary uses, I suspect that the demand for helium would remain at the present level. There might be a few fringe uses where helium is substitutable with something else and where price is a factor, but because the government is accustomed to using helium, I would suspect that raising the price would not actually have much effect. Ordinarily, in a free market, if one exists, price does have a relationship to demand, but in the case of helium, perhaps it doesn't. So we might perhaps eliminate no. 9 on a first-run basis from serious consideration.

Participant: No. 6—*Let private enterprise do it.* I don't think you can really depend on private enterprise to conserve helium for future use. That alternative is contrary to our objective of conservation. Private enterprise exists really for profit and conservation doesn't necessarily lead to profit. Certainly, private enterprise would hang on to some now for profit 20 years from now, but it still has to satisfy its stockholders and it can do that presumably only by making a profit now.

Taylor: Exactly. If you look at exhibit 2, you'll see that private enterprise will be going out of the helium business in 1986. Private enterprise wasn't seriously in this business until 1960. Then, all of a sudden, it got active. The reason for this sudden jump in 1960 is that the government raised its price from $15.50 to $35 per thousand cubic feet. Suddenly, here was a marvelous profit opportunity. Here was a price level at which private enterprise could produce helium and sell it at a profit. It could make a vast profit very rapidly. In 1986, all of the sources of helium available to private enterprise would be exhausted.

The government has no control over the uses to which private industry puts helium or the amount that they take out of the ground, so by raising the price, in a sense, the government acted against its own best interest, at least in terms of conservation. So, there are conflicting objectives here—the private enterprise's objective and the government's objective don't exactly coincide—and the way private enterprise is behaving now in the helium business does not exactly serve our objectives of assuring continuing availability of helium.

Participant: However, if contracts are let with private enterprise, we know it will be responsible. If it has the source, it will do it. If it is selling helium for $25 now and we're selling it for $35, private enterprise is still making a profit.

Taylor: But we are using private enterprise now. The present way is to give contracts to independent producers of natural gas, so we are allowed to go in and take out helium from their natural gas before they sell the natural gas. So we are using private enterprise in the present program in that sense.

Participant: But to the maximum extent.

Taylor: No, we're not. If we look at exhibit 3, we'll see that even under the proposed incremental program, there's still a gap of several billion cubic feet a year that we're not touching.

Participant: That is what I asked originally.

Taylor: Okay, right. We have not specified here the level of conservation.

Participant: We are assuming that private enterprise would be willing to provide more, but if the price is too low, it may decide to give up this helium business and go into something else.

Taylor: We could assume, for the purposes of our discussion here, that whatever level we suggest to private enterprise, it would be willing because it is making a profit on it. I think we would have to assume that.

Participant: Why would private enterprise store this helium?

Taylor: That's another question. I think that the idea of turning the program over to private enterprise or relying on private enterprise to achieve our objectives is probably not very reasonable, at least on a first-run basis.

We're getting somewhere. We've cut the list of alternatives down from nine to seven—actually six if we recognize that no. 2 is not an *alternative.* The problem is getting more manageable, hopefully. Are there any others that look infeasible?

Participant: No. 7, exploration doesn't look very promising.

Taylor: It doesn't look good. It is not stated in the case, but the bureau of mines has tested something like 47,000 samples of oil and natural gas, over the last few years. Every time a new oil field is discovered or a new source of natural gas is discovered, the bureau of mines receives a sample and tests for helium content. In all those 47,000 tests, it discovered helium in only two instances—instances about which it didn't know anything before. So I think the chances are, as a short run alternative, this is probably not very attractive. Over the long run, we might want to continue a minimum level of exploration or something of that sort, but on a short run, it's probably not very feasible. We certainly should not put all our eggs in this basket.

I think there is at least one other on the board that we could rule out because of its political constraints.

Participant: No. 4—*regulate production of natural gas that contains helium.*

Taylor: Right, where is the helium located? It's in Texas. Being political realists, I think we might want to consider the incredible difficulties in trying to do something which would be a serious blow to the businessmen in Texas. Remember, yesterday we talked about *constraints.* This is one of those constraints. I think this would be, politically, a rather infeasible alternative. Even though it's easy for us to say that 85 percent of the natural gas doesn't contain helium, the trouble is that 15 percent does and is currently being exploited for the natural gas content. This 15 percent happens to be

located mostly in Texas. That's what I would call a political constraint, and we can, temporarily, at least, forget alternative no. 4.

Participant: If you're going to rule that alternative out, why don't you write in *purchase of the land containing natural gas by eminent domain?*

Taylor: So many people being lawyers here, I'm sure I need not remind you that the owners are likely to keep the conversation going here for a long time in this sort of proceeding. It would be 10 times worse in this area, because it is extremely complex. You're dealing with all kinds of rights—ownership, leasing, mineral rights, air rights, oil rights—and then there are many small parcels of land owned by groups, with phony names—the whole thing would be a terrible mess. Yes, sir?

Participant: That's not the real problem. The real problem is that natural gas is used throughout the eastern United States, and you'll have to deal with all of them.

Taylor: The cities which derive their natural gas from these particular sources include Cincinnati, Cleveland, Chicago, Minneapolis and so on.

Participant: We can't win them all. Maybe we should change our objective now. I don't think the primary objective here is *low cost* of helium. We want helium, period. The government is involved in setting the price of helium. The only time you are concerned about cost is when you're talking about substitutes.

Taylor: Except, that, if tomorrow, a breakthrough occurs and the price of atmospheric helium suddenly tumbles to $10 per thousand cubic feet, there would be no excuse for the bureau of mines to continue in business, from the way we phrased our objective. All the helium we could ever possibly want is in the atmosphere around us. I'm not sure if I addressed myself to your point.

Participant: I think one of the problems that private enterprise runs into is low price paid by the government, the consumer.

Taylor: No, I don't think so. The $11? That $11 includes the recovery of the private producers' capital investments and profit fees. Then the other private producers who got in the business on their own lands are selling it for something around $25. They are not only recovering their capital costs plus fees, but they are actually tacking on a $25 gravy profit which is not available to those who are under contracts with the government. I'm still not sure if I'm answering your point.

Participant: Government being the principal user, it can charge itself more or charge itself less.

Taylor: Right. The $35 price was established essentially as a bookkeeping entry, so over the life of the present helium conservation program, it may go down. The treasury recovers from the bureau of mines, with 4 percent interest, money borrowed by the bureau of mines from the treasury, and the bureau of mines in turn gets this money back by charging other federal agencies $35 per thousand cubic feet. So the whole thing is just really a bookkeeping cycle, so that it's a transaction over the life of the $47.5 million program. So as you suggest, I think the price of helium the government charges is really irrelevant, in a sense. The reason you have *low cost* in the objective is that, if this is the cost of getting helium from the ground now, even if you tack on the interest which brings it up to $35, we know that the next cheapest available alternative source is the atmosphere, which at the moment costs at least $1,000. We'd rather have the $11 helium than the $1,000 helium, regardless of the interest rate—the difference between the $11 and $35 would be academic, compared to the difference between $11 and $1,000.

Participant: We're not thinking of cost as being cost in the market place.

Taylor: No, we're thinking of cost in terms of the cost to the economy as a whole, I think.

What does all this boil down to? We're left with no. 3, R & D at various times, no. 5, controls on the use of helium, no. 8, recycling of helium—to purify and to reuse it—and no. 1, the conservation program of the kind that we presently have but at perhaps different levels, and our base-line.

What about this? No. 8—recycling helium? Is this a feasible alternative?

Participant: We don't know.

Taylor: Right, there's no information in the case which tells us how much of the helium which is presently being consumed could actually be recycled and reused. On the other hand, when we look at the uses of helium, we might get a better idea. For example, in a gas cooled reactor, the gas is usually helium, although carbon dioxide is a substitute. NASA uses it to pressurize the skins of missiles prior to firing, and probably it would be infeasible to go up to the moon and bring back the rocket just to recover the helium. So in many of the uses, actually, this alternative would probably not prove too feasible.

However, in scientific uses where you are using helium for research purposes, it is highly feasible to recycle helium—to purify and to reuse helium. We don't know how significant that is, but we might want to lump this one with this no. 5—controlling use of helium. In a sense no. 8 (recycling helium) and no. 5 (controlling use) might be construed as overlapping alternatives. Recycling would be one way of controlling use.

If we eliminate no. 8 (recycling helium), we're left with only three major alternatives to doing nothing new—R & D, control on use, or conservation. So all this elaborate process that we went through has resulted in two things: (1) it resulted in a much sharper, clearer statement of our objective, and (2) it resulted on focusing our attention on three major alternatives.

One of the alternatives—no. 1, *expand present conservation program,* is actually a whole host of alternatives. The bureau of mines in its proposal concentrated on only one portion of alternative no. 1. It recommended expansion by $12.5 million per year. But why limit it to $12.5 million? Where in the case is there an explanation for this figure? As a matter of fact, there isn't any explanation. It's just a nice round number. I think we can congratulate ourselves for doing a much better job, analysis-wise, than the bureau of mines.

Now, obviously, the purpose of this case exercise is not to solve the bureau of mines' problems or to attempt to get money from Congress. The exercise, hopefully, is designed to show that when a piece of analysis comes in, unless you see evidence of this kind of thinking having gone on, then, I think you could reject that analysis as being poor. That basically is the purpose of this exercise.

Model. What would be the next step in the process? We've got to weigh the cost and benefits of the various alternatives, and to do this, we need some sort of a model. Remember that the word *model* is not a mysterious word. We now know that all a model really consists of is a simplification of the relationship that exists between, in this case, the cost of each of these alternatives and the amount of helium that we might save by each of these alternatives.

Now, how would we handle the R & D alternative? We're dealing with the future. We're dealing with uncertainty. We're dealing with the possibility of a technological breakthrough. These are very tough questions. How would you suggest we actually get a better handle on the costs and the possible outcomes of alternative no. 3?

We need some information. Where can we get it? We need expert opinions. No analyst himself could possibly be expected to be able to get this data. I think you can insist, however, that he should poll perhaps the most outstanding pyrogenic engineers, physicists, people who presently make liquid oxygen and so forth, and maybe he can pose his question this way: "Given $X million of R & D money over the next Y years, what is the probability of a Z percentage reduction in the cost of atmospheric helium?"

Now, these men are not crystal ball gazers any more than we are, but they are closer to the subject and their estimates of probability might give us a better feel for the outcome than if we just try to do it out of our own heads. We might sort of combine their various estimates into some sort of a lump sum probability or range of probabilities, and we might be able to say, "If we spend $10 million over the next five years, there's a fifty-fifty chance that we can get the cost of atmospheric helium down to as low as $300 per thousand cubic feet." That would give us a much better handle of the benefits of alternative no. 1, and we already know the cost since we said, it's going to be $10 million. We could ask them what would the outcome be if we spend $20 million on a crash research program over the next two years. They might say, "Well, chances are you'll get it down as low as $250." So, by looking at these responses to our questions, we might get a better handle on no. 1.

No. 4, *controls on use*, I think, on the cost side, this would be a matter of finding out how much it would cost to set up the administrative mechanism that would be required to issue licenses for the use of helium. It would include the formulation of regulation, which I'm sure will initially generate some legal battles. You will again have to investigate the present consumption patterns to see what are essential and what are non-essential uses. Again, expert opinions would be involved.

Participant: Doesn't the present price pretty well determine use, especially when it costs $35 per thousand cubic feet, to use helium? If the price is high, wouldn't people use nitrogen, if they have any of it, unless it's a question of lifting missiles or something that has to do with space?

Taylor: Right, but the price bears no relation to value and it may well be that people are using helium just because there is a slight difference in cost. You could maybe ask people how high would the price of helium have to rise before they would switch to a substitute or vice versa. Actually, we know that one use of helium is to fill children's balloons. I think by anyone's standard, that would be a non-essential use. Some of the welding application of helium might also be considered non-essential, because by paying a little extra money you could use a substitute. The question, of course, is, how do we define *essential* or *necessary*? I think we might interpret this as being those uses which are in the national interest or for the national security or something of that sort.

Let's say that it turns out that 75 percent of the present uses is considered to be essential, then the benefit of alternative no. 4 would be that extra 25 percent that we're saving, compounded over time or added up over time.

For alternative no. 1, *expand present conservation program*, we can calculate in the same way. With $12.5 million a year, we can save 220 billion cubic feet between 1970 and 1990. Suppose we spend $15 million a year, how much more might we save? We might want to know that.

Now, our model would consist very simply of a means of comparing the costs of each alternative that we have estimated on the one side with the volumes that we save on the other side. We know the cost of each alternative—that is we can find out the cost of each alternative for the various levels of conservation. We wouldn't have to worry about the value of the helium saved, because all it does is to allow some sort of

cost-effective calculation to be done. Our objective is to conserve physical volumes of helium. All we have to do then is to figure out what the least cost way of achieving that objective is or which of the alternatives will save us the most helium for our dollar invested in it. We can ignore the very difficult question of what is the true value of helium.

Now, it may well be that the answer that will come out of all this will be that no single alternative would be the best idea, and that what we really would want is a mix of these alternatives. We may want to hedge; we may not want to put all our eggs in one basket. We may want to maintain a minimal exploration effort, so that after three or four years of R & D, if we're getting nowhere, maybe we would want a crash conservation program to save what we can, while we can. I think we would want to stay flexible here. At any rate, the analysis, hopefully, will give us a much better feel for the cost-effectiveness of each of these alternatives.

One major point of all this is that there's nothing scientific or wildly blue sky or academic about this process. This is the kind of thing that any competent line manager, any program manager could do. He has to go to experts, particularly on alternative no. 2 but apart from the discounting, which is a mechanical routine that anyone can master very, very quickly, there is nothing complicated about the process. We have, rather, a nice, logical way of looking at a problem that at first sight may appear to have only one solution, namely to conserve at the rate of $12.5 million a year.

I think this kind of systematic analysis wouldn't be terribly expensive; it wouldn't take very long; it wouldn't require a tremendous amount of expertise, except for alternative no. 3, where all you have to do is to get hold of some scientists and ask them questions about probabilities. With not more than three or four manweeks of effort, I'm sure this analysis can be done.

Participant: If we set up controls on use, don't we have to have all kinds of people to help us convert so some other kinds of gas?

Taylor: Right. We have an opportunity cost involved, which I didn't mention before, but this would be a case where we have to weigh the opportunity cost. Namely, when we force people to switch from helium to some substitute, how much extra does it cost to do that? We'll have opportunity costs, even though the government doesn't bear that cost and the user does. The total economy is that much poorer in a sense. I think we would have to include the opportunity cost to the user of helium by that alternative.

Participant: We're talking about cost-benefit. Are we saying that we want to make every effort to reduce cost and conserve the helium, and the benefit remains the same regardless of necessary uses?

Taylor: Good, that's an implied assumption, although actually it's more true to consider a sort of declining benefit curve for the first few uses for which helium is absolutely essential. The benefits on our absolutely real scale of values are very high. When we get down to the kids' balloons which should be way, way out here, the benefits are low. But, actually, for some uses, the benefits are more than others. We have ignored that.

Participant: I think that rule will be knocked out, because we're talking about *necessary* uses. If we maintain our uses as necessary uses, then the benefits will always remain the same until we find a substitute.

Taylor: We have implied that. In actual fact, the different necessary uses will vary in degree; some will be more necessary than others. We would have to arbitrarily cut them off at some point. If we had some perfect utility scale in the sky somewhere, we could actually measure them.

Participant: May I go back to exhibit 3. It shows $12.5 million proposed expenditure resulting in an additional savings of two billion cubic feet of helium. If you doubled the spending, what would the end result be?

Taylor: Well, what we'll have to do is plot out a program over time. This graph is kind of misleading. These are actually annual amounts, not an accumulated total. In other words, in 1970, when the first program will begin, if we spend another several million dollars which are not specified—we don't know what they are—we could go to the top of that dotted portion which would mean that we may save another roughly two billion cubic feet per year, but the amount saved per year would decline because you see that second top line is growing closer to our thick black line which is the proposed program. So we'd be saving decreasing amounts each year, simply because the total stock of helium is decreasing over time.

Are there any unresolved questions left over from yesterday when we talked about systems analysis?

Participant: I do have another involved question. If private enterprise sells helium for $25, how can government justify selling it for $35 even though they paid only $11?

Taylor: It's justifiable, if you view it in terms of reference. The helium program lasts for 20 to 30 years after the passage of the helium act amendments of 1960. So the time frame is between now and 1990—1990 is the end of the $47.5 million program. The year 1990 is at least another four or five years beyond the time when private enterprise will cease to do helium business. The helium program started off in 1960 with a deficit in a sense. There was about $40 million of capital already invested which was actually sunk cost, but the treasury insisted that that $40 million be recovered, as well as the incremental loans that the treasury was going to make to the bureau of mines to purchase the new helium, at four percent. In insisting this way, the treasury violated one of our analytical precepts that you disregard sunk cost.

Participant: This is not a real cost then. This is what the government wants to recover. It is selling helium at that price to recover sunk cost?

Taylor: It is sort of like the civil service commission. The civil service commission has many reimbursable programs. It runs, for example, a training course, but it gets the money to run the courses not through appropriations from Congress, but by charging other agencies which participate in the training programs. It's that same kind of arrangement between the bureau of mines and the helium using governmental agencies.

Participant: In 1961, the price was $15.50 per thousand cubic feet, and now the price is $35 per thousand cubic feet, and private enterprise is only charging $25. Isn't there some piece of legislation that prevents private enterprise taking advantage of this price increase?

Taylor: Precisely, as I said, the federal government erected an umbrella over private enterprise within which private producers could make a very fat profit. That's very true. But before the act was passed, there had been no experience of any private involvement in the helium business, and I suspect the federal government just didn't foresee the consequences of the price increase. It didn't have PPB at that time.

Participant: Is there an opportunity for private enterprise finding out anything about helium that we don't know about?

Taylor: As far as I know and as the bureau of mines tells me, no. Private enterprise is simply bottling the stuff and selling it. It is not spending very much in R & D, that's for sure. It's surprising to me that the private firms are not spending money on liquefying

helium. Apparently the reason why the cost of extracting helium from the atmosphere is stated in the case at between $1,000 and $2,000 is that actually no one really knows what the cost is because private enterprise has not been doing research in this area.

Well, I think one thing is clear. The $35 price would not be adequate to recover the incremental $12.5 million per year program request. If, indeed, Congress passes the $12.5 million proposal, the price would have to be adjusted again upward to recover the cost of that new program. Actually, if you work it out, it turns out to be something like $65 per thousand cubic feet that the government would have to charge—so private enterprise would really have a heyday in that sense.

Participant: Would it be too soon to start thinking about reduction of helium from the air? We have 50 years before we run out of ground helium.

Taylor: I'd privately assume that we should be thinking about it now. But I'm not sure that the director of the bureau of mines can afford to take that viewpoint. I'm not sure. This would be a matter more nearly of political judgment than of analytical judgment. That's the kind of question I'm sure that would be debated in the congressional committee that looks at this.

Participant: How soon can we have that determination made? We wasted a long time before we found out a way to do what we're now doing.

Taylor: In many, many instances, in conservation, for example, people accept the existence of beautiful parks in the country without question. They assume it's going to be there forever, and a few interest groups which are looking further forward than the average citizen realize that something must be done now in order to conserve the natural heritage and a sort of ground swell of involvement grows, as is happening now with air pollution and water pollution on the mainland. And then there comes a point when the time is right for legislation—as you know much, much better than I—this might be an example where sometime in the future, time for legislation in accordance with no. 3 might be right. Being a helium conservationist type of person, I feel the time is now. But others with a broader perspective might well say that the time will be 10, 15 or 20 years from now.

So this is a good question to raise right here at the end of the session. Clearly the analysis can do no more than to expose some of the alternatives and to cost them out more explicitly than have been before. But the analysis certainly can't subvert or supplant value judgment. On that optimistic note, I guess we close the session.

Wednesday, January 31, 1968

INFORMATION SYSTEMS FOR PPB

James Kelly

This session is divided into two parts. In the first half of the session, I'm going to talk a little about the implications of PPB on the existing information systems that are now being maintained in government. During the second half of this session, Warren Law will lead a discussion on the case study, *Disease Control Programs (A).*

Lack of Precedence

There is not a great deal of experience to serve as a precedent for what I have to say about the effects of PPB on existing information systems. To my knowledge, there is no agency in the government which has really answered the question, what changes in the existing information systems to account for transactions in the government need to be made with the implementation of PPB? The federal government started to implement PPB in 1965. It has generated a lot of analyses and information, but even after three years, what effect the new planning orientation is going to have on the federal government's accounting system is not at all clear.

This is also true with respect to state and local governments. Some governments have said to themselves, "If we're going to have a good system to enable us to do a more analytical job of planning, we're going to need more data. We're going to need more output-oriented information, and, therefore, we're going to have to change our way of classifying our accounting information to better reflect programs and their relationships to missions and the outcomes that we expect from these missions." But, as yet, none of the cities or states, to my knowledge, has really successfully completed the transition to such a system. So, I'll start off by saying that I don't expect, in the few minutes that I'm going to talk about information systems, to come up with *the* answer concerning the implications of PPB for your information system.

The Four Classes of Information: A Review

Yesterday, we saw in the post office case that the lack of information and data along *mission* lines was the major stumbling block which prevented the post office from going into a completely mission-oriented program structure. The bureau of finance's vociferous argument that data were just not available on a mission basis, that programs would be fragmented if you try to look at missions, led to the selection of the more or less functionally oriented program structure. So, this question of what effect the PPB system will have on the way you organize your accounting information is indeed a significant question.

Let's start by looking briefly at what Allen Schick said yesterday about the different ways in which you can classify information. Allen mentioned four methods of classifying financial information. *First*, by object class. This classification tells you for what specific items you are spending your money—people, typewriters, and so on. *Second,* organizational structure. This classification is again by object class, except that now you group the object expenditures by organizations. *Third,* by functions. This classification tells you what is being done, what activity is being undertaken, what job is being performed. *Fourth,* by missions. This classification is the one with which PPB is most concerned. It tells you why we are doing what we're doing, what our mission is, what it is that we are trying to achieve.

These four ways of classifying information about the affairs of government are intended to serve different purposes. The first, by object class, and the second, by organization, are control-oriented. They are really intended for the purpose of maintaining very tight control over expenditures. This control aspect is more apt in the government than it is in business. In business, budgets are established but are not tightly held to; they are more a sort of estimates of the spending which the organization is going to undertake in the year. In the government, the budget is the limit of what can be spent. If this money is appropriated to be spent for personnel or supplies, it can be spent only for that purpose and only to the amount specified. This gives very, very tight control in the government. That's really the purpose of the first two.

The third, classifying information by functions, serves a different purpose. It is management-oriented. By management-oriented, we mean that the focus is not so much on whether the funds are being spent honestly and as authorized, but rather on what activities are being undertaken and whether they are being performed efficiently. This system of information tells you whether the workload is as you anticipated, whether the per piece cost is what you originally thought. This way of classifying financial information is usually referred to as *performance budgeting.* This way of looking at budgeting is very familiar to you in Hawaii. Your budget is very much oriented towards this.

The fourth way of putting together financial information is what we call program budgeting. Here we're concerned primarily with resource allocation as opposed to resource utilization. We're less concerned with efficiency and more concerned with effectiveness—what are we accomplishing with the money that is being spent, in a more mission-oriented sense. It is concerned with the levels of spending to attain different objectives; it is concerned with trade-offs between health and defense, for example.

You need all four of these ways of classifying information. One of them, alone, is not enough. Again, to summarize what we said yesterday, the primary change in PPB is to add the fourth to the first three which already exist in most government budgeting systems, adding an orientation toward what are the objectives of the activities we are carrying out and how best to measure the accomplishment of these objectives.

The Regularity with Which to Report Mission Information

What are some of the conceptual problems that the mission-oriented structure causes on your information system? Does it, for example, mean that you've got to report your actions and supply information every month and every year on a mission-oriented basis? Does it mean that your whole reporting system has to be built up to the point where you report back on a monthly or annual basis to the governor and the legislature just how much was spent for the various missions that were originally planned and authorized? In order to answer that question, I think we need to know a little bit more about the distinction between mission-oriented information and object or function-oriented information.

To use the term that is common in business, the mission-oriented information is intended to aid in *strategic planning*. This kind of planning is concerned with allocating the scarce resources to the various goals that the government is trying to achieve. The very word, *strategic*, I think, implies that the decision to allocate resources to a specific activity is not going to be made on a regular basis, such as every month or every year. There are not going to be new alternatives generated every month or every year for every single activity or program that the government is carrying out. You don't have new educational techniques developed, and you do not have new concepts or techniques for running a health service generated every month or on any kind of a regular basis. When a decision is made to use resources in a specific activity to reach a certain objective, you let that program run for a while; you don't make a new decision every year. You might wait five years before you review your decision. You might decide, on the basis of a very thorough

analysis, which relates the financial input to the missions or products, that $X is the relative level of spending that you want for a program, and then walk away from it for a couple of years and not really see any information coming back to you to give you any feedback about whether you made the right decision. Hence, you don't know that you're going to want to change the allocation of your resources exactly at the end of this fiscal year, or at the beginning of the next fiscal year. That's a major characteristic of strategic planning. New programs and new activities are not developed on a regular, routine basis.

On the other hand, control over expenditures and efficient performance which the other information systems serve occur somewhat regularly. You know you're going to have to spend money every year to buy the services of people and to buy equipment. You know that you're going to have to perform certain activities or functions on a regular basis—processing mail, collecting mail, etc.—so, routinely you have to rethink those activities on a very regular basis and try to establish just where exactly you stand in terms of the amount of money that you're devoting to those activities and in terms of the efficiency with which you are conducting your affairs. These are routine decisions. You want to know on a routine basis whether or not you are spending money only for those purposes authorized and whether or not you are performing in an efficient manner—maybe not necessarily as legislators, but certainly as administrators. You want to know about these kinds of management things in some detail. They are made on a regular basis at least annually in government. Annually, you know that you're going to have to routinely make those decisions.

I think this means that it is less important to orient your information system towards missions than to orient it towards expenditure and performance. I want to emphasize that I'm talking about the reporting system, the system that generates back to management information on that which took place during the past year. Since mission decisions are made on an irregular basis, you really don't need to see the information on the results you are getting on a regular basis.

There's another reason I think why a mission-oriented information system which generates information on a very routine basis is not highly important. By the very definition of the way the government works, items are very closely controlled. Therefore, I assume if you make the decision to allocate a certain amount of resources to a particular mission and divide that amount into subprograms and elements and authorize a certain level of expenditure that you have estimated you will require, that is the level you're going to spend in the next few years. This goes back to what I said before that the object-oriented accounts are pretty tightly controlled. A department in the government can't spend twice the amount that it has been budgeted. This tends to make me feel that it's absurd that the mission orientation of a PPB system has got to greatly change the way you report your actual financial performance. If there isn't a pressing need to relate on a very current historical basis exactly what you spent to achieve a certain mission or to perform a certain program or a certain subelement within your program structure, I presume that you have achieved basically the same level of expenditure that you authorized when you made your planning decision.

Highlighting Mission Information

On the other hand, I think that the mission-oriented or the purpose-oriented system needs to be highlighted more in an information system. Really, when you think about it, the PPB system is forcing you to think more in terms of specific objectives that you're trying to attain. Yesterday, in the post office case, we talked about how long it takes to deliver first class mail, or how long it takes to deliver fourth class mail. These are a sort of measures of how well the government is pursuing its objectives. I think that that kind

of information will have to be reflected to a greater extent in the information system than it is under the present systems.

Here, I mean information concerning the outputs that you actually achieve. These are not predictable. While you can estimate, you can't predict exactly what the level of output is going to be at the time you make your planning decisions and pass a budget. It might well be that you planned very conscientiously on the basis of a very thorough cost-benefit analysis or systems analysis or whatever you want to call it, and you estimated that you're going to achieve a four-hour service in the post office department in exchange for spending an extra half a billion dollars. You can spend that extra half a billion dollars and you can be pretty well sure that it's going to be spent in the program that you designed to achieve that objective. But you can't be at all sure that you're going to achieve that four-hour service. Whether or not you are actually achieving the quantitative objectives that you set up is what you want to find out from your information system.

Even putting aside the difficulty of reclassifying your cost information on a routine, mission-oriented basis, I think the job of just trying to record how well you're doing with respect to your objectives is a difficult one. It requires thinking about how you get feedback back from the public that you're serving, regarding the quality of your service. In the health department, this requires tracing through case studies of people who are assisted by your case workers to find out if the impact that you expected to have as a result of your work with this particular group of persons worked out as you thought it would. In education, it means surveying and testing students. To find out how well you are doing by the programs you designed requires new activities to generate new kinds of information that are not now being generated in the normal course of the accounting cycle in your government. So, my answer to the question, "What effect does PPB have on your reporting systems?", is that it should begin to reflect more information about the performance with respect to your objectives than it now does.

Periodic Review

Now, if you have a situation where a program is clearly identified with a particular objective that you're trying to achieve, there doesn't seem to be any reason why you could not rather easily generate information about the actual level of output in achieving that particular mission. It's where you have a program that has an impact on multiple objectives or where the program has multiple elements such as social workers, policemen, and lighting streets, or where a program has elements, each of which is implemented by different organizational units, that it becomes difficult to record how much you are spending on the program and what you are actually attaining as compared with what you have planned. It is when you have to start allocating funds to several different activities, and when there are several different objectives and several different program elements, that it begins to get a little questionable about all the work that you have to go through to produce that information.

This leads me to hedge and to say that where it is easy to do, generate information about your actual spending on a mission basis. Where there is a lot of allocations involved, as I think there are going to be in a number of departments and in a number of programs within departments, I'm very, very hesitant about the advisability of going through all the work to allocate the costs.

So what do you do to establish an information base? You've got to make planning decisions and you've got to relook at the decisions you've made in terms of allocation of resources, and you want to do that periodically, although not on a routine basis. My feeling on that is that in situations where costs are quite difficult to allocate, you should periodically do special studies to determine where you are with respect to the relative impact

that these activities are having on your goals. Do a statistical sampling and make a quite lengthy, involved effort to try and relate costs and activities to objectives, and use that special study to relook at your allocation decisions—do another job of planning and of analyzing alternative ways of achieving your objectives. That, I think, is an adequate substitute to the generation on a very current basis, year after year after year, of volumes of information about the costs of achieving various objectives that you're established in your program structure.

As I said before, there's not any precedence really to rely on when we're talking about the impact of PPB on the existing information system. I'm giving you a lot of opinions that are based more on my experience in the corporate field, than in the government field. Corporations have had a little more experience in this area than governments. So, you've got to understand that the comments I have made are my own personal opinions, and I'm sure that you'll get different reactions from my colleagues or some of the men in the audience. With that in mind I'd like to ask if there are any questions about what I've said or any comments that any of you would like to make about your feelings on the impact of PPB on information systems.

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Participant: If, as was mentioned, government can get *white elephants* on its back, I am wondering why information on the end products of the programs authorized should be reviewed on a less than a regular basis, except for those small programs which are relatively unimportant.

Kelly: That's a good question. I shouldn't be allowed to get away with such a general statement. I don't mean to say that you walk away from it and let it die and never look at it again for a couple of years. I mean to say that you might not concentrate a great deal of analytic effort on every single program and every single activity in the government every year. You are, however, going to concentrate a certain amount of effort regularly in analyzing your performance along an object line classification. Every month you want to know what are we spending? how do we relate to the budget? and are we on target? You don't need to know that with missions, because you're dealing with larger expenditures of money and with much more intangible questions—questions that require more time to really see whether or not the decisions you made worked out.

So, I didn't mean that you can completely forget it, but I meant that one year you might look at health services in a great deal of detail and make a general allocation of funds decision, and then you continue to include that program and funding you decided on in the following year's budget when you come around the cycle. You might not do a special study of it, however, You might not raise a whole lot of questions such as, "Did we actually fulfill the objectives that we set out to fulfill?" You might not go out and do a massive survey of the effect that your health services program has had.

PPB is introducing a new kind of information, and we're suggesting that one way to generate it is to put in a formal system to produce and highlight this kind of information—a way of looking at financial information to help you make decisions concerning allocation of resources. We've maintained through these past two days that for planning purposes it's very important to look at this mission-oriented information. We've said, "Produce plans based on benefit to cost analysis for a long-term mission." This requires a lot of information, a lot of analysis, a lot of special studies. The question that I seriously am in doubt about is whether or not you then follow this up with a report that comes back every year which says, "Okay, for this year, here were our actual expenditures on a mission basis, and here was our actual output."

That was the question that the post office got stuck on yesterday. The post office people said, "It's an incredible job. If you're going to ask us to routinely report at the end of every year what our actual costs were for every product line and do it on a timely basis on any kind of an accurate basis, that means a completely new system for us." I don't have the answer to that problem.

There definitely is a job to be done if you switch every single program that's being conducted in the government from a functional orientation, which tells you the functions that you are performing, to a new mission orientation to determine the outputs that you think you're getting. In some agencies, it's going to be pretty easy. The programs are more or less clearly related to a single objective, and you can cut or crosswalk financial information on a program category basis relatively easily. Those departments are going to be very, very fortunate. In looking through the Hawaii budget, there doesn't appear to me to be any department where this is the case, except perhaps the department of social services. I think you'll find in the presentation on Friday, that the department of education might face some problems in trying to categorize information on this mission basis. It's probably the same at the University of Hawaii.

The best example of the difficulty in converting existing financial information to the mission structure is the post office. It's very clear that it manages its business on a completely functional basis, and not on the product basis. To go to them and say, "Okay, every month I want you to give me a report that tells me how much you spent for these various missions—how much you spent for first class mail, second class mail, third class mail," is in effect to require the post office to do statistical studies every month to try to allocate the cost to the various classes of mail. I don't know whether this product orientation is going to help the post office look at the big picture. The post office, of course, refused to do that. It said, "We will not change our reporting system to accomplish that kind of information."

Participant: I still have a question on my mind on that post office case. Now, as I see it, the post office's mission, the post office's product, is collection and delivery of mail, no matter what kind of mail it is. This is the service it provides. So in the post office, then, its function almost becomes its mission or its objective. Who cares how many pieces of this kind of mail or that kind of mail, except from an analytic point of view in determining how much the post office is going to charge for it? The post office's major function is serving the people by collecting and delivering the mail.

Comment from the audience: Let me say I care. I care for having to pay for junk mail, for example. I would like to know how much of the post office's effort is going into delivering the essential first class mail and how much of this same postman's time is spent in delivering junk mail. I care very much.

Kelly: Let me take an example that might be a little better than the post office. We spend money to light the streets. We don't do it as a state, but municipalities do it. There's a lot of money spent. That's a program, I guess, of the department that's concerned with keeping the streets lit. What mission does that accomplish? There are probably a number of missions—law enforcement, beautification, etc. There are a number of objectives that are achieved by lighting the streets at night. What do you do with that program in terms of reporting it on a mission basis? To what particular division do you assign the money you spend to light the streets? This is a big problem. It's a problem that I think is important when you go into your planning process and try to decide whether you should really devote $10 million a year to lighting the streets. In the planning process, it's very important to look at what benefits you will receive by that and relate it to the cost.

But, when you start operating, and as you go along implementing the program, do you really want to know what you're getting from the $10 million you are spending to

light the streets and how much benefit the $10 million is bringing you? The question that I'm raising is the difference between planning, where you are trying to make resource allocation decisions, and control in the management, where you are attempting to follow up on those plans. I am suggesting that there are two different kinds of activities, and that we might not need to distort our whole reporting system that management uses for control purposes in order to reflect the mission-oriented program structure that we're developing down here. Of course, we need to establish a data basis which supplies information to help us rethink our plans and to raise the question, "Are we allocating resources in the right way?" But, I don't think we can answer that problem in all cases by saying, "Let's go to our accounting system and set up a new code for every single item we have in the system and report it out month after month after month." There are cities and states which have done that. I think in the situations where it's been done, they were very fortunate in that the programs were very neatly tied to the program categories, so the job was routine. They had no allocation and no sampling to do; it was very easy.

Participant: I have a question related to that highway lighting example we just discussed. My problem is that I have a difficult time identifying the specific mission, assuming that a mission-oriented report is desired. There are two possibilities: one, you mentioned, which is law enforcement. On the other hand, the mission might be to make the streets safer for night driving. Assuming that I can get ready information on the number of accidents on the lit streets for a specific period of time, but that I can't get any information on the reduction in muggings and so on, to what mission would I put this street-lighting program?

Kelly: To traffic safety.

Participant: Why?

Kelly: The answer that has been given in a number of similar situations is, put it all in the safety category. Don't attempt to allocate the cost of this program, even in the planning stage, unless there's a very clear indication that you can measure the benefits in another category. Otherwise, you are liable to get inaccurate kinds of decisions. Remember, we talked about trade-offs between programs in the same category. If you put street lighting in the crime prevention category, you might not get any street lighting at all, since you can't really get any evidence that crime is affected by street lighting. You might not get any benefit for street lighting in the crime prevention category.

Participant: But can't you point out that the street lighting program has some ancillary benefits in the area of traffic safety? Can't you specifically point this out even if you put street lighting in the crime prevention category?

Kelly: Yes. You might point out that there is this side benefit.

We'll follow up, again, on the implication of a mission orientation for planning on the information system. There is a question of just how you go about establishing a data basis that helps you in doing the planning part of the process in reviewing the budget.

You're moving towards automatic data processing with SWIS. As I interpret SWIS from the materials I've read, it is intended to be more than just a data processing center that serves payroll and things like that. I believe it's intended to collect relevant, vital statistics about the state. That, I think, is a necessary kind of information system for program budgeting. You must begin to generate through such an information system, data on how well you're performing—on what you are achieving in the light of your objectives. That kind of statistical information will need to be generated from your information system, and I think SWIS can do that for you.

Participant: If we need all four kinds of information—line item, organization, performance and mission—how do you translate missions to objects of expenditure, organization and performance for management purposes?

Kelly: You have to go through the plans before you can allocate the funds, determine organization, and establish the actual category within which you are going to spend money. Somebody has got to convert the plans into organization and line items. PPB suggests that maybe the legislature and the governor should be less concerned with the line items and more concerned with the missions. Information on missions must be passed down to the lower levels of the organization and converted into this sort of object classes. You need to crosswalk while you're planning and formulating your budget—crosswalk missions to functions, organizations, and objects of expenditure.

Participant: Going back to what you said on reporting on the mission basis—shouldn't there be an on-going evaluation being conducted by each department and the lower levels of the department throughout the year on how well they are approaching the objectives of each program, even though you might only have an in-depth study of it every five years?

Kelly: Hopefully, they're consciously concerned with how they're really achieving their missions, and less concerned with whether they spent $1,000 too much for automobiles and so on. I guess my final conclusion and answer to the question, "Will the information system have to be changed to reflect the PPB mission orientation?" is "maybe." To the extent you can easily reorient the system towards missions as opposed to functions, I think it should be done.

Participant: I was reading the testimony of Mr. William Gorham, assistant secretary of HEW, before the subcommittee on economy in government of the joint economic committee of the U. S. Congress. Now, if anybody has got statistics coming out of his ears, it's HEW. Mr. Gorham indicated that before HEW could even begin analyzing its programs, it had to develop a brand new information system in order to get the basic facts. It seems to me that if planning on the mission basis is to be done, particularly where similar programs are being carried out by a variety of agencies, there is need for a whole new information system which generates the needed data on a somewhat routine basis.

Kelly: There's no doubt that HEW has to have basic data in its detailed studies of their programs. The question I raised, however, is whether or not the generation of such basic information needs to be done continually in the accounting system. To take an extreme case, the case workers working in the health department or the social services department might be performing work aimed at achieving several different missions. My question is, are you going to, therefore, have the case workers fill out a time sheet that allocates their time to each of these particular missions? I'm saying that, that job of determining the cost of each mission might be better performed on a periodic, special study basis than trying to include in the existing accounting system the requirement that it report out on a routine basis the details on people, equipment and time for each mission. If you are going to so require, then you need a whole new system. Do you see what I mean? Yes, HEW has to have the basic information, but I'm questioning whether it needs to routinely generate that information on a monthly basis as a part of the normal accounting system.

Wednesday, January 31, 1968

CASE STUDY: DISEASE CONTROL PROGRAMS (A)

Warren Law

What I'm going to do in a few minutes left is really the same sort of thing I'm going to do tomorrow and the same sort of thing that I think has been done already. You may feel that you're learning more about cost-benefit analysis than you really care to know. This embarrasses me a little bit, but not very much, for one of the essence of the case method is simply that, presumably, repetition has some value and that the man who solves the same problem over and over again learns how to solve it more expeditiously. By doing the same thing two or three times, you begin to get a feeling for what is good and what is bad.

General Comments on the Case

A good feature of the case. This particular one has some good and bad aspects. One of the good aspects, in my opinion, is simply that it compares motorcycle deaths with head and neck cancer. This may not be obvious, but, as a matter of fact, it makes some sense. Instead of lumping the expenditures on highway safety with the highway budget and trying to make trade-offs between whether I should spend more money to increase highway safety or to make the pavement three inches thick instead of two inches thick, perhaps the more logical trade-off is, should I spend more money to cure head and neck cancer or to avoid motorcycle accidents, since, in fact, presumably, the object of either of these expenditures has some rough similarity with the other—i.e., trying to save human lives. This, I think, is a good feature of this case.

I emphasize, as I did yesterday, the fact that the way programs are presented is going to make a great deal of difference in the way people think about them and spend money on them. I can't believe that the exact amount of money spent on this highway safety program, when it is compared with cancer, will be the same amount as when it is compared with some highway widening proposal.

A bad feature of the case. One of the bad things about the analysis contained in this case, which is almost the nature of the beast of all of these that I've ever seen, is that it is atrociously written. There may be some law which, I'm about to discover, says that good analysts are bad writers. I think, perhaps, the government—federal, state, and local—ought to have a school teacher some place to read all of these things before they ever reach the hands of the users, because school teachers have a lot of experience in taking a blue pencil and marking through paragraphs. For this one, I wish I had a blue pencil.

Just at random, I opened it to page 3, and here's a very short paragraph that says,

> *"Any methodology sets the parameters on how a problem will be managed and which of several possibly germane problem elements will receive attention. Consequently, much of this report deals with the mapping of boundaries. However, when presented under the guise of method, much of this limit-setting is implicit since attention is on the method of problem-solving rather than on the limits being placed on problem-solving by the method."*

I've read that several times, and I think I understand it. I'm pretty sure I understand it. I'm not certain, but I'm pretty sure. I'm also pretty sure that any member of the Congress who bothers to pick this up wouldn't get past that paragraph. If the object of the program analysis is to nail somebody to read it to find out whether the program is good or bad, this particular analysis may be, in fact, deliberately designed to keep you from getting past that paragraph. At any rate, it adds almost nothing, and it's a very typical example of bureaucratic prose, and I express my own biases in making that comment.

The Methodology Used in the Analysis

Once you get past the verbiage and get down to the guts of the benefit-cost study, it's really rather simple. Let's walk through it rather quickly and then ask what you think about it and the level of funding that you might propose if you had this in your hands.

The fellow who did this analysis asked himself, "If we were to spend money on this particular program, what benefits would we receive from it?" This is a meaningful question. Let's take a look at how he answered this question. Turn to the table on page six.

The analyst asked himself, first of all, "How many people are being killed in motorcycle accidents, and how can I predict how many will be killed in the future unless we try to do something about it?" These kinds of things are not always easy to predict. Happily, he found enough correlation between the number of motorcycles and the number of deaths per 100,000 motorcyclists to believe that there's some rough ratio which he can apply in the future. I'm looking at table l, and you will notice that for several years the number of deaths per 100,000 was from 113 to 117, and it seemed to be declining a little bit. The analyst made a rather untenable assumption that in the future, if we don't do something, about 110 people per 100,000 motorcyclists will die annually.

Then, he had some trend in the number of registered motorcycles, and he extrapolated that trend into the future and said, "By 1972, I think there will be six million motorcycles registered, and that means we'll have 6,600 deaths from motorcycle accidents unless we spend some money to try to reduce that death rate." (Table 2, page 7)

Then, he said, "Well, what can we do? What alternatives can we explore?" The one that he explored was to persuade people to wear helmets and eyeshields. He reasoned that if motorcyclists were to fall off their motorcycles, the helmets and eyeshields might help to reduce the death rate. He had to ask himself, however, whether this is a likely outcome, and fortunately, for this question, somebody in Australia had studied the question and found that in the state of Victoria, which had passed a law that forced people to wear helmets, only one-half as many motorcyclists were killed in the year following the passage of the law as compared to the death rate before the law had been passed. Now he had at least something he could hang his hat on. He believed that if 100 percent of the motorcyclists wore helmets, the death rate might be reduced, as I recall, by 40 percent.

Then, he had to ask this question, "Well, how many people could we persuade to wear helmets? Surely, not 100 percent." Here's what caused the Harvard Business School's gut-feel to enter into his analysis. Something in his stomach told him that if we spent money in the way that is described in exhibit 1 [page 11]—if we had some TV spots and basic films and community projects and so forth—that in the first year, we could persuade 20 percent of the people to wear helmets, and next year that 20 percent presumably would keep on wearing them and 10 percent more, and by 1972, 55 percent of the people who are motorcyclists would be wearing helmets (table 3). He applied those rates to the expected number of deaths and got table 4 [page 8], which shows the estimated reduction in the number of deaths from this program.

The analyst then asked himself, "Well, what are the benefits? Obviously, the person whose life is saved has benefited in some way, but how can we measure this benefit?" He concluded that one way of measuring is to estimate how much income the man would have earned had he lived to a ripe old age. Presumably, by keeping him alive, society would benefit. This required him to estimate the average age of the people who were killed while riding motorcycles—drive or ride, I guess both. He had some data which pointed out that 90 percent of the deaths were men and 10 percent were women and, as I recall, about 90 percent of them—I've forgotten the exact percentage—were between 15 and 24 years old, and 10 percent were between 25 and 34. He also had some information on how much people, on the average, earn over their lifetimes, and thus, by applying a rather simple algebraic equation, he assumed that, if 90 percent of the lives saved are men and 10 percent are women, and 90 percent of the men are of a certain age, their lifetime earnings saved would be a certain amount. He then discounted those future earnings back to the present to get some discounted value of the lifetime earnings of those people whose lives will be saved, and these figures you find in table 7 [page 9].

Discounting by that process, he came out with a rather large amount of discounted lifetime earnings, something like $412 million. He figured the discounted cost of the program to be roughly $7 million. By dividing $412 million by the $7 million—I'm now reading page 10—he got a benefit-cost ratio of almost 56 to one, 55.6 to one, to be precise. That is, we will get—you could phrase it this way—maybe 50 times the benefit that our cost represents. He thought of a lot of other ways to reduce deaths—perhaps not the analyst, but somebody has. He studied a number of obvious disease programs and other ways to reduce deaths and compared the benefit-cost ratios of these programs with the helmet program. You see all those ratios displayed in exhibit 2 [page 11]. And there you are.

An Evaluation of the Analysis Performed

The obvious question that is posed is, if you were handed this study, would you fund this program? Would you spend money on this program? If so, at what level? What would you do?

Participant: The study doesn't consider whether this man's life is worth saving. It merely talks about are we going to get a 55 to one ratio by spending a certain amount of money. We need to know this other thing. It merely places a dollar value on the life of a man. Is that correct?

Law: He took a dollar value. You don't have to. One thing that should be said is, I just don't believe this is the benefit of the program. I think he is measuring the wrong thing. Am I putting words in your mouth?

Participant: Yes. Is this man's life worth saving? Or do we have too many people around?

Law: Well, that's a good question, although I don't know exactly how to address it. When I go down to Waikiki, I think there are too many people around. Some parts of the island I would be happy to see a human face.

Participant: An alternative might be to do away with motorcycles.

Law: Yes, I guess so. The analyst did dismiss some of the possible alternatives. For example, not allowing anybody to drive motorcycles until he is 21 would reduce the death rate, clearly. There are some things, I suppose, that we'd have to decide are alternatives, but we'd better not examine them. We're not going to suggest that we legislators do away with motorcycles. We might suggest it, and I'd vote for it—I don't care whether it's fair or not—but I just don't really believe it would pass.

Participant: We have here something of a Madison Avenue approach. We spend $X on TV and ads and public opinions and what not. We get good results.

Law: Right. Well, if you're saying this may be the wrong way to go about it, I'm willing to debate with you . . . .

Participant: Incidentally, I didn't say it was wrong.

Law: No. But if you did say it—I hypothesize you might be saying that—one of the obvious alternatives is simply to legislate that motorcyclists have to wear helmets. It would be a lot cheaper than trying to persuade them to wear helmets, and it certainly begs one of the basic questions of government which is the extent to which you order people to do things or to the extent to which you persuade them to do things. It even begs—and you're implying this when you ask, is his life worth saving?—the fundamental question of whether government should put itself in the role of a parent. The government does put itself in the role of a parent of children and of mentally incompetents, when it does things for them on the grounds that they are incompetent and unable to decide for themselves. You might want to define a motorcyclist as a mentally incompetent human being—I might even be willing to accept that definition. But if you assume that he is competent, you can argue whether to let him kill himself or let him go. I'm not really prepared to debate that point, although it's fundamental to this kind of question, because, of course, many government programs can be attacked or defended on your answer to the question of whether the government is there to act as a parent or is not to act as a parent.

Participant: To mandate that helmets be worn is going to meet a great deal of resistance, like the prohibition when it came along; they were then trying to find ways of keeping it from being put into effect. Same thing with cigarette smoking. If you make it illegal to sell cigarettes, people will resist it a great deal.

Law: You mean other than tobacco manufacturers?

Participant: Oh, yes.

Law: I think it's true.

As long as you raise the issue, it's always been one of the fascinating questions for me. I am, by training, an economist, and in fact I wrote my doctoral thesis on the question of luxury taxation. There's really almost no economic rationale for taxing cigarettes as heavily as they are taxed. If you ask, "Why should a cigarette smoker pay so much more to the general cost of the government than a non-cigarette smoker?" it's going to be very difficult to construct an economic argument except to the extent of, "Well, maybe we're going to take the money and apply it to lung cancer—a kind of user charge, a sort of service charge." But that's a sophistic argument.

What I am about to say, however, is that there's been a number of polls of the American public asking, "Which taxes do you think are fair? Rank them." And cigarette taxes have always ranked very high. The general public, including all the smokers, think that it's fair that the smokers should pay more taxes than non-smokers. I'm not prepared as an economist to force on the general public my definition of "fairness," because there isn't anything carved on a tablet of stone that says that I know more about what's fair as compared to the subjective judgment of others. If people believe that cigarette taxes are fair, for crying out loud, give them cigarette taxes instead of, say, the income tax which has a good economic justification but which is rather low in the public estimate of what's fair.

Well, that's a philosophic argument that I shouldn't have started on, except that it is tied-in with these fundamental questions of what are we trying to accomplish? What is a legitimate objective of government? By the way, no question has been raised in these three days as to where you are going to get the money. That's another thing.

Let's come back to the question of why we should save the guy's life, sort of against his will. You might even argue that anybody who rides the motorcycle has a death wish and that you're really preventing him from accomplishing what he is setting out to do by putting that helmet on him.

I think probably the economic rationalization for using the motorcyclist's earnings that you save as the benefit is that, if you keep him alive, he will produce something for the general welfare and his earnings is a measure of the goods that he would produce over his lifetime; if he gets killed, society gives up those goods; therefore, it may be rational for society to spend some money now to make sure it doesn't have to give up those goods in the future. That's the kind of logic that economists like to use. As a matter of fact, this is a pretty good logic, except that I think it misses this one point, that the motorcyclist, if he is alive, will consume most of those goods himself or an equivalent amount, and thus it's almost a wash transaction—he will produce goods equal to the discounted present value of $140,000 of earnings and he will also eat up, wear out and burn up $140,000 worth of goods, with a net benefit to society of zero.

So, whether society as a whole is any better off as a result of saving his life is debatable, although I would say probably not, if you think of it in a hard-hearted way. But, if you think of the government as a parent, then it's a different matter. You say, "Well, it's the job of government to protect fools against their own folly." And it is one of the jobs of government to protect children and feebleminded persons. Maybe you'll say whoever rides the motorcycle is feebleminded, and I'd vote for that.

Participant: He won't pay taxes?

Law: Well, he may pay some taxes. In that case, you'll start arguing how society will get something out of it. You could construct that argument. In fact, one of the reasons why you get a low cost-benefit ratio from lung cancer as compared to the 5.7 to one ratio for motorcycles, is simply that the average person who dies from lung cancer is considerably older than the average motorcyclist. If you say, "The older the man, the less the benefit of saving his life because you get less taxes from his income," I'm willing to be with you. But the income saving alone doesn't quite make as much sense. The cost to society is what I'm really interested in, because if I'm interested in saving his income for him, I'm putting myself in the role of his parent, and I'm not particularly enthusiastic about the government being in that role in most cases. But I am enthusiastic about the government being in the role in which it says, "If I can collect some money from society and spend it in a certain way, society will be better off."

This is the whole object of cost-benefit analysis, that it forces you to ask, "How does society benefit from this expenditure?" If you say, "Well, it may reduce the cost of ambulances or free hospital beds," or any number of other measures of benefits, I'd feel more comfortable than if you say, "It saves his income for him." Of course, almost certainly, one of the reasons why the analyst used "income saved" is that it's an easy benefit to measure. We've got a lot of data on how much money people make, and you can send out some kid and say, "Come in with the expected earnings of a fellow who dies at age 25." The trouble is, it's the wrong benefit, in my opinion. The right benefits are much harder to find and it begs one of those classic questions of whether you have accuracy with the wrong number or a rough measure of the right number.

Participant: Isn't the benefit-cost ratio high in this case because the motorcyclists are generally young and have a rather long life expentancy?

Law: Yes, I agree. One of my complaints about this approach here—I'm really saying the same thing over again—is that you get a low cost-benefit ratio from expenditures for example on lung cancer. Now, 5.7 to one is high, but it's nothing like 56 to one that you get for motorcyclists. The reason for this is that presumably when a fellow dies from lung

cancer, he's considerably older than this 19 year-old kid who falls from his motorcycle. If you use discounted future earnings, you're foregoing relatively few earnings on a man who dies at age 60, let's say, as compared to a man who dies at age 20. On the other hand, if the older man leaves several children behind him in contrast with the unmarried nut who is driving the motorcycle, you might argue that if we were looking at the true benefits to society in keeping a man alive, it's much more beneficial to keep the married man with children alive than the young unmarried motorcyclist.

Having said this, I'd be frank to admit that it's difficult to select data that would make you feel very comfortable in saying, "This is the benefit to society of keeping a man alive at age 20 or 40 or 45." This is no answer though. The fact that it's difficult doesn't mean that you should take a number that is wrong because it's easy to get and say, "Well, I didn't get the right number, that's too hard, so let's use the wrong number."

Participant: The analyst limited himself to head injuries. Now helmets have nothing to do with broken arms, broken legs, or lung punctures by bones. He's just talking about heads.

Law: I suppose that it's logical to assume that the helmet would only help in head injuries. Although, since you mentioned it—I didn't know I was going to teach this case or I would have brought the clipping—but there was a clipping in the New York Times within the last month of a suit against the State of New York by a motorcyclist. The State of New York has a law requiring motorcyclists to wear helmets. This man was arrested; he had a helmet, but it was strapped to his knee, and they fined him; and he made the legalistic argument that the law simply said you had to wear a helmet, but it didn't say where you had to wear it. But the reason he is suing is not to get the fine back, but because he claims that on the way home from court he was involved in an accident in which he broke his knee, with the helmet on his head. He feels that the state, somehow or other, is responsible for this.

Participant: The emphasis here is on saving lives. How about preventing injuries?

Law: You could argue that the analyst is understating the benefits of the helmet. You could argue that he's only estimating the value of the lives that are saved, presumably even if the program reduces accidents as well. The number of people who are in the hospital for a certain period of time, that must be some saving. That unknown analyst might argue, "Well, gosh, when you've got a cost-benefit ratio of 55 to one, you don't have to throw in any other benefits. It's only when it's close that you begin to invent other benefits as well as the one you measured." He has some logic, but, you could argue, "Well, it's bound to be beneficial, provided, of course, that your first assumption is correct—that the benefit of saving a human life is the earnings of the man from the time his life would have ended." This is so critical to this kind of analysis.

Participant: Exhibit 2 on page 12 shows that even in the uterine cervix cancer program, there is a ratio of nine to one. This is a very good return for your investment. In the lung cancer program, it's not quite so good (5.7 to one). In the breast cancer program, it's a little worse than in lung cancer (4.5 to one). Suppose we end up putting most of our health dollars into curing tuberculosis which has a ratio of 4.4 to one. Sometimes a program may be highly desirable although the benefits may not be as great in terms of the benefit-cost ratio than other programs.

Law: But it makes you uneasy, doesn't it? It makes me uneasy. I am not denying the desirability, except that I don't have an easy solution. This morning, somebody asked whether it is really possible to think these state and local programs through rigorously, and whether there aren't such things as basic services that have to be carried out regardless of cost. I think Graeme Taylor gave it away too easily when he said, "Yes, you've got to collect the garbage." I think that is baloney. You don't have to collect the garbage. There

is not any state and local service that you *have* to offer. In fact, you know, in Southern California, for years they didn't collect the garbage. People burned their trash until the smog became so bad that they finally decided that it would make more sense to pick it up and take it someplace. You don't ever have to have a police force. We decided, presumably on some rational basis, that we would rather spend the money to have it than bear the cost of not having it. But this begs the question, would you rather have twice as many policemen? are you willing to pay that price? We could fall out into your department, and I suspect you might like to see more money in your department. If not, you're the first public servant I've ever encountered who couldn't think of beneficial ways to spend money. I think this approach applies just as much to state and local governments, maybe more than to the federal government where in fact it is pretty difficult to come to grips with the defense department and say, "Well, what's the discounted present value of not having the war next year compared to not having one this year?" This makes less sense to me than some of these state and local things. I'm not arguing; we're not arguing; I'm just speaking.

Participant: If this program is such as to give you a ratio of 55 to one, why not spend more money sooner to get the benefits quicker?

Law: You've made a good point. To carry it a little bit further, you are really asking one of the questions that I posed earlier—what is the level at which you would fund the various programs? If you had $X to spend, would you spend it all on the program that gives you the highest benefit-cost ratio and spend nothing on all the rest? Would you say, "Boy, if one of these really pays, why fund it 20 percent over the next five years? Let's pour all of our money into it in the first year, and we can postpone one that pays off, but not as well, for two or three years." Or, would you spend a little of the $X on everything on the ground that we ought to be doing something of everything?

Then, this subsidiary question. Suppose I got a benefit-cost ratio of five to one from lung cancer but 56 to one from motorcycles, and these are the only two programs, and I could spend an enormous amount of money on either one of them. Should I spend it all on lung cancer on the grounds that the absolute number of lives I would save is much larger than if I spent it all on motorcycles? I might not do as much with motorcyclists as I would do with lung cancer with the same amount of money, even though, in fact, the cost-benefit ratio from lung cancer is somewhat lower.

I don't want to push this argument very far simply because we don't have time. There are a lot of philosophical questions here about the whole technique of analysis. But, there's nothing in this analysis that gives us any clues to these questions.

What I've just said isn't exactly what you said, but it's really another facet of what you are saying, which is, "Suppose I spend a little bit more in the first year, would I save more lives, and if so, how many more? Would a 10 percent greater expenditure save 10 percent more lives?" Now this is one of the classic businessman's questions. We're talking here really about a kind of an advertising campaign—to persuade people to wear helmets. All businessmen can tell you that if you spend $50 for advertising, it won't do you any good. You have to reinforce it; you have to spend more. But what's the optimal amount? When would the marginal return equal the marginal cost? I would agree that this analysis doesn't tell us, although it's a dilly of a question. Just to use the advertising analogy, ask some businessman why he spends exactly the amount he spends on advertising, and he'll come out with something like what Wanamaker, the famous Philadelphia department store owner, said. He said that he knows that half of what he spends is wasted, but he doesn't know which half.

There is a cost-benefit ratio to carrying cost-benefit analyses very far. We could spend twice as many man-years to analyzing this program—whether the incremental benefits from this would be worth it, I don't know. But you've still made a very good point, which

is, the guy who reads the analysis ought to ask himself, "Should we spend a little bit more or a little bit less? What are the marginal trade-offs?" Answers to these questions, you can't get from this document.

Participant: It seems that you can have a program to prevent deaths and injuries from motorcycle accidents by prescribing helmets and so on, but in the disease programs, such as lung cancer, there doesn't seem to be much you can do to prevent it from occurring, except perhaps through research. Now, in determining the benefit-cost ratio for lung cancer, shouldn't the benefits of research be considered?

Law: Yes, you might, presumably. I know nothing about any of the other studies since the only one we have here is the motorcycle study. Presumably, the reason you don't get much of a payoff from the cancer program as you can from the motorcycle helmet program is that you don't prevent cancer; you wait until you find out if the guy has it and then, by spending some money, you may save his life, sort of.

You're arguing that maybe if we put an equivalent amount of money into research for cancer, we might in fact prevent it. If so, the cost-benefit ratio could be staggeringly high, and that poses a most difficult question. The question is just like the one posed in advertising, in business—how do you measure the benefits of research and development? In business, the businessman has some techniques—you know every advertising agency has a lot of techniques—to measure the benefits of advertising. He goes out and samples people and asks them, "Did you hear that commercial? Did you buy it? What do you think of it?" These are crude techniques. But, he's got almost no technique for estimating the benefits of research and development. If you ask a businessman why he is spending so much on R and D, his answer comes out, "Well, I've always spent X percent of my sales dollar," or "It's what people in the industry spend," or something like that.

The same thing is true in government, I'm sure. How do you measure the benefit of research and development? Darned, if I know, although it still doesn't avoid your having to answer the question, how much to spend on R and D. My limited experience with the federal government has been that, since you can't measure the benefits, and it is a "good thing" because you can't imagine not having research and development, it's a great temptation on the part of the administration to put a lot of its accounting expenditures in R and D. At the state level, too, there's a tremendous amount of money poured down what may be called a "raffle" by some critics. The argument at NASA is, "Boy, by research and development, we're really learning a lot," or "We're going to learn a lot some day."

Participant: Australian highways are considerably different from ours. So are the motorcycle riders. Then, I suspect not all of the lives of those wearing helmets are going to be saved. I wonder how many of these motorcycle riders are going to die of a broken neck with their helmets still firmly fastened on their heads?

Law: You will note the analyst says the helmets will reduce the 6,600 deaths in 1972 by 1,450. That still leaves 4,200 dead from other causes, and I assume 50 percent of them will have helmets on. Now, you want to argue as a matter of fact that the helmets might contribute to the broken necks—that's interesting. This hadn't occurred to me. As a result of wearing the helmet, he couldn't hear the approaching train or something like that. That would be another possibility. Well . . . . Yes?

Participant: There is one benefit that isn't covered. In this country, women outnumber men three to one. If you noticed the ratio, there are more male deaths than female deaths on account of motorcycles. If the male deaths can be reduced, surely this is a benefit to the female population.

Law: Yes, and that is a staggering thought. Apart from the accuracy of the first three to one ratio, which I would be willing to question, it is true that the analyst expects

many more men to be killed on motorcycles than women. This is not really surprising. There are more men motorcycle riders, and men make more money than women, and therefore, presumably, by this analysis, saving a man's life is more valuable than saving a woman's life, if you argue that the benefit is the discounted earnings.

There are a lot of weaknesses in this analysis. For example, if you want to pursue this to a mathematical absurdity—we've already passed that point, I think—there is an assumption built-in here. I'm almost certain that I read the analysis as saying that motorcyclists all stop riding motorcycles at age 35. So the analyst is using the expected earnings of people who are killed before age 35. I assume that they'll keep on riding and some of the people who will be killed will be over 35 and earn less. Well there are a lot of things we could take potshots at.

Participant: One thing that's not considered is the savings in the cost of public care of persons who are injured and land in hospitals as a result of motorcycle accidents and who are thereafter not able to work any longer.

Law: Absolutely, I'm with you 100 percent. I think the benefits are wrong. The "earnings saved" is a wrong benefit to measure. The question is, what is the right benefit? This question is worth studying. Since we spend lots of money at the federal level on public health and welfare, it is worth considering whether we ought to spend some money at the federal level in order to reduce motorcycle accidents. It's just as disastrous to become maimed as a result of a motorcycle accident as it is to get killed on a motorcycle.

Participant: Why should it be done at the federal level? Why can't it be done at the state level?

Law: Well, state or local, I don't care at which level, but I'm willing to concede that it is worth studying. I am not willing to concede that "earnings saved" is the right benefit. You've got to wrestle with that tough question of what the benefits are of spending this money. If you say, "Oh, I don't know, something tells me that we really ought to be spending money in order to reduce the death rate," my answer would be, "Why?" until you can give me a better reason than that. Now, if you say that society ought to spend this money to encourage motorcyclists to wear helmets because we can then save society the costs of leaving orphans on the public welfare rolls and of maintaining hospital beds and all these other things, I'll vote for that.

The same kind of argument might be made about putting fluoride in the water—I bet this is a hot topic in Hawaii; it's hot back home. Why should society spend money to fluoride the water? Well, it depends on two different things. One is whether you believe that the government should assume the role of being a parent. I don't particularly care for this kind of reasoning, and so, I might say, "Well, no, I wouldn't spend the money to fluoride the water just for that reason." But, if you say, on the other hand, "There are lots of costs to society from dental decay and there are lots of expenditures that will later take place that wouldn't take place if we put fluoride in the water," then you might begin to debate the cost-benefit analysis there.

Participant: We recently enacted a dental health program for public employees. If the taxpayer is going to have to pay the bill for a tooth decay, then I believe that the government is right in trying to force fluoridation of our water to prevent decays from occurring which will require spending the taxpayer's money.

Law: Oh, yes, but I'll even go further. I don't want to get involved in a debate about whether fluoridating the water is a Communist plot or not—I suppose there are some people who say that it is—but one of the objects of government is to make the whole society efficient, and to avoid social costs, where possible. Now, if in fact there were no such thing as tooth disease or decay, we perhaps wouldn't have to have any dentists—I guess your

gums would fall out or something then. At any rate, if we could reduce the number of dentists, this would be a genuine positive saving to society. I don't mean that you kill all the ones you have; you just don't train as many in the future; and you have skilled people who can be devoted to other useful services. So, to the extent that government, by spending money, can reduce the social costs of various things, why, it is a legitimate object of government expenditure, even if the taxpayers weren't going to have to pay the dentist bill in the future. This is a rather narrow argument, but I think it has validity. Even if everybody paid his own dental bill, the government might still be interested in promoting dental health simply in the long run to get rid of dentists because there's nothing desirable about using resources in this way. Are there any dentists in the legislature?

Participant: Do you know of any data that is available to indicate that we are going to have six times as many males of ages 18 to 35 in 1972 as in 1964?

Law: Maybe I don't understand the thrust of your question. We are going to have six times as many motorcyclists, assuming that the growth rate of motorcycle riders is as in the past. Now, you might want, for example, as a critic, to say, "We've just about saturated the market for lunatics, and we're not going to find anybody else to ride motorcycles, and therefore the assumption that there are going to be six times as many in the future is wrong." But, if you're willing to assume that it's a fairly logical assumption that motorcycling will continue to catch on, the number quits me. Now the highest percentage is men.

Participant: My question is, if we are going to have six times as many men in that age bracket in 1972 as we had in 1964, why hasn't the analyst justified this with documentation, reference, studies, or any other source material?

Law: Where are you seeing that number, and maybe I can understand your question better.

Participant: As a legislator I'd say, "No."

Law: Where's the number? I'm not arguing the point.

Participant: I'm on pages 6 and 7. On page 6, the table shows the 1964 total number of registered motorcycles as 984,000. At the top of page 7, the table shows the projected number in 1972 as six million. How did we get that projection? Can you explain this?

Law: Obviously, you're begging one of the tough questions of any statistical analysis in making forecasts, and I really better be careful here. As a matter of fact though, there is an old rule which says that, if something is drawn roughly like this for five years and you don't know what's going to happen next year, probably the safest bet is that it will be here. Now, you may be wrong, because by that kind of logic you end up predicting that the New York Yankees will win the pennant year after year. You know, for years they did, but then they fell apart. Nevertheless, unless you've got a better prediction, you may want to say, "I just don't believe there are going to be six million motorcycles, but at the rate we're going, there will be." Now if you want to say, "Can the world stand six million motorcycles?" that's another matter. Maybe there is more that the government ought to be doing than legislating motorcycles.

Participant: Is this a case which actually happened?

Law: Yes. We didn't invent this. This is an excerpt from a document presented in the federal government. It is not the worst cost-benefit analysis I've ever seen. It is not the best.

Participant: This cost-benefit concept of PPBS, if done in every problem, may cost more than it's worth. In a democracy, representatives are elected by the people who expect their representatives to do those things which are beneficial to them or to their district. Cost-benefit analysis, on the other hand, emphasizes logic. Not all decisions, however,

can be decided on logic alone, if the people's expectations are to be fulfilled. How do you reconcile this?

Law: You are putting me in a very tough position, because as a professor, you are forcing me to decide either for logic or for democracy, and I find it difficult to be against either one of these. "I am against inflation, I am against deflation, I am for flation," you know.

Yes, it is certainly true that democracy has some elements of illogic in it. I think it was Winston Churchill who said that the democratic form of government is the worst form ever invented, except all the rest. It certainly lacks perfection. I would hope, however, that it is not inherently illogical in the sense that, in the long run, voters will try to elect people who they think will represent their best interests and who will try to behave fairly logically. Admittedly, they do throw a little money here and there just to get reelected, but I think good economics is good policy. Lyndon Johnson is in trouble for a number of reasons, but one is that he followed some bad economics, and he's smart enough to know that he would be better off if prices weren't going up.

I'm not really arguing your point, I'm trying to avoid it. I think anybody who argues that you can apply absolute mathematical rigor to the democratic caucus is out of his mind. Nevertheless, I think if you can make a marginal improvement in efficiency with which you spend large amounts of money—for example, if you spend with five percent more efficiency—you save enough to pay for the cost of PPBS. No one pretends that it's going to be 100 percent efficient. We're talking about moving from five percent efficiency to 10 percent efficiency or something of that kind—maybe in Hawaii, from 60 to 65, but in Massachusetts it would be from five to 10.

But commenting on your first question, of course you can spend a lot of money in making analysis of this kind. I could turn an expensive analyst loose on the most minuscle question, and if he traced every ramification down to its ultimate end, he could spend $50,000 to save $50. If that happens, it's partly his fault, but it's really his boss's fault for saying that he wants the analyst to tackle this problem. Analysts are very scarce, and presumably, an administrator has some visual intuition about what the major problems are in turning the analysts loose on it. If you believe that the problem of motorcycle deaths is a rather minor one, I probably would agree with you. Knowing how scarce analysts are, I'm surprised that HEW spent so much time on this particular problem. On the other hand, I'm also surprised at how many people are killed.

The beauty of this kind of analysis is that, if you do it properly once, you may not have to do it over again. You can gradually chip away at your problems and analyze them now, and you don't have to come back to those problems until five or 10 years later. I convinced myself that it's worth spending this amount of money over the next five years. Now I'll come to the next problem and the next one.

If we had a lot of time, I'd be willing to enter into some of the other more academic questions about whether you really believe the average motorcyclist is going to make as much money over the rest of his life as the average non-motorcyclist. I'd be willing to argue "No," that riding that motorcycle is surely detrimental to his mental capacity, unless you argue, as I did a few minutes ago, that maybe—I hope there are no motorcyclists in the room—his mental capacity is low, otherwise, he wouldn't be a motorcyclist in the first place. At any rate, this question of what the benefit is, is so crucial here, that certainly I would as soon send it back and say, "Saving this fellow's life is not the kind of benefit I had envisioned. I want to know the benefit to society, not to him."

In addition, I would argue, if we had time to debate the case, that the process used by the analyst which on the surface appears to be a fairly logical way of estimating the benefits and the cost of this program, has at least a couple of weak points. One of them I

emphasized when I was going through the steps—that is, there are no numbers yet on how effective you're going to be in persuading people to wear helmets. It makes a great deal of difference in that final cost-benefit ratio whether you believe that by the Madison Avenue technique, we are going to persuade 20 percent or 40 percent of the motorcyclists to wear helmets. We don't as yet have any experience in this. Well, we have a limited experience now in publicizing the dangers of smoking, but, in general, I'm rather pessimistic about using Madison Avenue techniques to persuade people to do things that are good for them. They are very successful in persuading people to do things that are bad for them, but we don't have much evidence as yet that by spending this amount of money, 20 percent of the motorcyclists will put on these helmets. In fact, they're probably out on the motorcycles and not watching the television commercial in the first place.

The point of this aside is, simply, that in looking at one of these studies, you've got to ask yourself what and where are the weak spots? I think the analyst probably got a pretty good guess about how many motorcycles there will be and how many people will get killed on motorcycles. We've got some evidence, and there seems to be some stability in those ratios. But, when you come to something on which we have no evidence, you at least might ask yourself, "Suppose he's wrong? Suppose only 10 percent of them wear helmets, then what happens?"

Of course, another drastic weakness of this analysis is simply that the analyst didn't think of all the alternatives. It may be that the constraints under which he was operating didn't enable him to think of what is the cheapest alternative. If you really want to save motorcyclists' lives by having them wear headgear, pass a law, and tell them they've got to wear headgear. That's pretty cheap, except that you've got to pay the legislature, but that's not very much. Passing a law that requires motorcyclists to wear helmets is much cheaper than persuading them that they ought to wear headgear. This of course raises the fundamental, philosophic question of whether the government ought to push people or try to coerce them. What finally happened was that state legislatures passed laws requiring the wearing of helmets. The federal government can't pass a law that forces them to do so, but it can say that some of the money it is going to channel to your state will not be channeled there unless you have such a law. Now more than half of the states have such a law.

The other weak spot in the analysis is, of course, the Australian experiment. This is weak, not because Australian heads are thinner or thicker than American heads, but it's weak in that, if you read it closely, it's based on one year. The first year after the law was passed, Australia reduced the number of deaths by a certain amount. There are dangers, as anybody will tell you, in looking at one piece of evidence and then assuming that that ratio would hold. Now, if there had been experience for five consecutive years, I'd feel more comfortable.

Participant: Is it an example of the type of quality which we, as members of the legislature, ought to refuse to accept?

Law: I would hope so. It is. I thought that you were going to ask, is this an example of the quality we're likely to get? If you had asked that question, I'd say, "Probably, at the beginning." We don't have many college courses training people to do this sort of thing. The fellow I know who wrote this was a sociologist working in the department of HEW, and somebody said, "Grind this out," and he ground it out.

The object of this exercise is to try to see the kinds of weaknesses that may creep into an analysis. As somebody else said, "You haven't examined all the alternatives. One of the obvious alternatives is to legislate. It's a lot cheaper to force people to wear helmets than it is to try to persuade them to wear helmets, and let's pass a law." Then somebody said, "I don't think the federal government can, in fact, legislate to force people to wear helmets on state highways." Then someone else said, "Oh, that's all right. The federal

government can say, 'We will grant money for state highways, provided you have a law that requires people to wear helmets.' " That has taken place, and now more than half of the states have such a law. In the meantime, there's been another study in the United States which suggests that maybe it doesn't help nearly as much as that Australian study suggested. The issue is far from clear.

The point I simply wanted to make—and we have a knack here, of course, of really making three or four statements over and over again—is that you have to ask, among other things, whether you're asking the right questions. There's an old saying that a thing not worth doing is not worth doing well. I'm not at all sure that the question being asked is even worth answering in some of these cases. It may not take three days to persuade you of this, except that it's sometimes useful to give a number of examples of people who spent quite a bit of time and energy not asking the right questions or even looking at things in the right way.

I was reminded yesterday of a story of the fellow in a small, East Texas town who had a motion picture theater which was slowly going bankrupt. He persuaded a man, sight unseen, to become his partner. When the man arrived in town, the fellow took him into the theater rather diffidently, having sold him half of it, and sure enough only four or five kids were in there eating popcorn, and nobody else. He looked out of the corner of his eye at the buyer to see his reaction, and he said, "Do you think it will go?" And the buyer looked around and said, "Yeah, I think so; it looks like about 70 percent wood." Here's a fellow who would make a good analyst because he was thinking of alternatives, of new ways of looking at old problems.

On that note of quasi-levity, I will quit for the day. Tomorrow you've got a much tougher case, and, by the way, a much more serious problem in the sense that when you start talking about the job corps which is the cost-benefit study tomorrow, you're talking about lots of money and lots of people. Since it is potentially a major expenditure, it's worth spending a lot of time and effort in program analysis.

Wednesday, January 31, 1968

WORKSHOP SESSION

Graeme Taylor, Allen Schick and John Haldi

Taylor: This workshop session is intended to permit you to raise any questions that you may have on any matter that we might not have covered adequately in the previous sessions or on any aspect of PPB. Allen Schick said we've got to be explicit. Maybe we weren't explicit enough in some areas. If you have any sort of dangling question or if there is any unsolved issue, this is a very good time for you to bring it out.

PPB Implementation: The Timetable in Philadelphia

Let me start. It might be of interest to you to hear about the implementation schedule or timetable followed by another government. The one that I think would be of interest to you is the one followed by the City of Philadelphia. Philadelphia has had a rather interesting experience with PPB.

Philadelphia made the decision to go with PPB just over a year ago, about October or November of 1966. The first thing it did was to conduct training programs. It arranged for three types of training programs. The first was a one-day orientation briefing for the mayor and the senior administrative officials of the city (but not the city council). It then held a one-week training program for the deputies to the department heads—the number two men in the departments—and the senior officials in the departments. About 150 of these men went through the training program in three consecutive one-week sessions. It also conducted a training program for the principal line managers within the departments. All this took place roughly in January of 1967.

Simultaneously, the operating budget division within the department of finance was given the chief coordinating responsibility for PPB. The chief of that division happened to be totally committed to the idea that PPB was a good thing for the city. His group drafted a tentative program structure for the city. The draft program structure was then submitted privately for comments to the mayor and his three key assistants—the mayor's chief administrative officer, the city managing director and the deputy city managing director. Based on their comments, the budget division then modified the structure and circulated the draft of the structure to the other members of the cabinet and their principal lieutenants for their comments and criticisms. The final version of the program structure was then used to recast the city's entire operating budget request for fiscal year '69 in program terms. This recast was for fiscal '69 only; it didn't project beyond '69 for five or six years. But, at least for that fiscal year, the city's operating budget was submitted to the city council on a program basis.

In designing its program structure, the City of Philadelphia adopted four levels. It didn't want to use cumbersome terms like *program categories* and *subcategories*, because it felt that the more cumbersome the titles, the less easily appreciated would the structure be by the city council. So, it eliminated the use of the word, *category*, and it called its four levels, *program*, *subprogram*, *element,* and *subelement.*

Programs and subprograms cut across departmental, organizational lines, but the elements and subelements do not. The elements and subelements respect organizational lines, and each element and subelement is a group of activities carried on within a department.

Having taken this first step, the city then changed its accounting code. The city has a 15-digit accounting code. It freed off four of those digits so that during the calendar year '68 all cost data can be accumulated according to subelements. Philadelphia feels that this is a prerequisite for doing meaningful cost analysis next year.

The city is now in the process of setting up *program analysis committees*. This is a rather interesting concept. I don't know where this idea came from. There's no parallel to my knowledge. There are seven program analysis committees. Each one consists of element and subelement managers—the line managers most closely identified with each element. These committees cut across departmental lines, since a program contains elements and subelements from several departments. Since the program analysis committees are composed of the subelement and element line managers, they vary in size, depending on the size of the program. For example, one program analysis committee is highway safety. Some members of this committee are from the highway department and some from the police department, and still others from the courts.

These committees have been given a deadline of August, 1968, to prepare analyses of the most substantial issues arising from the programs. They are supposed to come up with budget requests for fiscal 1970, accompanied by analyses of the major issues.

This is very roughly the way Philadelphia chose to implement PPB. It started in November of 1966, and it is now in the process of preparing the budget request for fiscal 1970, which projects for, not five, but six years, which is what its capital budget happens to be, just like yours.

Participant: May I ask a few questions? First of all, how many major programs are there?

Taylor: There are nine programs. We would call them *program categories,* but Philadelphia calls them *programs.* Of the nine, there is no program analysis committee for two. One of these is general support. The other is education. No analysis is being done in the education program because of certain peculiar school districting problems in Philadelphia. No attempt has been made to analyze the general support category, because Philadelphia feels it isn't worth analyzing.

Participant: Would the entire budget, other than the areas not being analyzed, be implemented by these committees rather than by the department heads?

Taylor: The money will be hopefully appropriated by programs for fiscal '70.

Participant: I know, but will it be appropriated to departments by programs or to programs?

Taylor: According to the chief PPB person, hopefully, the major program decisions by the mayor will be made strictly along program lines, but since the subelements and elements are intact within organizational units, the actual costing out of the money will be to existing organizational units, not to the committees as such.

Participant: How long has the mayor been in office? What kind of person is he?

Taylor: Mr. Tate has just been reelected for another term. I don't know how many previous terms he has had. I really don't know.

Participant: How has the council reacted to this?

Taylor: I don't know. That's one of the big unanswered questions. I just don't know. However, the City of Philadelphia has a very strong mayor type of government. The mayor's budget is, just like the New York City mayor's and the State of California governor's budgets, very strong in terms of influence on the council.

Participant: Were the training programs conducted by people outside the Philadelphia city government or by the people in the government itself?

Taylor: Yes, the initial training programs were conducted by an outsider. Philadelphia intends to continue hopefully on-the-job training programs.

The program analysis committee device was adopted to bring together the managers from the various departments. One thing I should have pointed out—staff is assigned to each of these program analysis committees. The staff is composed of analysts from within the budget division. These men have had training and have taken courses in analytical techniques. While a staff is assigned to each committee, the basic responsibility for the analysis is in the hands of the line managers who comprise the committee.

It is rather interesting to compare Philadelphia's timetable with the federal government's timetable. In the federal government, President Johnson came out with his directive, announcing the implementation of PPB throughout the civilian agencies, in August, 1965. The first submissions were due in about March, 1966. The first submissions on program lines were made in the fall of '67. That's a two-year delay between the time of the President's announcement and the time of the first real review of the budget on program terms. In Philadelphia's case, it was from November of 1966 until the fall of '68. So, basically, it's often a two-year implementation period before the system is fully operational.

Participant: Who heads each of these program analysis committees? I'm wondering whether there has been any difficulty in naming the chairman of each committee, when it is made up of people from different departments.

Taylor: That's a good question. I just don't know who is chairing each of these committees. Whether the chairmanship is rotated among the element managers or not, I'm not sure. I have, frankly, one reservation about this way of doing analysis. With element managers from different departments participating in directing the analysis, I suspect we may get an analysis that looks rather like a camel with many humps, instead of just two. It's kind of hard to organize an analysis with each member having an equal say. You can better organize the benefits, if there's one principal analyst and he has a staff working for him. But, when you have several people trying to direct it, it may be rather difficult.

Participant: If this is so, how would you organize the committees?

Taylor: I would have one senior analyst from the budget division assigned to each of these committees, and this man would be responsible for the analysis. I think I might even make him the chairman, if he is a senior enough person within the budget division. As chairman, he would draw on the knowledge and expertise of the committee members, rather than the other way around. I do not mean to imply by this that the analyst should dictate to the decision-maker. Far from it, but some of the mechanics of getting the analysis going, I think, can better be accomplished by a person with the necessary analytic background. Perhaps, Allen and John will disagree with me.

Schick: I don't think any jurisdiction, certainly not Hawaii, should buy the Philadelphia model, lot, stock and barrel. You're going to want to design something that takes care of your own political and administrative situations. The Philadelphia story tells us that there are ways of cutting down the political and administrative costs of getting PPB started—cutting down such things as apprehension and lack of participation. Allaying apprehension and participation are two obvious advantages in a committee system. Whatever method you decide on, I think it would be wise to be sensitive to ways of averting costing problems.

In-House Capability v. Outside Help

Participant: As I understand it, your recommendation is that we develop in-house PPB analytic capabilities, rather than importing outside experts. Isn't there, however, instances when an outside expert is important? For example, when problems are immense, such as in rapid transit?

Schick: I think you're correct that the higher up, the more global, the more daring your analysis is, the more need you have to import people, if only temporarily. I think, however, that you should also look at the other side—that to make PPB go in the long run, you ought to involve people who have programmatic expertise within the government.

Haldi: If you have a problem such as the installation of a mass transit or rapid transit system, then probably you should go outside and get some transportation expert who can come in and do a major one-time study. I would also suggest that you consider something I pointed out yesterday—that is, get more than one study. This is because there's usually more than one answer.

Participant: What can we do while analytical skills are being developed through training and our information system is being developed, which will help us implement PPB in the state?

Haldi: Let me say a little about what you can do and what you cannot do. I think between the development of the information system, which is now in the process of being developed, and the PPB system, there's a lot of room to make errors. New York State got off to a less than a healthy start. The central budget staff responsible for implementing PPB in New York swamped the state agencies with directions which no one understood, and the agencies came back with a lot of meaningless paper. It's quite possible to do that in the implementation of the PPB system. You can waste a lot of worthwhile time and resources.

In terms of what you can do, I think Allen gave you the tools the other day that you can use in the budget session that is coming up. Every department of your 16 or 20 departments has programs. Whether it presents the budget material by programs or by some other format, each department has programs right now. What you can do is to ask some hard questions regarding those programs. You can ask such questions as what are the programs? why are you allocating the resources between the programs in this way? There's always a strategy involved in the allocation of resources, even if the department doesn't think of it that way. The department doesn't think of it that way because it has been funding programs in the same way for the last 10, 20, 30 years. But there's always a strategy, and you can ask the department why that strategy and not some other strategy—why not reallocate or shift efforts from this to that. You can ask your legislative auditor to spend a one-man day thinking of some real hard questions about the programs of each department and to supply you with questions to ask.

Programming Across Organizational Lines

Participant: I've heard that somewhere in the federal service, there has been some success in programming across organizational lines, that some jobs have been set up which have interorganizational responsibilities. I don't know at what levels—15 or 16 levels—that such crossing occurred. Maybe it is in a department which has some total responsibility closely akin to defense—the army, navy, and the air force. Are you familiar with this at all?

Schick: This has been done in a couple of agencies. Programming across organizational lines has two purposes, one related to budgeting and the other related to the strengthening of the office of the head of the department. It strengthens budgeting because it no longer requires you to honor the organizational structure within the department. Because the programs cut across organizational units, the programmatic people become more responsible to the department head than to the units. Not only did McNamara accomplish this, but also Secretary Gardner of HEW. As a next step, McNamara intended to reorganize the entire department to correspond to the top structure that he had built. I don't know whether this will be carried through, since McNamara has resigned.

"General Support"

Participant: Why did Philadelphia decide not to analyze general support?

Taylor: That's a very interesting question. I, frankly, feel that *general support* is a much neglected Cinderella in government. General support is a category which presents a tremendous opportunity to do what I call management analysis. Efficiency calculations can very readily be performed here and they can save a great deal of money. However, general support has no sort of end output to people, to the taxpayer, and I suspect that's the reason why people have tended to regard it as less important programmatically than the other program areas.

General support provides a kind of an intermediate output within the government. It's sort of like a service division in a large corporation. This doesn't mean, however, that you shouldn't pay attention to it in terms of improving efficiency, and that can be done by standard management analysis techniques. You don't need to apply benefit-cost analysis in this area as you would to a larger programmatic field.

Schick: If you want to be completely pure about it, the cost of general support would be prorated and distributed among all the units of government so that you get a full systems cost for anything. To take a crude illustration of this, suppose education consumes 50 percent of the budget and, by various estimation techniques, you arrive at 50 percent as the amount of the general cost of government which is consumed by education. That 50 percent of general services cost should be allocated to the education program, and, by doing so, you would get the entire cost of conducting education in the state. Presumably, if you didn't do education, you would have a small general services budget; and under this strategy, there would not be any separate general support category.

My own concern about general support is not that we should apply PPBS to it, but that we must be very diligent in assuring that the wrong things aren't put under this category. If you don't watch it, general support can become a rug under which the departments can put all sorts of things that they don't want inspected, whether by the legislature or by others. Things like general overhead and fixed costs can become a mechanism for concealing the operations of government rather than revealing them. And this ought to be avoided.

Taylor: And I'll go along with what Allen just said. On the other hand, you've got to be careful not to make phony allocations, like for example, in the defense department, allocating a portion of McNamara's salary to the polaris missile and the B52. Wouldn't you agree, Allen, that you can't be too careful in avoiding proration or allocation of costs which really aren't allocable?

Schick: As a matter of fact, I would say that in PPBS, the more relevant distinction which we ought to make is, not between general service cost and the other direct costs, but rather between fixed and variable costs. This is very important and is something that in government we hadn't given enough attention to. We assume somehow that all costs are variable, so that if the program expands, the cost goes up proportionately or vice versa, if the program declines, the cost goes down. This is not so. A 50 percent increase in program might mean only 25 percent increase in cost, depending on what the fixed costs are.

This, I think, is a more important analytic problem which you, the legislature, should give attention to when you have a budget presented to you and you're not sure whether you want to increase or decrease the budget amount. Among the questions you should ask is, which of the costs are fixed? A fixed cost is something that you're going to have to pay; there's no benefit in cutting that cost. On the other hand, sometimes if you increase a program, it might entail a new level of fixed costs beyond the benefit which you try to derive from programmatic increases.

Schick: While on this track, I'll add a footnote to the footnote. In states and localities, much more so than in the federal government, personnel costs constitute a very high percentage of the budget. In the federal government, even though there are upwards of two and a half million employees, the personnel costs constitute proportionately less of the federal budget than of the Hawaii budget. For states and localities, therefore, I think it would be justifiable, maybe even desirable, to develop a budget strategy which indicates the personnel cost relative to what you're accomplishing.

It's true that you might regard personnel merely as an input, as an item of expenditure. Some people will argue that you should not become concerned with personnel costs. This is a very shortsighted view, given the fact that personnel services account for such a large portion of the budget. I would suggest that, in lieu of the traditional items of expenditure reevaluation of personnel cost, where all you know is how much the person's salary is and very little about what he's doing, what he's accomplishing, you develop a system of sophisticated work measurements in which you find out what the connection between an investment and the result is and what the return from that investment is.

Executive-Legislative Role in PPB

Participant: Should PPB be executively implemented or legislatively implemented? What are the respective roles of the executive on the one hand, and the legislature, on the other hand, in PPB?

Taylor: In most states and cities where PPB has been installed, the administration has taken the initiative. In those states, the administration has usually attempted to assemble firmly the jurisdiction's objectives and to structure the programs. Remember that PPB is basically a tool of the executive. It's a decision-making tool to help the executive allocate the resources available to him. The plan which results from this is an expression of the state's underlying policies as interpreted by the administration. The benefit to the legislature is that by casting the budget in these program terms, the legislature can see exactly what the purposes of the government are, without having to infer them from the budget requests. Allen, do you agree?

Schick: Let me answer by giving an illustration. For the department of labor and industrial relations, your statutes spell out what services the department is supposed to render—that is, to administer programs designed to insure economic security, to provide for the physical and economic well-being of the working populace in Hawaii, and to maintain good labor-management relations. The legislature, the elected representatives, makes these objectives operational by converting them into budgetary terms. It does this when it reacts to the governor's budget and when it, under its own initiative, increases the budget or proposes and gets enacted new legislation. However, this is a job that doesn't have any clear boundaries or lines between the governor and the legislature.

Critical Size of a Government for PPB

Participant: Yesterday, John Haldi spoke about the critical size of an organization for PPBS. Does this mean that PPBS is not applicable to all governments?

Taylor: That's a good question. As a former physicist, I know that the critical mass of uranium is a certain number of pounds. That's fixed; that's immutable. You can't change it; it's a law of nature. I don't think that that applies at all to PPB in state governments or any government. I'm told one of your counties has a budget of $11 million a year. I, personally, feel that's large enough for PPB. I think that so long as there is a diversity of services or a multiplicity of programs, where there is a budget of several million dollars, and where there are alternatives and options, PPB is a desirable thing. If that $11 million was all spent in one single program, then PPB would not be so applicable. John, do you agree with that?

Haldi: Yes.

Schick: Going along with Graeme that where there is program diversity, there's an opportunity for analysis and substitutions, I would like to note that size does have an implication for the *kind* of PPB system that you're going to operate. Let me mention two things which come to my mind now.

The smaller the unit of government and, therefore, the smaller the expenditures, the less likely that you're going to have a vast administrative machinery at the central level for doing PPB. You cannot afford it and it doesn't make any sense for you to have a 500-man bureau of the budget equivalent to what the federal government has. You're going to have to rely much more on your middle managers, your lower managers, the people who have program responsibility down the line, because you can't afford having, not only cost-wise, but organization-wise as well, a top-heavy structure. So the smaller the government, the more sensitive you have to be to the opportunities for analysis lower down.

The second comment I would make is that the smaller the unit of government, the more likely that there'll be fewer annual changes in the things that you do. Let's take a locality. Regardless of whether you have PPB or not, you're going to have a system for periodic collection of garbage refuse. You're going to have to have a system for law enforcement. You're going to have to have your foundation education system. So that you know that the very large trade-offs—the *either, ors*—are not going to be within your range. The federal government, by comparison with any state or locality, annually has a much larger turnover of programs—the termination of existing programs and the start of new programs—than does virtually any state or local government in the United States. The state and local units of government, therefore, when it applies PPB, might be doing more of what Graeme calls *managerial analysis*, rather than *systems analysis.*

Take the example that I mentioned before, you will be collecting the garbage. There's no question about it. But within this necessity, this mandatory program, you have very large money-laden questions—how often you should collect it, what kind of machinery and labor you should use, whether you should separate the different categories of refuse as is done in some units of government, whether the business districts or other districts should have fewer or more collections per week, at what hours of the day the collection should be undertaken, whether we should contract with a private company or have government employees, and so on. All of these are relative concerns. I think, however, they are of a different magnitude than you would find in a larger government.

PPB and the Organizational Structure

Participant: One situation in the Philadelphia budget has some parallel in Hawaii. These are activities in our health department which are similar to or related in some fashion to the activities of other departments. If the programmatic approach is desirable, and the state activities are categorized in a program structure along mission lines, would it not be just as easy to reorganize the state government? Wouldn't there be advantages in such reorganization in that the data and statistics being kept for the activities by the various departments can all be in one plan and everyone would be using the same statistics?

Taylor: Let me say two things first quickly about this.

In the first place, when Philadelphia was designing its program structure, it realized that the program structure could not be frozen for all times on the first attempt. It grouped the programs in the most obvious manner. Philadelphia did not waste an inordinate amount of time trying to decide whether one subelement fitted into element A versus element B. There are many, many instances when you will find that one activity could almost equally be placed in one of two or more program categories. This happens in the federal government,

it happens on the state level, and certainly it happens on the city levels, too. But Philadelphia didn't spend a tremendous amount of time in philosophical debate as to whether a certain subelement should go with program A or program B.

Secondly, there is no need for organizational change as a result of viewing your budget in program terms. Information technology is such that you don't have to do this. Philadelphia has gotten around this problem by simply adding four digits to its accounting code, and it can get the data, and it can classify the data in any way it likes—by activity, by organizational units, or by program subelements. By this system, the officials in Philadelphia can see the information according to the purpose for which they wish to view it. Thus, PPBS and the program structure do not mean that you are automatically going to transfer an activity of recordkeeping in one department and lump it with a recordkeeping activity in another department. You don't have to do this. PPB highlights the discrepancies, the anomalies, that people have always been aware of but haven't quite seen as forcefully and visibly as they would under PPB. But it's not mandatory that you make organizational changes simply in order to do your budget in program terms.

Schick: As a matter of fact, there's been a change in thinking in the last decade. When Hawaii in the late 1950's, I think, moved to performance budgeting, when it began to move away from the total line-item budget, the thinking at that time in all the states was that there should be a perfect synchronization of the budget and the organizational structure, that the two should be identical. Right now we recognize that an organizational structure has a different purpose than a budget structure.

An organizational structure should be designed for managing a discreet, prescribed set of activities in the best way. That leads you to a different structure than the kind of categorization that you want for analysis. For analysis, you want to put things together so that you can see them together even though it would be most foolish to try to manage them together. Thus, you can have an organizational structure which is separate from the budget structure. As a matter of fact, I would think that it would be unfortunate if people try to use PPB as a device for reorganizing everything.

A second point that I want to make, and it's awfully germane to your question, is that PPB opens up a new opportunity for data sharing among different organizational units of government. To take your specific case, there are two units, the health department and, of course, the police department, both of which are collecting basic data about the population. PPB doesn't mean that we ought to have a statistics collection department which removes from the police and the health and the other agencies their data collection services. I think we'll find that almost every major organizational unit in Hawaii collects information which it ought to be sharing with some other sister units of government. What PPB does is to allow you to share your information. It's important that the police have access to the health data, that the health department have access to the traffic data, and so on. This need not be done in a way which forces overcentralization, although I might say that I have seen, particularly in the state government, a move towards computerized data processing in an overcentralized fashion.

If you do it carefully, with sophistication, you can distinguish between having one large central computer which gathers and stores the information and in which everything is centralized, and to which you have to go physically to get the information, and having people dispersed throughout government who gather and feed data into and have access to a large computer. The latter approach is not much more costly in terms of hardware, and it's a lot, lot, lot less costly in terms of the software—in terms of utilization of information.

I've seen almost no government in which, let's say the superintendent of education—pardon the example again—can sit in his office and have a simple typewriter which can

speak, instead of the computer. Now, each of you, when you've gone to the Honolulu airport and made an airline reservation, has seen the lowly clerk use that piece of equipment with which to communicate with the American Airlines' centralized computer system in upstate New York without difficulty. The clerk can do this, not because he's a big shot, but because it's very cheap to give him that information. So, if the police department feeds in its basic data and the health department feeds in its basic data to a central computer, you have control for presenting this piece of data to anyone who wants the information. Everyone can participate in and have access to it.

Expenditure Control in PPB Through an Allotment System

Participant: I have a question. Suppose you have a budget and a particular program is going to cost several hundred dollars. The first question is how do you appropriate this? Secondly, after you appropriate it, how do you allocate it, being that the program itself can't spend the money?

Schick: In my view, I think I mentioned this yesterday, that the appropriation always has to be to a unit of government. In the long run, I can see no adequate system of controlling accountability which is not based on a system of appropriations in units of government. So we begin there. The money is appropriated to identifiable units of organization in the appropriation act. You look at any appropriation act, the language reads, "to the department of education $Y for so and so."

Beyond that, however, we recognize that PPB is a budget system. You notice we don't call it a PPA—planning, programming, appropriating system—the reason being, that we make a distinction between a budget and an appropriation. A budget is not a device for controlling; it's a device for planning, for making policy decisions. Before you make your budget, you will have done your analysis and you will have intended that $X should be earmarked for a particular program.

Now, after the legislature has appropriated, you ought to have a system of what is called allotment—that's what you call it in Hawaii; it's called *apportionment* in other units of government—in which the department head would indicate to the director of finance or to some other official close to the governor, how he is going to distribute the funds voted to him by the legislature in accordance with the budget plans which previously were presented to the legislature. You can set up an allotment system which again deals with variances. Let me go to the blackboard so I can show this—this is important, even though it's technical.

Here (in the first column), we have the budget which is recommended by the governor; analysis was done and it was done under program lines. Here (in the second column), we have the appropriation which is made to organizational units, and depending on how you want to work it, it can be subdivided among organizational units within the departments or among activities within the departments. You can do it either way.

After the legislature appropriates the money, you have what is called the *execution of the budget.* Here, since there's inevitably a discrepancy between the recommended budget and the actual plan for execution of the budget, you ought to have an allotment system or work program or apportionment system—you can use the system now existing in Hawaii; adapting it to what I'm proposing here shouldn't be too difficult—in which the department head indicates, "This is the amount I initially requested in the budget; this is the amount the legislature appropriated; this is the way I'm going to use the money appropriated." When there is a difference between the initial budget and the way the department head intends to use the money appropriated, he ought to explain why the difference.

For example, suppose the department head got $X for program A and the legislature appropriated $X. In this instance, the allotment ought to be a carbon copy of the first

column, because the legislature made no change in it and therefore the department head has no warrant for going ahead and making a change. On the other hand, if the legislature does make a change and, to take a difficult case, it does it organizationally or by activities –i.e., by subprograms, elements, etc., as Graeme explained–then the department head should note in the allotment system how he can account for the total $Y. He would divide the total appropriation among the programs and indicate that there's a change from what he initially requested in his budget, because of the change made by the legislature in appropriating the money. He would say, "The change is the result of a legislative instruction to me. The legislature said to me, 'we don't want you to spend money on this program; we want you to spend it on that program.' So I'm changing from this to this one."

Further, it might be that although he initially asked for $X in total and he got $X in total from the legislature, the department head might need to change the apportionment of the $X among the programs included within it because of a change in the situation. He might then say, "I'm changing from this to that, and this change is the result of the fact that the situation has changed since the budget was first made." As you know, a budget is prepared sometime before the beginning of the fiscal year–a half year or more. As you also know, things change in the time span between preparation and execution of the budget. The cost of certain goods could go up. An anticipated emergency might abate, but a new problem might come to the fore. So, the department head makes changes. I want to stress that a department head is not likely, in executing the program, to give 100 percent conformance to what was initially here (column 1) or here (column 2). You people recognize this in your decision to go with a lump-sum budget to the university and to the department of education. There are going to be changes. The important thing is to recognize this.

This allotment should be done right at the start, or right before the start of the fiscal year. I suppose, since you have relatively short legislative sessions, you're in a favorable situation to have this done before the start of the fiscal year. In the State of Massachusetts, this past session of the legislature adjourned, I think, the day before Christmas or the day after Christmas. It convened on January 3, and then said, "Let's take a month's vacation." I don't know when it voted the budget, except that it was after the beginning of this fiscal year. You're in a terrific situation in Hawaii in that what happened in Massachusetts is not likely to happen here. Let's say that your fiscal year begins on July 1. The governor might impose a deadline of May 1, or May 15th by which time each department head must make an allotment to the governor for his approval. That approval bit by the governor is very critical; the department head cannot vest in himself the power of total approval of an allotment.

Now, the reason why I mention this allotment system is that it is not only important in connection with PPB, but you already have something to which an allotment system is critically important–the lump-sum budgeting for the University of Hawaii and the department of education. In the pretty groupy conversations I had with a number of legislators over the last two days, they have expressed to me an ambivalence. On the one hand, they recognize the need for a lump-sum budget; on the other hand, they are apprehensive of what kind of problems that are going to result. There's been no substitute developed for the old system of accountability. Under lump-sum budgeting, we don't know whether the university and the education department are going to give any recognition for this or this in how they execute the budget. They can disregard not only the appropriation, except in the aggregate, but they can also disregard their budgets. That's where this allotment comes in. When you have lump-sum budgeting and when you have PPB, allotment is the new system of control that ought to be imposed.

Taylor: Allen, can you draw an analogy, if there is one, between lump-sum budgeting on the state level and the federal problem of giving grants? How does the federal government get stability in its grant programs?

Schick: It can be elaborated. Is it a problem about *giving* grants or about *getting* them?

Taylor: Something about administering the grants. The department of health, education and welfare is in the business of giving large grants of money to state governments, for example. Now at the federal level, how does HEW maintain control over the grants? How does it know that it is getting its money's worth from the different states?

Schick: Here, we have a very unfortunate problem. I'll give an illustration from the office of economic opportunity, community action program. Hawaii has community action agencies, I believe. The federal government last year, I mentioned this yesterday, established a pilot project of PPBS in approximately a dozen community action agencies. There are a little more than a thousand community action agencies in the nation. Some of these are local units of government, some are states, some are counties, some are public and some are private, and some are combinations of these units. Next year, the PPBS is going to be extended to more than a hundred of these agencies and two years from now to about a thousand. The federal government is going about it in a disastrous way, however.

Two years ago, the federal government began a pilot study on what was called a management information system—MIS. One year ago, it imposed the MIS on all 1,000 community action agencies in the country. This was done by a consulting firm, MacKenzie and Company, who developed it in initial form. Now it's made mandatory for all agencies. Each community action agency has received from the office of economic opportunity a 250- to 350-page manual with forms in it for the implementation of this management improvement program. They have to supply the federal government with the most detailed information possible, so that every time they get a grant of money, they have to account for it according to this management information system, and this requirement applies to all federal grants.

The result of the imposition of this management information system is that it stifles the doing of PPB. To the extent that you're prescribed by irrelevant forms and procedures, you can't plan. You have no maneuverability for analysis.

Let me say this one other thing– that one of the main gains of PPB is the forcing of consolidation of federal grant programs. This has now happened in health. The health act enacted by the government last year did consolidate a half dozen health categories, but PPBS does invite further consolidation.

Industrial Funds

Taylor: A gentleman raised a question to me before the session began, and he might wish to raise it again here.

Participant: I don't know whether it's particularly appropriate here or not, but I have a question about the value of industrial funds. I have seen some of the industrial funds, and it seems as if you're kidding yourself when you make a service organization apparently pay for itself. My question is whether anybody here has any particular views one way or another on industrial funds.

Taylor: An industrial fund, I feel, is beneficial if it is set up in a situation where you have a service organization, such as the navy shipyard, supplying services to other units of government.

Let me briefly explain what happens when you set up an industrial fund. To do this, let me first of all describe what the general procedure is, without an industrial fund. The

general procedure is that you fund the shipyard for the cost of servicing ships as they come in for repairs. As the ships come in and get repaired, the shipyard somehow allocates its funds among the ships. The shipyard, controlling the purse strings, goes down the list of things that need to be done on each ship and selects those things which it will do. When you have an industrial fund set up, each ship has a budget with which to purchase repair services from the shipyard. It's just like a buyer who has the money to purchase services. The industrial fund sets up a buyer-seller relationship between the ship and the shipyard. The ship has control over the money for repairs. This gives the ship considerably more voice in what gets done.

What usually happens on the more typical navy ship is that, as it goes in for periodic overhaul and repair, it has a little want list about as long as my right arm. Now, there are a few things that are standard—a few things that have to be done on a ship as a matter of course. For example, it always gets its keel straightened and repainted—that's traditional. These won't change under the industrial fund system from the old system. But there's always a lot of discretionary items of work that can be done on a ship. Somebody has to decide what will be done, what will be done only part-way, and what will not be done. Which of these discretionary items will be done depends on how much money is available to do them. By setting up an industrial fund, each ship polices itself as to how much money it will spend for what repairs. It's just like the buyer who has a fixed budget and tries to get as much mileage as he can from the money he has and thus is as discriminating as he can be in selecting from this want list.

If the shipyard commander controls the budget, then the ship plays the game of trying to get as much out of the shipyard as it possibly can. Sometimes it gets away with a lot. Maybe Chief Wilson has made out great with that head of the repair crew and is able to get a little extra work done on the ship. There is a Chinese term for this—*poon shaw,* meaning *thank you for your gift.* The ship takes everything it can; it *poon shaws* in the shipyard.

Most observers on the scene generally agree that setting up a buyer-seller relationship has very beneficial effects. If a ship or an agency like the police department has a budget and it is trying to get things fixed, it feels like it is spending its own money and it becomes very conscious of what things are costing the agency.

There's one particular shipyard that happens to be in a political district of a politician. I think everybody in the shipyard votes for this guy every year. It's a very small shipyard, but, until recently, the cost of doing everything at that shipyard was just unbelievable. It reached the point, finally, even though the navy consigned ships for periodic repairs in this specific shipyard, when the fleet admiral said he'd be damned if he was going to send any more ships in there if that's the way the costs were going to be. That complaint triggered an investigation which in turn triggered the correction of a number of existing things. This correction of existing ills probably wouldn't have come about, if the repairs at this shipyard hadn't been costing the fleet admiral lots of money. Industrial funds, then, can give you signals of inefficient practices and procedures which you otherwise won't get without industrial funds.

The classic situation in government is in the central supply agency. I've seen this happen many, many times. I can give you examples after examples. The supply organization says, "They (the line agencies) need it, therefore, you the legislature must give us money. I know they need it." Now, if it's free to them, all line agencies always need it and they always need more, inevitably.

Another example, the weather bureau, which is a part of environmental services administration in the department of commerce, services in a very special way the federal aviation administration, now a part of the department of transportation. The ESA supplies

specific weather report to the airmen, and the cost is $16 billion a year. These are special weather reports just for airmen. Now, if you ask the weather bureau, the FAA always needs these reports at a 20 percent expansion every year. But nobody ever bothers to ask the FAA, "Is this the way you really need to spend another $4 million, say, on the total air system? Is this the most critical item in what airmen need, and what the air navigation system needs? What is the most critical need—is it weather reports? is it radar? is it some kind of other control device, a communication satellite, perhaps?

As long as the weather bureau always thinks that the FAA needs the weather reports, and as long as the weather reports are free to the FAA, there is no reason for the FAA to come in and say that it doesn't need them. Whereas, if you set up a fund and give the money to the FAA, and you say, "By the way, the weather bureau services you. You talk to them," then the FAA thinks about how it spends its money, the way it doesn't think about it otherwise.

Participant: I understand the role, it's obvious, and I can understand some of the good parts of it, but it seems to me very often you get into what I call a phony situation. Let me cite an example. The national guard last year went to summer camp. We had to transport equipment between islands. The general direction is to use MSTS, if it's available. The MSTS rates for travel between the islands are quite high, and this is because of some peculiarity of its rate setting system. I don't really understand what it is. Young Brothers could've transported our equipment for half the MSTS' quoted price, just about half. But we couldn't use Young Brothers. We had to use MSTS. So, I went to the national guard bureau to get the money to transport our equipment by MSTS. The bureau said, "No, no, we can only give you half that money." So what did we have to do? We had to cut down on the amount of equipment to send between the islands. I just couldn't get the authority to use the commercial service, which would have been true, out-of-pocket dollars for the government. To me, in a situation like this, the system is kind of defeating itself.

Taylor: On the contrary. It's just that the system's not working well. Either MSTS is overpricing its services or the price that MSTS is charging reflects the true cost to MSTS. This is a loud and clear signal that MSTS is probably horribly inefficient.

What the national guard bureau really should do is to give you the freedom to go outside to purchase the service you need, rather than limiting you to MSTS. Commercial companies give their district managers the freedom to go outside. If the manager does go outside, there's usually an investigation—an investigation not on why you went outside, but an investigation that focuses on the supply side of the corporation. The investigation is to determine why the corporation's supply organization couldn't supply at a competitive rate whatever it is the district manager went outside to buy.

Actually, MSTS has two rates. It has certain kinds of things on which the rate is low and it has other kinds of things on which the rate is higher. The MSTS has a regulated price system. Now, we all had experience with regulated price systems during the war. We know that a lot of anomalies crop up in a regulated price system. In the case you mentioned, you were circumscribed. You're a part of the system and you're circumscribed by the regulations of that system.

Industrial funds are not without some dangers. If you set up an industrial fund in a situation, but don't carry it through in a totally comprehensive way, you get some very anomalous results. A friend of mine, who is the assistant secretary of the air force for MATS, told me of this incident. Over in Vietnam, the air force found that it got a lot of stuff docked at Saigon. To transport the stuff up to the northern part of DaNang, MSTS imposes a charge. The air force, however, doesn't charge itself in any systematic way. So, the air force shipped all the supplies on its aircraft to DaNang at a very great cost. It was

clearly much more efficient to ship the stuff via MSTS, but the air force commander over there was trying to avoid the MSTS charge. The shortcoming here was not the charge that MSTS was applying, but the fact that the air force wasn't charging anything. As I said, if it's free, you take all you can get—you *poon shaw.* The danger is, if you don't spread the system evenly, then you'll wind up with unbelievable amounts like the example you cited.

Information System

Participant: Yesterday, Jim Kelly spoke about the information system for PPB, and he also said that the information system we have in Hawaii can be adapted for PPB use. Can you tell us a little about the different ways of gathering information, and the effectiveness, reliability of the different methods of gathering information.

Kelly: Let me relate this question to the Philadelphia case. Graeme said that Philadelphia went into its accounting system and completely revamped the numerical code so that it is now on a programmatic and program structure basis, in addition to an organizational basis or function basis. You should make that kind of changes in your formal accounting system so that the costs on a programmatic basis are reported out on a regular, routine, month-to-month basis in those situations I discussed yesterday where you have *clean* programs. But, where you have programs that have multiple benefits or where programs or activities benefit a number of different program categories, then you have an allocation problem. The problem is, just how much of this cost is attributable to program structures A versus B versus C?

I have some doubts about the utility of developing a whole new system which reports out on a regular, routine, month after month basis the cost of an activity as distributed or allocated among three, four or five different programs and program categories. Don't go to a lot of trouble conducting an elaborate, detailed analysis or statistical sampling to produce information on a regular time basis, such as month to month, when you don't need it. The alternative would be to do periodic special studies of the cost, to get some reading on how you are actually performing compared to the way you had planned. You can, for example, on a yearly basis, go in and make samplings and distribute the cost between three or four categories, sum up, and compare your expenditures to your budget expenditure on a program basis. Do you see the distinction between the two?

Taylor: A good example of what Jim is talking about,I think,can be found in the bureau of customs. It has just installed the random sampling concept to find out what custom officials are actually doing. The computer generates a random series of timeslips and then records the responses of custom officials, who again are chosen randomly, to the question, "Okay, 901, what are you doing?" The customs official queried might say, "Well, I'm inspecting baggages to detect any illegal agricultural imports. We're doing this for the department of agriculture." By doing this on a sampling basis, the bureau of customs can get a pretty good and accurate idea of the allocation of the activities of one man who may perform a whole range of tasks which belong to the various program categories.

Participant: Necessarily, some of these information and data, you can't get with precise accuracy; they have to be estimates because you're taking samples only. I don't know whether this raises a problem. Let me pose a hypothesis here. Suppose there is an urgent time problem of getting our teachers to become acquainted with a new teaching technique which has proven to be beneficial to students. So the department of education decides on a crash program to re-train the teachers, and the teachers do get the training at workshops. Now, how are you going to measure whether they are using the new technique in the classrooms? I would think that some precise information on this would be necessary from the standpoint of an effective use of PPBS.

Schick: I think the technique which Graeme indicated a moment ago is okay—it is acceptable. Statistically you're dealing with sampling and estimation techniques. As a matter of fact, PPB would preferably rely on these than on an across-the-board kind of thing, in which you look at everything.

The problem is that we often insist on exact figures. Somehow we feel that if we haven't looked at every voucher or every piece, we don't know what's happening. This isn't so. Hardly anything is ever exact. We shouldn't delude ourselves into thinking that we ever have exact figures. Furthermore, sometimes, even if you look at every voucher, every piece, you still don't know what's happening.

Taylor: There is one sentence on page 30 of the post office case where it says, "It is important, we suggest, to distinguish among our audit and payroll accounts which must be exact, our functional subcategories which can be more approximate, and our totals for planning purposes which need not be nearly as precise." I think this is a useful distinction.

PPB and Centralization of the Government

Participant: Doesn't PPB tend to centralize the government?

Schick: In Washington, at least one of the major apprehensions about PPB is over-centralization. There can be no doubt that a good PPBS will induce more centralized information than we already have. As I explained the other day, right now, we have a decision-making system which provides the greatest latitude for policy-making at the lowest levels rather than at the highest level. The fact of the matter is that the PPB system ought to resolve to the managerial and operating levels responsibilities which are really in their jurisdiction. Certainly, now we have something very interesting. Policy-making is really lodged at the lowest level, and control over the items of expenditures is lodged at the highest level. PPB is, at worst, the reversal of this.

Taylor: I agree. I would like to give an example. We mentioned briefly before the outdoor recreation program of the U. S. government which is rarely looked at in toto. It has grown up like Topsy. The corps of engineers determines where the lakes, dams and so forth are going to be built, the forest service determines where the forest recreational areas are going to be located, and the national park services, the soil and conservation, and the bureau of land management, each makes similar independent determinations, and all of the decisions by these agencies are really made in the fields. Each field office, (for example, each supervisor or a forest park) proposes and decides on recreational areas. The central office of the forest service hasn't really taken an interest in looking at the allocation of resources in toto. It has just been interested in controlling expenditures at the headquarters level. So the forests seem to just somehow grow like weeds in the fields every spring. PPB here probably will foster a desirable centralization of policy and decision-making.

Placement of a Program in a Program Structure

Schick: I just want to raise one question which was asked by a legislator yesterday. The state has a department of agriculture and it has a school of agriculture at the University of Hawaii. There are two problems: one, how are these two units displayed in a program structure? and second, what concerns me even more, how does this affect, if at all, the committee structure of the legislature?

Regarding the first question, I think that one can say that there's an advantage for retaining the cohesion of organizational units. I don't know whether this is the case at the school of agriculture, but supposing that it were, then I might want to do two things—first of all, continue to display the school of agriculture segment in the University of Hawaii budget. At the same time, I would put the school of agriculture money, costs,

and benefits, as a *non-add* item in the program category for agriculture. In other words, I would indicate that this is what it costs, but I wouldn't add it to the department of agriculture program budget, because then we would have a duplication of cost. If the school of agriculture is so separate from the rest of the university and has no contact with it, then we might want to shift it, not for organizational purposes but for budget purposes, to the budget of the agriculture department. That's only, however, if the school of agriculture is so divorced from the whole university. If there's any meaningful relationship, I would keep it together.

Now regarding the second problem. The question here is, which committee—the committee on education or the committee on agriculture—gets to see the budget of the school of agriculture? This is a hot potato. I think that the legislative committees should be recognized functionally as they are today, which means that you continue to have one on education and one on agriculture. The best advice that I can think of at the moment is that the agriculture committee should continue to review the basic agricultural programs and that the education committee should continue to review the entire University of Hawaii budget. Yes, sir?

Participant: The agriculture extension service, which is organizationally a part of the school of agriculture at the university, exists primarily to service the agriculture industry as such through research activities. Shouldn't its budget then be a part of the agriculture category rather than the university category?

Schick: Well, without being offensive, I love to confuse. Take the case of agriculture first. Even without a school of agriculture, one of the components of any agriculture program category would be research in education. This is a legitimate thing, so that you're right. If there's an extension service, you might find that it's in a way more appropriate to put it into the agriculture program structure, but this does not preclude other inclusions.

Participant: But is it your preference to keep the school of agriculture's budget with the university?

Schick: Yes, my own preference is, as I suggested, to keep the school of agriculture in the University of Hawaii.

Participant: Suppose you were to program economic development in the State of Hawaii, and suppose you assume also that agriculture contributes to the development of the economy. Assume, too, that tourism, and the capital improvements program to develop state lands also contribute to the development of the economy. At present these four different areas are administered by four different departments. Would we lose the effectiveness of PPBS if we display these different activities within the confines of their organizational units? Would we make a supplemental display which ties all these together?

Schick: We can do a supplemental display. It seems to me that in Hawaii, what would be most advantageous is to have this kind of grouping of agriculture, industry, tourism, capital, in the general plan. The general plan has a level of generality and interrelatedness which might permit you to look ahead to see what the connections between tourism, agricultural research, education and capital budget are in the development of the future social and economic product of Hawaii. That would be, to my mind, the best place for integrating them.

Alternative Funding Levels and Program Priorities

Taylor: Just one final thing I would like to add. It's an item we haven't touched on. The secretary of one federal department asks his various organizational units to submit to him their budget requests based on three estimates: (1) on the assumption that there will

be no budget increase, that the mandatory on-going programs will continue at their present levels; (2) on a 10 percent increase over current funding; and (3) on an optimal funding level—that is, on the assumption that there is no budget constraint, what the level of funding should be for the various activities within the program grouping. In addition to these three levels of funding request, the secretary asks the units to attach priorities on a 1-2-3-4 scale to the various activities for which they are requesting funds. In this way, the secretary has available to him three different plans, each indicating the priorities of the different activities.

When cuts are made, as they inevitably are in terms of the line items which is the way the present federal Congress is still appropriating, it is relatively easy for the secretary to see the impact of these cuts on the level of preferredness within the department. The combination of the three levels of funding proposed and the priorities attached to the individual activities make the administrative task of translating cuts in line items or activities into programs much easier to handle.

Thursday, February 1, 1968

RESOURCE MANAGEMENT VERSUS RESOURCE ALLOCATION

Case Study: New Jersey Insurance Company

James Kelly

We are drawing closer and closer to the time when you've got to finally come down to the point of talking about your own situation in Hawaii—the work that has to be done and the plans that have to be made for using PPB in Hawaii. I hope that today, in the nearly an hour that I have, I can begin to draw closer to your situation in Hawaii.

What I hope to do is to bring out some points that are contained in the New Jersey Insurance Company case and relate them to the situations which probably exist in the departments in Hawaii and to some programs you're carrying on.

I don't find the New Jersey Insurance Company case to be completely different from the problems of the government. I might explain why. In exhibit 3 of the case, you see a budget for the individual loan section of the law division of this insurance company. It is a report on the first six months of 1959. The report attempts to relate actual performance to the budget. The real question of the case is, how good has this performance been? As a member of the budget committee, would you say that this section has done a good job or would you be displeased with its efforts? The same kind of question comes up in government situations. Assume that the *Actual* column is a proposed budget for the next fiscal year, and the column labeled *Budget* is last year's results, and that you're being asked to grant an increase in spending by this section. Viewed in this way, the situation here is really no different from that problem of trying to justify an increase in spending by a department within the government. It's the same problem faced here by the budget committee of the New Jersey Life Insurance Company.

Thus, I don't think that the decisions that have to be made in this corporation are at all different from the decisions that have to be made in government. That's why I think this is a good case; it's somewhat appropriate to the types of problems that you face in government. I also think it's a good case because it isn't your government, and it's pretty far related from any government activity; therefore, we ought to be able to talk pretty frankly about the situation in the New Jersey Insurance Company.

Responsibility of the Individual Loan Section

We're going to be dealing with only the individual loan section of the law division of the insurance company. You will note that the law division parallels the investment division. The responsibility of the investment division is to go out and deal with people who make mortgage loans and negotiate with them to purchase the mortgages they hold. The law division, on the other hand, is a sort of an administrative agency that makes sure that everything is done properly and that the legal paperwork is in order—that the signatures are there and that the terms are as originally negotiated by the investment division. It makes sure that everything is done according to legal procedures.

The law division is divided into several sections—I think it's five—and the section with which we're concerned is the individual loan section. The first question is what is the responsibility of this section which is headed by Mr. Wallace? What is the activity that it has been assigned to perform?

Participant: Well, Mr. Wallace's main job was to be sure that the mortgages that are purchased or about to be purchased meet the requirements of the law and to protect the interests of the insurance company.

Kelly: And what kind of staff does he have there? Do you remember?

Participant: Yes, 26 mortgage examiners, I think, and there are three attorneys, heading each of three groups. And then he has two floating attorneys and a secretarial staff.

Kelly: Yes. The mortgage examiners are not lawyers, but they're highly qualified clerks. I think we can see without any problem what's going on in this section. You've got 26 clerks, supervised by some professional people, who are examining documents which are coming through. The examination is done on a very routine basis, and the section tries to regulate the flow of paperwork so that it comes through somewhat evenly. All right. We've got an understanding of the purpose of this section.

Evaluating the Performance of the Individual Loan Section

Let's take a look at the section's budget (page 10, exhibit 3). This is really the prime question in the case; what's our reaction to the section's performance during the first six months in 1959? The original budget was something like $232,000, and the actual expenditures totaled $253,000. If this section were in a government agency, it wouldn't have overspent its budget by this much. But, let's stick with what's shown on the exhibit. How do you evaluate the performance of the section in the light of its budget and actual expenditure? Can you make any statement about what kind of job this section is doing?

Participant: Maybe the workload was heavy. It's got a lot of overtime pay.

Kelly: Okay, how much is the overtime?

Participant: $12,000.

Kelly: Let's talk about the variance over here. The total variance between the budget and the actual expenditure is $21,000. Of that, $12,000 is due to overtime. You're saying, "Well, it's the higher workload which probably caused this increase." The case doesn't give us any statistics, but, generally speaking, all of the costs are up, particularly the variable costs. So, it looks like some change in the workload probably occurred. As a matter of fact, $18,600 of the total increase in actual expenditure over the budget, including the $12,000 overtime cost, is attributable to increases in salary costs. The $18,600 is a pretty significant piece of the $21,000.

Well, what would you want to know in order to determine whether the workload really justified that kind of an increase?

Participant: We need to know the number of mortgage purchases which were actually processed and compare that to the number which had been estimated when the budget was made.

Kelly: You want the budgeted versus the actual number of mortgages processed? The case tells you that the section has a sort of rule-of-thumb to determine the number of loan transactions that the section should be processing—15 loan transactions per man per day. You want to know how many loan transactions per man per day were in fact processed. You want to know how many transactions the section should have been able to process with the number of people it had or the number of hours its examiners spent, including the overtime hours. This tells you something about how efficiently the section performed.

Another way you might look at the performance of the section is to relate the actual work volume to actual cost and compare that to the work volume and cost which were anticipated when the budget was put together. In other words, you can compare the actual

cost per loan processed to cost per loan anticipated. When the budget was made, the section said, "Generally speaking, we're going to get 15 per man per day; therefore we need 46 people." It's possible to multiply out the number of applications that the section had expected, and divide that into the budgeted cost and come up with the anticipated cost per loan transaction. When I pushed the numbers around, I came up with something in the order of $2.40 per loan transaction on the budgeted basis. The section expected to spend in total cost for labor, supplies and copying and so on, about $2.40 for every loan processed. To discern how well it did on the actual basis, we could take the number of transactions actually processed and divide it into the actual cost. Then we could ask, "Is this above or below the budget? Are we processing for more or less profit?"

Participant: Haven't you left out the overtime cost? Overtime is generally calculated at one and a half times.

Kelly: If there is an increase in cost per loan transaction, you can say, "This is because of overtime premium." And if it turns out in fact that there was a substantial increase because of the overtime premium, some changes in the section's policy about hiring people might be made. Note that this section was pretty constrained in the number of people that it could hire. The budget set a ceiling of 46. That's all the people the section actually hired. I suppose the company doesn't like to hire people to fill peak needs and then have to drop or to fire them. I think that's probably the same kind of philosophy you follow in the government. You don't like to hire people and then have to fire them when there is a workload decline. But if it did turn out that overtime seemed like a permanent thing, you might hire one or two more people to reduce that overtime premium that you're paying.

Let's assume that we know how many loans were processed, and the cost per transaction turned out to be $2.20. Let's also assume that the cost had gone up, but the volume had also gone up, and that, instead of processing something like 15 transactions per man-day, the section had actually processed something like 18 or 20 transactions per man-day in order to get that decrease in the per loan cost. What would your reaction be if that were the case? Would you conclude that the section had processed the transactions a little more quickly? Would your reaction be, "Good boy, keep it up. Next year I want to see the cost per transaction further reduced to $2.00, and then the following year to $1.50."? Is that what your reaction would be?

I suppose,as Mr. Wallace, I could say, "My people are really going. Maybe we'll have to hire a couple more people because the overtime is getting to be a little expensive, but we've really got our performance down now to where we can process loans at the rate of 20 per man-day. The standard used to be 13, if you remember, and we got it up to 15, and now, we can get 20 per man-day." Is that going to please you?

Participant: I would like to think that the workload is something that can be expected again next year, but I would be concerned with its effect on the morale of the employees who have to work all that overtime. You might get an increase in efficiency, but also get diminishing returns, so you must consider that.

Kelly: So you'll say, "Maybe we'll take the ceiling off the number of employees that you can hire. We'll let you hire 48 instead of 46 and thereby take some of the pressure off the organization, but keep pushing it out as fast as you can at $2.20." Everybody agrees with that?

Participant: You have to know what the profits were in order to really analyze the cost.

Kelly: You're saying that you've got to put this in perspective of whether the company is profiting or not. But, these people don't really make decisions directly with respect to the profitability of the company, do they? You're the people who are studying the

company's profits; these people in the individual loan section are simply reviewing documents to make sure that they're accurate. They can't really be held for profit responsibility, can they?

Participant: However, in terms of this budget, surely it's their responsibility to consider expectations, isn't it?

Kelly: Well, that's the question. As I read the case, they don't have any direct profit responsibility—they're not responsible for the rate that the company is going to charge for the mortgage loans. Their responsibility is simply to check the paperwork.

Participant: Well, I don't know. If the section can get the cost down so low, you might draw the conclusion that the work the people in the section are doing is pretty *per forma* and not really exacting. Maybe it can be done some other way—perhaps it could be done by the investment division itself.

Kelly: You're really questioning the quality of the work they're doing?

Participant: Yes.

Kelly: Is the quality diminishing? Let's think about the job that these guys are doing. As I visualize it, there is a clerk here. On his desk, he's got an *in* basket and an *out* basket. In the *in* basket is a big pile of contracts that he's got to analyze. The real question is, how fast does he pick them up, go through them, and put them in the *out* basket? If I want to lower the cost per loan processed, I'll just take them out of the *in* basket and put them in the *out* basket. That's pretty fast. I can get it down to five cents per loan processed. But, what kind of quality are we getting? Is this section really doing the job that it's supposed to do? If you bring quality into consideration, you might say, "I'm not sure whether I'm happy that he's getting it down to $2.00 per loan. That might be worse than if it were $2.60 per application."

The workload is up, the cost is up, but when you put the two together, the cost per unit is down. You say, "That's not enough; we've got to know something about the quality of the work they're doing." I might note that there's some history in this company of changes in its feelings about the quality of examining loan transactions. It used to have more done. Several years ago, I don't know exactly how long ago, the individual loan section used to have a full staff of lawyers. It probably had 30 lawyers. Now, instead of lawyers, it has highly qualified, trained clerks to examine the documents. It takes about two years to train a clerk. Earlier, the standard of work for the clerks was 13 documents per man, per day. Then, in the last couple of years, the standard went up to 15 per man-day. So, there have been some changes in the desired quality—in the amount of inspection that is given to the documents.

Participant: The standard is the average. An examiner could conceivably spend all day on one loan.

Kelly: It all depends on the kind of loan, doesn't it? The case says that in a housing development, where every single application is exactly the same, the loan section can really run the documents through, but in cases of large, very fancy houses, it might take a day to process one document.

Participant: I also think the section might have a problem of turnover or morale in the department. If it takes only three months to get the initial training, and then about a year and a half for a trainee to really be on his own, and then approximately two or three years to reach optimal performance in the number of loans processed per day, the section could have a whole batch of trainees then, which could mean a variety of things. It could mean that the people left because they could get better paying jobs elsewhere.

Kelly: If you are getting this kind of performance—low cost per loan transaction—you probably aren't having turnovers. If the cost per loan were $3.00 instead of $2.40, you'd begin to ask questions such as, is there a turnover problem? Why is there so much overtime? Are the people dissatisfied?

As I said before, maybe the section might be just running the documents through without doing a thorough job. So, I guess the quality of the job that's being done is one factor that you've got to consider. Another factor is the service the loan section is giving the investment division. How long does the investment division have to wait before it gets the documents back from the legal division? The investment division doesn't want to lose business because these guys over in the legal division are very slow. That's another factor we'd want to consider in evaluating.

This quality thing, I think, is important, and I think that instead of looking at work measures—15 per day, $2.20 per application—there might be a better way to try and analyze the performance of this division. Is the individual loan section living up to the expectations that we have for them? Are the examiners performing the functions that we want them to do?

We're spending a half a million dollars per year in this section. How are we going to justify that expenditure?

Participant: To justify it, we're going to have to make sure that the section isn't making too many mistakes.

Kelly: What is the implication of the mistake?

Participant: Unless somebody else catches the mistake, the company might lose money.

Kelly: All right. What you're saying there is that the individual loan section's responsibility is to prevent losses? Isn't the *mission* of this department preventing losses through inaccurate legal work?

The only way you can really evaluate the expenditure of a half million dollars is not in terms of $2.40 per unit, but in terms of the amount of losses incurred by the company because of faulty legal work. The primary benefit that you can expect from having this individual loan section is the prevention of losses through inaccuracies. To really determine whether spending half a million dollars a year for this section is justified, you have to get some kind of picture of the probability of having losses.

On the surface, it would seem that the primary responsibility for preventing losses is in the investment division. The people there are the ones who extend credit, set the rates, and make the terms. They are the ones that have the primary responsibility for purchasing the mortgages in the first place. But, it is the legal division, and more specifically the loan section, that must check the final documents. If the check is faulty, the company can lose money. The loan section is supposed to make the check to reduce the possibility of such losses.

The Cost-Benefit Relationship

Let's look at the relationship we talked about during the last three days—the ratio between cost and benefit. We anticipate that we're going to get benefits as a result of having this individual loan section. In order to get these benefits, we're spending something like $500,000 a year. What kind of reduction in losses do we anticipate achieving as we increase the cost of our legal examination? What's the relationship between the benefit of reduction in losses and the cost of the legal examinations? What do you think the curve would look like that would describe this cost-benefit relationship?

The more money you spend, you would expect the amount of the losses to gradually decrease. The curve would be slightly declining line. However, while spending $100,000

might prevent quite a bit of loss, the next $100,000 is likely to prevent a smaller amount of loss, and you will reach a point where an additional $100,000 would not prevent any loss at all. This is the principle of *diminishing returns*.

I think you can see the purpose of this case. It starts with a position where it looks like you've got a very simple work measurement problem—what's the cost per piece handled? what's the per man-day loan transactions? In reality, however, in order to fully evaluate whether or not a half million dollars should be spent, you've got to look at the bigger picture. You've got to look at the benefits you can expect to get—at the reduction in losses.

Reduction in losses is a very difficult number to get hold of. Losses because of faulty documentation probably don't occur for 10 years. When they do occur, they are probably one in a thousand. There's no way you can get a reporting system that's going to tell you that this year if you spend $500,000 inspecting the legal documents, your savings are going to be $750,000. But, you probably do want to say every few years, "What has been my loss experience? how much of it can I attribute to faulty legal work?" and then go back and do a re-evaluation of the individual loan section and ask yourself, "Are we spending a ridiculous amount of money in relationship to the losses that we're actually incurring, or are we spending too little?"

Participant: But, aren't statistics like cost per loan, transactions per man-year, helpful to the manager of the individual loan section to determine how well the section is doing year after year?

Kelly: You're quite correct. Your question relates to how best you can manage the section. If I were Mr. Wallace, the head of the individual loan section, I'd define the kind of quality that I want to get from my people. I'll also try to reduce cost. This means I'd measure the number processed per day and then I'd watch my new employees to make sure that they improve. I'd have standards; I'd have everything else that I could get to help measure the efficiency of my operations. After all, I've been assigned the task of reviewing paperwork. That's my major function.

On the other hand, if I were the president of the corporation, and I'm assigned the job of planning the company's operation, and I've got now to decide whether to eliminate completely the individual loan section or double its size, I'd have a different perspective. I'll have to look at the section in terms of the desirability of spending money to do this kind of legal work. I'll have to solve the problems in terms of the missions, or end products that we're achieving.

Participant: There's no built-in measurement to determine the effectiveness of this individual loan section that can be used as a check against the investment. Those documents which are checked this year might not produce a loss until years later. We don't have a way of determining what losses can be expected from the examinations currently performed. How can you make a cost-benefit analysis in such a situation?

Kelly: You might have some interim indications of whether or not the benefit is going to be big. If you find a lot of errors, and as a result you're constantly redoing mortgages, it gives you some feeling that if you don't check them you might have a loss. But that still doesn't mean that 10 years from now, any of those mortgages is going to fall. For example, suppose a document doesn't have the mortgagor's signature. The mortgagor might pay for 20 years on that mortgage and you'll never have a loss. You'll have no problem so long as he pays. Thus, you might let every single mortgage go through unsigned and never suffer a loss.

This means that just because you're getting a lot of rejections on pure legal questions —for example, rejections of documents which are unsigned by the mortgagors—doesn't

mean that you're actually saving the company from losses. There are a whole series of things that have to happen before you incur a loss. That's why all that you can look at is the reduction in losses that you are actually realizing. Unfortunately you might have to wait 20 years until you know for certain on every single application that you process today, just how many you're going to lose as a result of faulty paperwork.

You can, however, get a bit of a feeling from the number of rejections that you're experiencing currently, and also from the level of losses that you're realizing currently from faulty paperwork that occurred 20 years ago. So you do get some feedback which you would want to look at; you would want to look at it occasionally in order to justify the general level of spending that you're putting into this document examination function. It would appear from the case, that the company has looked at it periodically because it changed from lawyers to clerks and from 13 transactions per man-day to 15 transactions per man-day. I would hypothesize that, if I were running the company, I'd permit pushing expenditures up a little bit, but I'd be a little hedgy about spending $100,000 more a year to check the documents. But we can't be sure; we don't know what losses the company is experiencing.

Analogous Examples in State Government

Let's see whether there are similar kinds of examples in the Hawaii state government where work measurement statistics are just not in and of themselves adequate to justify the activities or the programs that are being carried on. Can you think of similar programs or departments in the State of Hawaii where work measurements just aren't enough to really give you a feeling for whether or not spending a million dollars or three million dollars is adequate for a particular program?

Let me give one—one that I did a little homework on. The department of taxation has a function in the budget called *income assessment and audit*. As I understand it, in this program, men go out into the field to follow up on the accuracy and legitimacy of the tax returns that are submitted by businesses and individuals. What's the benefit of this work? I think it's pretty clear—the same kind of benefit that we've got in the New Jersey Insurance Company case.

Participant: I think the tax department has done a pretty good job of showing what the benefits of the audit program are because the legislature, in the last few years, has appropriated funds to increase the audit staff on a temporary basis. The amount of money being brought into the treasury was so large that it more than compensated for the appropriation.

Kelly: In other words, you're doing a cost-benefit analysis without even calling it that. Now, you've even got a name for it. The tax department says that in fiscal 1967, through the audits, it saved $2,272,000. It spent $1,145,000 on the audits. The direct cost-benefit ratio is thus pretty good. So the question becomes, how much money do you spend for audits? Since the state is earning $2 million for every million it is spending now, how about increasing the audit budget to $2 million? If you go from one to $2 million, do you expect your return to rise from $2 million to $4 million? Probably not. There probably would be some decline. Yet, you still might choose to spend the extra million dollars, because you will probably get more funds into the government than if you didn't. As a matter of fact, I would guess that you wouldn't mind increasing the spending to the point where you get a dollar in for every dollar spent. Based on your statement that the legislature has said that the state has not yet reached that point, I would suppose you'll keep increasing the budget for audits until you reach the point where the state gets 99 cents in for every dollar spent.

The same argument holds true in the collection function of the tax department. However, here it's a little harder to analyze. You have people out pounding on the doors trying to collect on delinquent accounts. The money, however, might come in even if they stopped pounding on the doors. In 1966, the collection division collected about $3 million in delinquent accounts, and it spent about a half million dollars in this collection function. So you would ask, "Well, if we raised this from $500,000 to $600,000, what kind of return, what kind of incremental benefits would we get from that?"

How about the department of social services? There's a category called the *prison system*. There are 400 prisoners, and it is costing the state $3,637 per year per prisoner. In the budget that I'm looking at, the department has proposed that the program be increased by about $300,000. The justification is that there are some rehabilitation programs that the department wants to carry out. It is proposing the establishment of a number of half-way houses to reorient the prisoners to the outside world. Is that an adequate justification in terms of what it is that the state is trying to accomplish, to enable you to appropriate the $300,000? What kinds of questions would you ask about this proposed program?

Participant: What kind of a social benefit do you derive here in dollars?

Kelly: Right. You try to measure social benefits in dollars. What kinds of social benefits should we measure here?

Participant: A benefit would be that the man would try and get a job on his own when he gets out. When he's earning, it would cost the state that much less than to keep him in prison.

Kelly: Okay. You almost started into the trap of the disease control program where they took a man's earnings stream and discounted that; but you changed your direction. You would measure the savings in the cost of keeping the man in prison. That's a social cost. If he's in prison, it costs $3,637 a year to keep him there. There's also the benefit of saving the cost of unemployment, if part of the program is to get the man a job. There's further the benefit of saving the cost of supporting his children, if he's got children. There's a whole range of costs, the savings of which depend on whether or not he becomes a productive member of society. What you need to determine is the probability that we're going to increase his productive contribution to society by spending $300,000 more for halfway houses.

That's a hard question to answer. Just like it's hard to determine what our losses are going to be from all the paperwork 20 years years from now. But it doesn't mean that we don't try today to measure what our results have been in this kind of activity in the past. How have our prisoners performed once they have gotten out of prison when they've been through the rehabilitation programs? I'll bet you've got rehabilitation programs now that you didn't have five years ago. What's been the result? You might not have statistics on that now, but by thinking this way, by asking this kind of question, you're going to start getting that kind of information that will help you get a better feeling for whether it's better to spend $300,000 to rehabilitate or $3 million.

Now, the department of personnel services. What do you think is the mission of the personnel programs? You're spending something like $350,000 for your personnel programs. Allow me to speak in very broad generalities about your personnel programs, since I don't know the details. It says in the budget, that the primary missions of the department are: the application of the merit principle and scientific methods, and the attraction, selection, and retention of competent employees. This is a good statement of the goals of the personnel system—the attraction, selection and retention of competent employees—and I think that's worth spending a half percent of the people's salaries on. I'd even vote in favor of spending one percent. (We just doubled your budget.)

I don't know whether it's worth really doing a big study to look at these kinds of information, but I think that if you really wanted to do a cost-benefit analysis of the personnel programs, you would want to look at the turnover and achievement in some way of the government employees as a measure of just how competent the employees are whom you are recruiting and how well you are doing in retaining the employees. Just saying that you are performing a lot of tests and a lot of classification reviews is not enough. These are just work measures. They are certainly important in managing the department, but a focus at the missions of the personnel programs could be profitable.

It's probably not worth testing every single employee in the government and somehow rank them on an aptitude basis to see how well you're doing in achieving the objective of gaining competent employees. But at some level of spending for these programs—maybe it's $3 million, maybe it's $30 million—you begin to reach a point where it's worth the incremental effort to ask questions like that and to look for better answers in terms of the benefits that you're getting from these activities.

Participant: We have a children's day care center that takes care of eight emotionally-disturbed kids—eight kids all year. The budget is $80,000, and we have a staff of eight people. Now the question is, what are the benefits here? The cost is $10,000 per child.

Kelly: If you're trying to make the kids productive members of the community, then it's probably easy to determine the benefits, but if you are trying merely to keep them alive, then you've got a harder problem. There are some benefits which you're never going to be able to measure—the enjoyment and satisfaction that their parents have or even the kids themselves have as a result of being well cared for. So there's no perfect answer, but being explicit about what your hopes are for that $10,000 per pupil will help you get some perspective on whether you should spend $10,000, $5,000, or $15,000.

I sympathize with you, if you just throw up your hands and say, "Lord knows how badly we need to keep the children alive and happy." This is why I picked on taxation and personnel and prisons where there are more explicit benefits than some of the social and educational programs that you carry on. In social and educational areas, the benefits tend to get fuzzy.

The last point I want to make is that the support activities don't have to go by the board. Sometimes they provide a better basis for doing cost-benefit analysis.

Thursday, February 1, 1968

CASE STUDY IN PROGRAM ANALYSIS:

Office of Economic Opportunity (A)

Warren Law

This, I know you'll be sorry to learn, is the last case on benefit-cost analysis. There's an obvious similarity in all these cases, and I feel like the man who was learning to play the cello whose wife diffidently approached him after six weeks and said, "I hate to mention this, but I've been watching other people play the cello and they use all of the strings and they move their fingers around, but you hold your hand in the same place and you use only one string," and he said, "Yes, that's true, they do move their fingers around, but, you see, they're looking for the note and I have found it." I know you feel like that today. I may just have found this "note" on cost-benefits and keep playing it, but each one of these cases brings out a message that I think is worthy of brief comments.

Measuring Program Effectiveness: The "Controlled Sample" Approach Discussed in "Evaluation of OEO Programs–A Progress Report*

First of all, without even discussing it, I will merely make again the point that Bob Levine makes at the very beginning of this case. The early part of the case consists largely of quotations from a speech Levine made at the American Statistical Association. Bob Levine is the assistant director of OEO and is required among other things to try to evaluate the OEO programs. He makes this point better than I am going to be able to make it.

The difficulty with evaluating the effectiveness of programs is that, unlike in the physical sciences, you really cannot engage in a controlled experiment. In physical sciences you can hold everything constant except one variable, and you can change that variable and then you can assume that whatever happens as a result of changing the variable is due to the change in that variable. Here, you're dealing with human beings, and you cannot run a controlled experiment.

In the job corps, for example, you cannot take 50 pairs of identical twins and take a twin from each pair and run them through the job corps, then take the other half of the 50 pairs and not run them through the job corps, and then watch what happens to each one-half and say, "Well, this is attributable to the experience of being in the job corps." You can attempt to simulate a problem, but you cannot really duplicate it. This simulation is, in essence, what the OEO is trying to do in a whole series of studies.

Levine points out that OEO is in the process of gathering a lot of information to try to get a sample, a large sample, of young people in the United States with certain characteristics so that, as a matter of fact, it can sort of experiment on them–that is, if 50 people go through the job corps, OEO can ask what are the characteristics of these people in terms of age, sex, background, race, anything, and try to find 50 people as close as possible

*Editor's note: The case, *Office of Economic Opportunity (A)*, discusses and quotes from three different papers, all of which attempt to evaluate the job corps program, each using a different methodology. The three papers are: (1) *Evaluation of OEO Programs–A Progress Report;* (2) *A Framework for the Evaluation of Training Programs;* and (3) *Benefit-Cost Study of Job Corps.*

with the same characteristics, but who lack that one distinguishing characteristic of a job corps experience. Then OEO can compare what happens to the ones who go through the job corps and the ones who don't.

This is a long, laborious process and also involves some assumptions that we may talk about later. The point that is worth remembering is that, in essence, what we're trying to do in measuring, say, the benefits of the job corps, is to answer the very, very difficult question of what would have happened to the job corps graduates had they not gone through the job corps. This is really impossible to answer in that they did go through the job corps, and you just have to make some guesses about what might have happened if they hadn't gone through it. The closest you can come, perhaps, is to find some people who have as much likeness as possible who didn't go through and then ask what happened to them, but there are some big caveats in this kind of logic.

"Benefit-Cost Study of Job Corps"

With that background, let's take a look at one of these studies, the one I thought you might glance at. I forgot to tell you not to read the appendix. I have a feeling nobody read it anyway, but if you did, I apologize. Let's take a brief look at what the analyst who wrote the paper, *Benefit-Cost Study of Job Corps*, says he did in trying to measure the benefits of the job corps. You can see what he did sort of summarized on page 20, exhibit 6, and page 21, exhibit 7.

Cost Estimate

Let's very quickly take a look at the cost figures on page 20. I will ignore everything except the first line there, which is the line based on the assumption that a man stays in the job corps for 12 months. There are some mathematical relationships described in the case from which you can derive the nine-month, six-month, five-month estimates, but let's assume that he stays in the job corps for one year, and the question that exhibit 6 poses is, what does it cost to keep a man in the job corps for one year?

The analyst derived an estimate of the cost in this fashion. First of all, he took the obvious step of collecting the expenditures of the job corps and divided it by the number of people who went through the job corps last year. By this calculation, he got $7,142 (column (1)), as the average cost of all job corps centers per enrollee. As the case points out, we must keep in mind that this cost figure is just the average for **all** of the several different kinds of job corps centers. In fact, the average cost of the different kinds of centers ranges from about $5,000 to about $9,000 (see bottom of page 10).

Then the analyst threw in and added some estimate of the capital costs of—the investment made in—these job corps centers in addition to their operating cost (column (2)). He amortized that capital cost over some estimated life of these job corps centers. Again, without going through all of the details, which is in the body of the case, there are some interesting questions raised. For example, he assumed, for reasons that are not clear to me, that the life of the men's urban job corps centers will be 20 years and the women's urban job corps centers will be only seven years, and, therefore, he divided the total capital cost of the women's center by seven and the men's by 20. Query, on what assumptions did he estimate the capital cost? He had to guess in advance how long you're going to have a job corps, if in fact he was trying to get some annual cost of constructing or rehabilitating the centers from which the job corps operates. That average figure, by the way, is about $700 per corpsman.

Then the analyst amortized the overhead of the job corps—the administrative costs, including Washington operations and all of the other overhead costs—and this begs all the

questions I mentioned before of deciding how to allocate overhead. For example, what part of Sargent Shriver's salary do you think should go to the job corps, versus some of the other things that he does? Again, you have to make some assumptions or ignore the overhead and say, "Well, Shriver doesn't spend any time on the job corps and all of the other overhead is not allocable in any respect to the job corps." It's not clear to me from the case exactly how the analyst did allocate the overhead, but he did, and that came out to about $600 per corpsman.

By this time he had reached the figure of $8,400 per man per year. Then he made a very interesting deduction. He figured that about $2,000 of this $8,400 is "transfer payment." I won't get too bogged down in "transfer payments," but the essence of his argument simply is that what we're trying to do is to decide what are the real social costs of putting a man through the job corps for a year, and the fact that we feed him and clothe him is not a real social cost because he would be fed and clothed anyway; that what we're trying to do is to decide the incremental, extra cost of the job corps. So, by some arithmetic logic, he deducted about $2,000 as transfer costs, or as not real costs (column (4)). I'll come back to that in a minute.

Then the analyst asked himself, "What real cost is there that doesn't appear as expenditures in the federal budget?" He reasoned that if a man were not in the job corps he could be at work. In fact these people do occasionally find work, and if taken into the job corps for 12 months, they wouldn't be contributing anything to society. So he figured that he ought to make some estimate on what the average job corps member would produce in goods and services if he were not in the job corps for a year. Thus, he estimated, by some arithmetic that's also explained in the body of the case, what percentage would be unemployed and what percentage employed, and how much the employed ones would earn and so forth. He determined that on the average, those in the job corps would probably produce about $1,500 worth of goods per man in a year, if they weren't in the job corps (column (5)). That's the cost of operating the job corps—cost to society at any rate.

Finally, he wondered,what if some of the people in the job corps do work and produce something? In one of the four kinds of camps, apparently there is some output produced. So he reasoned, "Well, that should be deducted from the cost of operating the camp as I'm trying to measure the real cost." He determined that the people in the job corps on the average produce outputs of about $600 per man.

By this process of calculation, the analyst arrived at a figure of about $7,500 as the cost per man in the job corps.

Now, there is a lot of interesting philosophical questions. As a matter of fact, as an economist, I would have to argue that the analyst's logic is right—at least when we're thinking about the federal government. What we're trying to decide is what are the costs of operating this program to society as a whole, and what are the benefits to society as a whole. It is not fair to say it costs society so much to feed a man in the job corps, unless you assume that he wouldn't eat anything for 12 months if he weren't in the job corps. We are always trying to think of the *marginal* costs.

This poses some fascinating questions for state and local governments. Can this same logic be used for state and local government programs? I would say in most cases it probably could not, although, again, I would remind you to be careful. For example, suppose you have some kind of program like this job corps thing and you want to determine what it costs you. If in fact a man included in the program would be on relief anyway, then in determining how much money you would spend to put him through this program, you'd better remind yourself to deduct what you would have spent on him in another alternative expenditure. This is really the same kind of logic that the analyst used in the job corps case on the federal level.

Benefit Estimates

As you know, there are two problems in cost-benefit analysis. One is estimating the cost and the other is estimating the benefits. The analyst had real tough problems in determining benefits. Benefits are much harder to measure than costs.

First of all, he reminds us that you've got to ask, "What are you trying to accomplish in the job corps?"; and here he decided that what we're trying to do is to increase the man's income—give him more earning power than he would have had without the job corps experience. Therefore, he argues, it is fair to measure as benefit that added income—the income increase over what he would otherwise have had.

I argued yesterday against this, as a matter of fact, when we were talking about the motorcycle accident case. I said there that it's not fair to measure benefits by including foregone income (future income a man loses if he dies in a motorcycle accident), but here in the job corps situation, I think there is some logic; I think it makes somewhat more sense, to measure benefits by income increase. That is, if the object of the job corps—and I suppose it is one of the objectives, maybe the major objective—is to increase the cash income of the people who go through the job corps, then that's what you ought to measure as the benefit of the experience. You may want to argue that that's not a very good objective for government, as a matter of policy, if you wish, but I would assume that that is probably the primary objective of the job corps—to increase the income of these people.

So the trick is to estimate how much higher their income will be if people go through the experience of job corps than if they don't. Fortunately, OEO had some experience already with the job corps and there already were some graduates. The analyst hired Louis Harris to go out and find a sample of graduates six months out of the job corps and find out what they were earning per hour. Then he tried to remember what Levine said about a controlled sample, and he knew he just couldn't go out and find equivalent numbers of people at random. So he tried to find the number of people that were about like the ones who went through the job corps, and he determined, with some logic, "Well, the closest I can come is to look at those people who were accepted for the job corps but didn't show up." He had a list of them, and Louis Harris went to find those people and checked on how much money they were making. The analyst compared the two, and fortunately for him, the ones who went through the job corps were making more than the ones who didn't, and thus he had a positive benefit—otherwise he would have been in trouble. I've forgotten the figure, but let's say it's 14 cents per hour more.

Then, by some rather obvious arithmetic extrapolation, the analyst concluded, "Well, on the assumption that this gap between their wages will continue over their lifetime, the man who goes through the job corps would in fact earn X amount of dollars more as a result of the experience. I would discount those future payments back to the present at some rate to see what that total amount would be worth today compared with the $7,500 we spend, and see whether I win or lose by these people."

Then the analyst reasoned—and you'll have to admire his ingenuity—"After all, this is not very much evidence, this last six months' experience. Maybe there is some other way I could approach the question of what the benefits are." He had some empirical evidence that people who go through the job corps increase their reading and arithmetic skills. (There is some logic behind the reasoning that people who read better and can handle mathematics better will make more money in their subsequent employment.) In fact he had a great deal of evidence from the 1960 census—a tremendous study made in which one out of every thousand people was studied and categorized and run through a computer to see what the differences were by race, education, grade level finished, state, and so on. The study created a lot of data on how much more a man with an eighth grade education might expect to make than a man with a sixth grade education.

The analyst came up with a figure which is the most intriguing figure of the whole case, and this appears on page 14 in which he says, "We have some evidence that a nine months' stay in the job corps has the effect of increasing a corpsman's skill in reading and mathematics by an amount equivalent to 1.625 years of schooling." This has got to be one of the must furiously accurate numbers ever generated—what 1.625 years of schooling does. I get the impression that if you quit on April 12th, whatever you are supposed to learn after that you won't learn at all. At any rate, he got some rough benefit of the crude mathematics and reading skills that the job corps imparts, and then, by again some very sophisticated manipulation, he tried to estimate what that would mean in terms of the future earning power of these people.

The analyst says in his paper, "I'm going to leave it up to you to decide which of these two is better, that is, the sample I have of actual people who have been through the job corps, a rather small, limited sample, or this other study of what happens to people who have better education. I'll give you the numbers and in fact I'll discount those future earnings figures at two different discount rates—3 percent and 5 percent, and let you take your choice." All of this is displayed in exhibit 9.

You've got a lot of benefit-cost ratios now. In the first place, he used two different measures of the educational gains approach. First of all, he compared the job corps people with the average person found in the 1960 census, and then he thought, "It's probably not fair to assume that the average job corps enrollee is typical of the nation." So, he compared them with the average white Southerner found in the 1960 census and concluded, "They probably come closer to that because the average white Southerner has a poorer education than the national average and the average job corps enrollee does not have a very good education," and so forth. And then he reasoned, "It makes some difference obviously whether that two years' educational benefit has the effect of raising you from grade six to grade eight or grade eight to grade ten," and so, you've got a lot of numbers here.

The cost-benefit ratios run from the lowest one of .63 to the highest one of 1.881. So, depending on which assumptions you feel come closer to reality, you've either got a program here where the costs outweigh the benefits or where the benefits are maybe 90 percent higher than the costs. "Remember always," and he says this at the very beginning, "that I recognize that there are other benefits in addition to increasing the man's income. There are certain spillover effects; we could think of a lot of benefits in the job corps in addition to added income." So he says, "Whatever number I reached will be the lower limit of the cost-benefit ratio; the others I may not be able to quantify or they may not be worth the effort, but there are some others as well."

I'd be interested in any comments you have on this analysis.

Some Questions on the Analysis Performed in the "Benefit-Cost Study of Job Corps"

Validity of Numbers

Participant: Do you make allowances for that much of an error in an analysis?

Law: I'm not sure I understand what you are saying. You're saying that it may be that the testing is so inaccurate that it's quite possible you could miss the average by two years and thus to run a series of people in the job corps through these tests and to say, "Well, gosh, they've improved their skills by two years," may be just an absolutely fallacious number? Well, I'd have to say I don't know enough about educational testing. I'm certain that I don't have to know anything to know that 1.625 is not the right answer. It couldn't conceivably be that accurate.

Benefits to Whom

Participant: Here we are using social costs. Is there any good reason not to compare social costs to social benefits rather than social costs to individual benefits?

Law: Well, that's a tough question. Yesterday, I was trying to compare social costs and social benefits, benefits to society as a whole, and here, I'm in a sense trying to compare the costs to society with the benefits to individuals. The only reason I would be willing to make this comparison is simply that this is a program clearly designed to benefit a selective group of individuals that society for some reason or other has decided it wants to help. That's not a very good answer.

Problem of Disaggregation

There are lots of other questions that seem to arise from this job corps case. One of the obvious ones, for example, is the following. I would like to emphasize that government decisions have very strong analogies in the business world. Businessmen always ask themselves, "I am going to make an investment; will it pay off?" One of the problems that every businessman worries about is the problem that this case raises—a very difficult problem in any cost-benefit analysis for government decisions as in business decisions. The problem is, do I look at the average number or do I try to break this project down into little pieces and decide whether each piece pays off? This job corps program may be big enough to stand probably four cost-benefit studies—three certainly.

For example, if the average cost-benefit ratio is 1.1—which indicates that the program is barely a beneficial program—and you've got components whose costs range from $5,000 to $9,000, all of which are taken into account in deriving the average cost of $7,000 to get your cost-benefit ratio, you've got a sneaking suspicion that some of those job corps camps aren't paying off at all, that if you broke down and disaggregated the cost among the various camps, you may find that the camp costing $9,000 is a mistake. You've got to be careful in leading to that assumption, however, because you would also have to disaggregate the benefits, and it may be that the $9,000 camp costs $9,000 because there's a much more intensive educational experience. It's conceivable to get the highest cost-benefit ratio from the most expensive camp.

Now, there's no answer to the question, to what extent should we disaggregate? In the ultimate, you would run a cost-benefit analysis study on every job corps center, but you've got hundreds of them and you can't really do that. Is it worth the effort to try to run two analyses for two different kinds of camps? I just pose a question that is implied in this particular case.

Complementary Programs

Another question which the case raises is not as difficult as the previous one. It is, however, one we ought to keep reminding ourselves of. There are programs like the job corps at the state and local levels. These programs are designed to upgrade the skills of members of the labor group, so that they can get better jobs.

One of the few things that I was taught when I was trained in economics is that you have to consider supply and demand. What you are really doing with these programs is increasing the supply of labor or improving the supply of labor. Unless you, at the same time, do something to increase the demand for labor, you really may not be accomplishing anything for society as a whole.

It's quite possible, for example, to upgrade the skills of the people in the job corps so effectively that they're the equivalent of a Harvard education. Now, unless there is a demand for additional Harvard graduates, all you'll be doing is to create a bigger pool of

people begging for jobs and causing the graduates to displace some other Harvard graduates —as the phrase which is often used says, you'll be "reshuffling the places in the job queue" —that is, these people would get some jobs but other people who would've gotten jobs won't now because they've got only X number of jobs available. This is so obvious a fact that it's often overlooked in any kind of program like this. You're wasting your time running this kind of program, unless simultaneously you're taking some steps to make sure that the demand for these skills will exist when the supply is created.

The federal government made a classic boner when it took unemployed coal miners in West Virginia and ran them through programs to retrain them as typewriter repairmen. After the government had created a hundred typewriter repairmen in Appalachia, somebody looked down and said, "Where are all the typewriters?" and someone said, "There are only two in this whole area; there's just no demand for typewriter repairmen."

That's an obvious case, but it's not quite as obvious as when you say, "All we're going to do is upgrade their general skills." The assumption is that somebody with more skills will automatically find a job. But it isn't that simple, as we found out in 1930. It is the responsibility, of course, of the men at the top—the President or a group of advisers—to make sure that programs are coordinated and that if we're generating extra workers, we are generating extra jobs through some other programs as well. It is not the fault of the analyst that he doesn't consider matters like this; he only considers certain things. In this job corps case, he was just asked to determine whether the job corps would pay off for these people. But, it's still not clear from this analysis what the pay-off for the nation is, unless you can assume that the jobs will be there.

Alternatives

The question, again, to beat this to death for the last time, is one of alternative ways of accomplishing your goal. Again, it's not the analyst's fault in this case. He was not asked to think up some other ways and to compare them. He was merely asked to see whether the job corps pays. The answer is, "Yes, perhaps it does pay," but, he might have been asked the wrong question. Are there other ways to put these people to work that are cheaper? We can think of a lot of conceivable alternatives, whether they are cheaper or not. So we have to cost them out.

There's one alternative, in fact, that the federal government is now engaged in. This program helps solve, by the way, that first question I asked which is, "Will the jobs be there when the guy goes through the job corps?" The federal government says to employers, "Here's a group of unskilled workers that you wouldn't hire, but you have some jobs that need to be filled with certain skills. Hire these people, train them to do it and we'll pay you; we'll pay one-half or all or whatever is some proper fraction of the cost of training." Under this approach, the job at least is there when the fellow finishes his training. The point I'm really trying to make is, this alternative—to pay the employers—may be a cheaper way if your only object is to get these people into jobs.

Take another obvious alternative for Appalachia. The obvious alternative for Appalachia is simply to subsidize employers to move to Appalachia, and if they move down there and start a factory, they'll hire somebody. If the object is to put the people to work, it may be cheaper to move the employers down there.

Another possible alternative—maybe there's a shortage of workers in Honolulu and it might conceivably be cheaper to grab everybody in the job corps and ship them to Honolulu where the jobs are.

The point is so obvious, I won't belabor it any longer. We ought to ask ourselves, what are the alternative ways of accomplishing this? This job corps case, of course, does nothing about alternatives.

Use of 1960 Data

Similarly, if you want to attack just the logic of the cost-benefit analysis, there are things that are easy to attack. For example, the assumption that the 1960 census data apply in 1968 is not always clear. The 1960 data basically suggest the difference in income between people who had a high school education and people who didn't in 1960. It happens that 1960 was a depression year, and we have some evidence which suggests that a figure like that gets bigger in a depression year, since the definition of who is employable gets more rigorous and there is a larger number of non-high school graduates who are unemployed. In a full employment year, you may find that as a matter of fact the gap is narrowed. Thus, before you automatically assume that what existed in 1960 would exist over the next 25 years, you might ask whether the next 25 years would be something more like 1960 or 1967.

I don't want to argue that this is a major point; it isn't a major point. I've got a great deal of sympathy for this analyst. The obvious question that you've got to ask is, "If I don't like this analysis, what would I do that's better?" I sympathize with anybody who's done analysis. There are lots of times myself when I can't find the right number and I grab the best one I can find. The 1960 census data may or may not have been the best number the analyst could find. But it still is a weakness that you've got to be aware of.

Measuring Intangible Benefits

Participant: Let's assume that it's government's responsibility to get people trained for jobs, and the measure of benefits is the added income. Thus the analysis here is directed to the amount of increase in income that we can expect from this program, due to increased education and so forth. What about social benefits or other benefits? How far do we go in measuring social benefits to make this a meaningful analysis?

Law: Let me make only a couple of comments. You know that there are some added benefits—some other social benefits. If you happen, for example, to have in the job corps all of the instigators of the Newark riots and you can save Newark from the riots by putting them in the job corps, you might say that this is one of the additional benefits of the job corps. There are a number of other benefits which I'm sure you can come up with if you spent some time thinking about them.

Having said that, there is still the question of whether you can measure these other benefits. Some of them you might be able to measure, if you spent a lot of time and effort; some of them you probably couldn't measure. About the only comment I can make is that at least the approach taken by the analyst in the job corps case, assuming you have confidence in it, will give you some help in answering the kind of question you ask.

Suppose that by the approach taken by the analyst in the job corps case you came to a cost-benefit ratio of .9, and suppose, you felt that spending so many millions of dollars doesn't pay, unless all of these other benefits which you haven't measured are worth a million dollars. You might say, "I can't measure them, but I know they're worth at least $1 million. Why bother to measure; they're worth more than that." On the other hand, suppose that the analysis arrived at a cost-benefit ratio of .2, and suppose, you felt that these intangibles have got to be worth $80 million. You might say, "I don't know, something in my stomach tells me that I'm not so sure I'm getting $80 million worth of reduced riots." So, even if you can't measure some of these intangibles, sometimes you can ask yourself what would they have to be worth for the job corps to be a worthwhile expenditure.

We are all in favor of increasing the image of the United States before the rest of the world. When an analyst comes to you and argues for the space program, you might ask, "What would our getting to the moon first before the Russians to save our public image

have to be worth before we put money into the space program?" Increasing our public image is something you can't measure. However, if you can measure the other benefits in the space program and you find that after counting everything else you got $3 billion less than the other benefits, so that you can attribute this $3 billion only to this unmeasurable benefit of national prestige, you can answer the question whether this national prestige is worth $3 billion. Sometimes it's easier to make that kind of judgment than to try to measure the intangibles with any kind of precision. You could use an approach like this and say, "Gosh, I'm only getting some of the measurable benefits—.63—which leaves so many billion dollars of intangible benefits. I've got to believe I'm getting at least $3 billion of these intangible benefits, or the job corps doesn't pay. I don't know how to measure them but something tells me it's worth $3 billion; they're not worth a hundred billion, but they're worth three."

It isn't always vital to measure something, if at least you can get a rough handle on what it has to be. You might say that the people who are teaching in the job corps are getting some value themselves out of learning how to teach the hard-core unemployable. You might argue that the nation ought to benefit, if you can come out with a corps of people who have experience in training this kind of students. I think this has some logic. I mention this only because I am sure I could put some worth on it.

You could conceivably, once you get some experience, run the same kind of survey that they ran on wages. You could just sample the people who had been in the job corps to find out how many of them subsequently had some conflict with the law and been arrested. If you find that in fact only two out of a thousand had been arrested, whereas four out of a thousand in the other group had been arrested, we could get some measure of another benefit—the reduction in incidents of crime.

The other point I would make refers back to some of the technical weaknesses like using the 1960 census data. You can find technical weaknesses in any analysis. The point, however, is that, if the analyst comes up with a cost-benefit ratio of 500 to one, you might say, "I'm sure the 1960 census data are wrong, but they're not that wrong; the job corps is still a beneficial program." If the analyst, however, comes up with a cost-benefit ratio of 1.1, with some fuzzy numbers in there, then you might say, "I'm sorry, I've got to see better results than that before I'm willing to fund a program of this kind."

I'm not sure that was even the question you asked, but I think I gave you a lot more answers than you wanted.

Real or Money Cost

There's another question I might raise—the question of whether you look at **real cost** or **money cost**. Although to suggest to a non-economist that maybe we're not very interested in saving money may come as a shock to him and although I can sympathize with the non-economist, I'd have to depend on my profession. On the federal level, if you have two ways of running a program, one of which doesn't use any real goods or resources—that is, somehow or other you could accomplish your end by just handing out money—I can't envision such a program, but if there was one—and the other which uses a thousand tons of steel and a million bushels of grain and things of that kind, the money value of which is less than the amount of money you hand out, I would argue, and I guess most economists would, that you ought to spend the money rather than use the real goods and services because the money doesn't represent any real cost to society. Money is created out of nothing.

On the state and local levels, this argument is not only not going to appeal to the voters, but in fact it isn't really valid because first, the State of Hawaii can't run out and create money out of thin air (like the federal government can) and secondly, any money that is spent does represent real goods and resources since it is money taken away from

the citizens of Hawaii who could've spent it on real goods and resources. Presumably on the state and local levels, money costs are the ones to look at, and you would look at them. So, that argument, apart from whatever academic interest you have, doesn't apply to the state and local levels.

Comparing the Job Corps Applicant Who Showed Up with the Applicant Who Didn't

There's another assumption here that this case raises and that any case of this kind raises—the assumption that a man who went through the job corps and a man who didn't go through the job corps are the same except for this one characteristic—the job corps experience. Now this analyst did the best he could, I think. He found some people who at least signed up for job corps but did not show up. However, there's still a significant gap in the logic—to assume that the man who did not show up is just like the man who did show up, except for the fact that he didn't get the training.

What caused one man to show up and the other one not to? It may be that the man who didn't show up thought about it and said, "I'll have to be in that classroom for 12 months under a lot of discipline that I don't want to subject myself to. I'd rather be out in the streets." If this is in fact the explanation, then I would expect the man who's willing to subject himself to that kind of discipline to make 14 cents more an hour. It is the same kind of argument as people make about Harvard University—that Harvard happens to be famous because the graduates are very good. But, we are so careful in letting them in that they could just sit around for four years and they would be pretty good when they got out—better than, say, the average guy on the street. This is the problem here. What causes the fellow to be willing to go through the job corps?

It seems conceivable—if you want to twist the logic as far as you can twist it—to say that if we didn't have a job corps he'd find some way; he'd move to where the jobs are or he'd do something to get a job. Maybe the job corps has skimmed the cream off this hard-core unemployed, and, if so, you're going to end up with the wrong kind of cost-benefit measures.

You can twist the logic the other way around. I've heard, for example, one guy claim that the job corps center in his town had been used as an alternative to jail; that when they caught some juvenile delinquents, the judge said, "Thirty days or six months in the job corps." If that is the case, why, clearly, probably the benefits are understated. If you can take a guy who should be in jail right into the job corps and he makes 14 cents more an hour than somebody else, then you've really got an efficient program.

This is a significant question to which I do not know the answer—what characteristic does the job corpsman have that the non-job corpsman doesn't have; is this characteristic the thing that gives you the results rather than the job corps experience?

Fudging Figures

Let me say another thing. I'm as cynical about this as you probably are. I've a sneaking suspicion about the kind of people the average job corps center manager is picking. Many of the centers are not quite in the same position as Harvard, where they turn down five out of six applicants, but they can probably turn down a half of their applicants. Which half do you think they take—the ones that are harder to train or the ones that are easier to train and who are most likely to succeed? I would guess they would accept the ones that would make them look best. If for some reason, a graduate of Harvard shows up at a job corps center and says that he'd like to get 12 months' training there, the center might grab him and say, "It's great. Boy, you're really going to run up our benefit ratio when you go out and get a job at $10,000 a year or something." This, of course, is human nature—to make the program look as good as possible—and here's a clear way to

do it. I'm sure I'm not warning you about anything that you don't already realize. You've got to find out if the guy has fudged the figures and guess at how or the way in which they might have been fudged.

Discounting

Well, there are all of these obvious comments. I would like to make about one or two others that the case raises which apply to almost all cost-benefit studies. One of these is discounting.

Graeme Taylor yesterday talked about discounting. Conceptually, it is impossible to refute the logic of discounting. It's just human nature, at least I believe it is, for people to prefer spending a dollar today than spending a dollar five years from now. They'd rather have it now than five years from now. Hence, if you spend a dollar on a program which only yields a dollar's worth of benefits 10 years from now, you have not maximized the public welfare, in my opinion. On the other hand, if you spend a dollar on a program which would yield $10 five years from now, you may well have improved the public welfare.

The only question is the one Graeme posed yesterday. At what rates would the public expect the government to invest its money? What rate should the government be expected to earn with the public money? The analyst in the job corps case used two figures —three percent and five percent. Graeme yesterday mentioned the debate here as one of the hot topics in academic circles. But academicians enjoy topics that may not intrigue other people very much, and I'm not going to pursue the debate except to voice one opinion—that in the spectrum of answers that people have come up with, I tend to find myself closer to the upper end rather than the lower end in terms of the discount rates to be used.

At the lower end, almost invariably, the logic runs this way: "What are we doing when we spend public money? Well, we are taking it from people and investing it for them. They are willing to loan it to us at four percent, the cost of government bonds. Surely if I could borrow money from them at four percent and invest it at five, I'm bound to be improving the general welfare of society because they are getting five percent for the money and I'm giving them bonds as well."

There is some logic to this but not very much, I think. The reason it doesn't grab me as a masterpiece of logic is, of course, that there are two kinds of public moneys. There is the *borrowed money* and the *tax money*, and once the government gets its hands on the two kinds, it's impossible thereafter to distinguish them. It's not possible to keep a set of books and say, "I have here some borrowed money and over here I have some tax money." I assure you that money looks exactly the same.

For any government which, for example, raises $80 million in taxes and $20 million in borrowed bonds to say, "Well, we're applying the $20 million of borrowed funds to these uses and we're applying the $80 million of tax funds to the other uses," is to engage in some kind of rather shaky logic, because it's just as easy to say, "Well, we've got a $20 billion federal deficit this year or thereabouts, and we are going to get a tax increase." Now, are we financing everything except the defense budget out of taxes and borrowing $20 billion to fight the war in Vietnam, or are we paying for the war in Vietnam out of taxes but we're borrowing to finance the post office department?

The federal government doesn't, in fact, keep its books that way. It just lumps all the money in one big pot, which is the logical way to do it. There are lots of state-local governments that keep separate books, but it is just not absolutely rigorous in logic to believe that this money goes here and the other money goes there. It would, for example, be quite possible to raise the $100 million in exactly the other way. Change the books around

another way and say, "Well, we decided to borrow this $80 million for this program and pay for the other one out of $20 million in taxes."

I feel pretty sure that what Graeme Taylor called the opportunity cost of this money—that is, the opportunity that the taxpayer has foregone; what he could have done with the money if the government left it in his hand—is probably something better than four percent or so the government bonds are yielding. I assure you that I would hope that I could do better with the money that the federal government and the State of Massachusetts takes away from me than four percent or so, quite a bit better I would hope. If the government takes it away from me through compulsion and then invests it in something that yields five percent of social benefits and says, "Look what a good job I've done to maximize your welfare," I'd take issue with that.

Having made that point, though, at least having offered it, if you ask me, "What is the right discount rate?" my response would be that I can't tell you, except I'm darned sure it's significantly higher than the rate on government bonds.

It makes an enormous difference which discount rate you use in any of these studies. Look at exhibit 9, for example. Let's take the first one of those educational gains measures—the one where the average guy stays in the job corps for nine months. If I discount the benefits at three percent, I get a cost-benefit ratio of 1.32; at a discount of five percent I get a ratio of .84. This is a difference between saying it pays or doesn't pay. Of course, the lower the discount rate you use, the easier it is to make anything look good—to make anything pay off in the future. If you use a discount rate of zero, you can talk yourself into taxing the public $1,000 this year, putting it into some project that would yield a $1,001 of benefits in the year 2020. Now zero is an absurd rate, but three percent may be absurd too.

In many of the water resources projects in the federal government (I think Graeme Taylor mentioned this yesterday), they use not the rate on government bonds but the moving average rate on government bonds, which means the average rate over the last five years. Let's say the interest rate on government bonds has been going up steadily, so even if the latest rate is four and one-half percent, the average over the last five years might be three and one-half percent or so. Well, if you build any project, whenever the benefit is more than 1.0 when discounted at better than three and one-half percent, you might end up building a lot of big dams just to keep a few acres of land from being flooded.

Now, this argument may be made: Isn't it true that you finance capital investment with borrowed money and finance operating budget with tax money and therefore shouldn't you apply to the capital investment the cost of borrowed money? I'd have to say, "No." This isn't necessarily true at all. You can borrow to finance the operating budget and tax to finance the capital budget, if you want to. Money is money.

I don't have any real knowledge whether any of this applies to the State of Hawaii, but I'm really getting off my chest some mistakes the State of Massachusetts has made in making investments. I truly would exhort you to remember that there are people out there—and I know you do know it—who are surly but not mutinous as yet about the money that is coming out from their pockets being loaned to the government "voluntarily" at some miniscule rate of interest. If in fact you invest it in the job corps or something else which pays off at five percent a year, but not any better, it's not clear to me that you have maximized the public welfare. That is more sermon than anything else, but at least it's worth reminding ourselves.

Marginal Analysis

Finally, one last thing worth noting is that this study—and again it's not the analyst's fault necessarily, unless he had a chance to do something about it at the beginning—doesn't

enable you to do any of the two kinds of marginal analyses that are most important. If I increase this program or cut it back a little bit—if I put another $1 million in or take $1 million out—what would be the added benefits or the reduced benefits?

Just for example, if you want to leap to the assumption that the overhead expense on Sargent Shriver's salary won't go up, I could pawn the job corps at a significantly higher level at a reduced average cost per job corps enrollee. Because the overhead would not go up and since a big chunk of program cost is simply total overhead divided by the number of people in the job corps, I could reduce the cost per enrollee in half by putting twice as many people in the job corps. Based on my experience in the business world, I can tell you that *fixed costs* are never really fixed. You always think they are until you in fact do double the size of something. If Sargent Shriver demands that his salary go up, a lot of other things—all those costs you thought were fixed—suddenly become variables. The point still is that this doesn't give you any marginal analysis.

Asking the Right Questions

Not only does it not give any marginal analysis, but it doesn't give you—and I say it for the last time in three days—any comparison of any other alternative ways of trying to accomplish the ends, and of course this is clearly the question. Enabling people to get jobs is a desirable goal. I'm sure of it. If I get a cost-benefit ratio of 1.9, and this is the only way I can think of accomplishing this goal, I may say, "Let's have a job corps." But if I can think of some other way, I might want either to run some other cost-benefit studies, or even to conduct an experiment, and then look at the result before I pawn the job corps at $500 billion and run everyone in the nation through it. I might try to run four or five little experiments—a couple of job corps centers, a couple of other techniques, and then take a look at them afterwards and see which ones seemed to have the lowest costs, the highest benefits, and so on. This is the question always you have to ask, and we are always in danger of asking the wrong questions.

I remember my favorite story of the fellow from New York who went to Moscow and was shown the Moscow subway. The Moscow subway system bears no resemblance to the New York subway system—it's modern, clean, and it has art work, crystal chandeliers and everything; the New York system is filthy and, as you know, antiquated and archaic. With great pride, the man from Moscow showed the subway to him, and the New Yorker was awestruck. But, after 15 minutes, the New Yorker said, "I hate to mention this, but I haven't seen any subway trains coming through the station. Where are the trains?" The Russian looked at him for a while and then said, "What about Little Rock?" This is the sort of thing we often do. We don't always respond ourselves to the right questions.

Conclusion

I'm not really attacking the *Benefit-Cost Study of Job Corps*, believe it or not. I think, in my opinion, it is considerably better than the one we had yesterday, and I want to endorse my earlier statement. It is very easy to jump on these things. It's difficult to decide what you would do instead. With that statement I conclude.

We have about six minutes left. I want you to pose some questions. I'm sure you have some programs similar to the job corps. How do you go about deciding whether you're getting your money's worth from them?

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Participant: This morning a question was asked here about the halfway house. I don't fully understand that program, but I assume that convicted criminals are placed in some

home-like, unguarded dwelling to help him make the transition from the institution to the community. We're spending tax dollars to do this. Do you measure the benefits of this program by the gains to society or by the gains to the individual himself?

Law: I'm glad that at least you can say there are alternatives. I know nothing about the program, and I think I'll repeat what somebody said a day or so ago. If you start free-wheeling without any regard to whether it makes any practical sense or not, you can think of a hundred ways of doing almost anything. As I mentioned the other day, one way to improve water purity may conceivably be just to channel all of the pollutants to one stream and then you have two streams—one clean and one dirty—and that may be better than trying to purify both streams. There may be other techniques than what I've mentioned.

Participant: Isn't this [cost-benefit] approach an alternative in itself?

Law: What are you trying to do? What are the conceivable alternative ways of doing this? What do they cost? How would you measure the benefits? It's childishly simple to describe what cost-benefit analysis is. You point out all the weaknesses in these analyses and ask, "Is there some better technique than cost-benefit analysis?" My answer is "No." By definition, that's all you can do—compare the cost with the benefits.

There are certainly better ways of estimating costs. There are better ways of estimating benefits. If you went into traumatic shock when you went through this case, there are some much more sophisticated mathematical techniques of trying to come to grips with a lot of questions. For example, how do you forecast the future when it's uncertain, as it always is? You simply extrapolate the past. We've got some brilliant guys at the Harvard Business School engaged in statistical decision-making, where they use some very abstract theory in defining the laws of probability and come out with predictions of the future. It's certainly theoretically possible with a computer, if a guy knows what he's doing, to come out with some very sophisticated predictions of the number of guys who will fall off the motorcycle next year with details such as, with or without a helmet. There are lots of additional statistical techniques that can be applied.

The trouble, I find, with those cases where the statistical techniques are applied is this. Take yesterday's case. There were four different numbers to be produced—you had to predict how many motorcycles there would be, how many deaths from motorcycle accidents, how many motorcyclists you can persuade to wear helmets, and what difference it would make if they did wear helmets. You got four different numbers and multiplied them together and came out with the outcome. You can apply some very sophisticated techniques on these numbers to produce an outcome. Usually, however, one of them turns out to be the wildest kind of a guess. If you hire a $25,000 Ph.D. in mathematics to apply very sophisticated techniques to one of the numbers, and then add it to another number which is generated out of the dystro-intuition of somebody, in answer to your question, "How many people can we persuade to wear motorcycle helmets if we spend $1,700,000?" he might say, "Oh, 20 percent." There's an old saying in computer programming, "If you put garbage in, you'll get garbage out." If you put just wild guesses in the computer, you'll get wild guesses. That is so clear that it's not worth belaboring.

Participant: I have one or two observations about those situations where budgetary planning is carried out, let's say, at the operational level. At that level, certain elements of the budget are considered. Eventually this low-level analysis is reviewed by other people at a higher level whose job is to look at the entire state. Are there changes that occur from the individual benefit focus to the social benefit focus, and what kind of discrepancy do you get between the ways in which the two levels view the program?

Law: Undoubtedly. This question is one that's related, of course, to what I was talking about in the beginning. I've found it very difficult, when I was trying to think of this

case in relation to Hawaii, as to the extent to which you should tax your citizens in order to produce national benefits. I noticed in that list of program categories that I've seen in some document, that one of the goals of the State of Hawaii is to promote national interest or something to that effect. I'm very pleased that you're willing to spend some money to promote my interests. The extent to which you should be doing it is, I find, a very tough analytical question. Actually, if you look at Hawaii, the problem is not so acute, since you're so far removed from the other states. But we've got thousands of examples on the mainland United States where a state by running accrued cost-benefit analysis can find that something really pays, but which if carried out ruins the neighboring states, like silting up their streams, polluting their air, or something. This is one of the great problems of the federal system.

Participant: Are there situations where as a result of analysis something was recommended which benefited one department at the expense of another?

Law: Oh, yes. You're asking a question that's very closely related to business decisions on which I wish we'd brought a case. I know a wonderful little case of a firm that has three divisions, buying and selling to and from each other as many firms do. The question in the case is, "What prices should each division charge the others?" Each division wants to charge as high a price as possible to look good. On the other hand, each division wants to pay the lowest price possible so it'll look good. How do you maximize the welfare of the corporation as a whole?

This question of transfer pricing has a direct analogy in government. We know very little about running a business, and although most of the things that business does do have a direct analogy in government, they're twice as hard to resolve in the government. In business, at least we can measure our outputs in dollars, we can measure our outputs more accurately and we presumably know what our goal is—to make money. When we see how hard it is to run a business in any efficient way, when we realize that the models of efficiency that we think of (General Motors, or anybody like that) 10 years ago were half as efficient as they are now, and then multiply that by some factor of 10, you can imagine how difficult it is to run a government efficiently where the numbers are illusive, the goals are illusive. Then, if I want to offend you and add to that, the fact that there has been probably less effort to run the government efficiently than to run General Motors, you can get some feeling for the gap there exists between what could be done and what is being done.

Thursday, February 1, 1968

THE FUTURE OF PPB FOR THE PUBLIC, LEGISLATURE AND EXECUTIVE

John Haldi and Warren Law

PPB: The Payoff, Present Status and Effect

John Haldi

I'd like to start off with a title like *The Future of PPB for the Public, the Legislator and the Executive—How Can You Go Wrong?* But let me start off by just reviewing a few things briefly.

The Payoff of PPB

I put a chart up on the first day on which I listed the basic components of the PPB system. You recall the four-way chart—planning and analysis, programming, budgeting, and managerial control. The hardware part of the PPB system—the formalistic part—is the program structure, which is adopted for these various purposes—for analysis, for budgeting, and so on. The structure can be used in conjunction with an object class or functional budget, or it can be used in place of or in addition to, the budget. It can also be used as a way of keeping one's accounts and structuring one's accounting reports.

Program structure and planning. Something that should be clear and apparent by now is that it is possible to define and adopt a program structure with various levels of applications that I just outlined, and yet do no planning whatsoever. All the decisions which get recorded in the program and financial plan can be the result of exactly the same kind of decision processes now being used. I don't know what those decision processes are in Hawaii, but the decision processes can be political; they can be a "seat-of-the-pants" kind of thing; they can be whatever you want to call them. I've seen them in operation in the government. I have seen secretaries of large federal departments start their analyses in this way. They call in their chief analyst, and they say, "Now, look, this is the problem in this program; this is what I decided to do; now go do an analysis which justifies my decisions." This is not impossible at all. That is one way to kill the system for good.

Similarly, you can have planning and analysis, without going through all the work of defining the program structure and disseminating the program structure throughout the organization—explaining it to accountants, to key punch operators, to the people who try to keep accounts in this way, to all the people who have anything to do with the budget—all the various managers up and down the line. You can do the analysis without having all this apparatus if you want. After all, we've had analyses before in government. I'm sure you've had an analysis on one problem or another, in one program or in other programs without going through all this business of defining a program structure.

So, the two—structuring and analysis—can be done independently. In the past they have been done independently. We've had analyses in government at all levels, and there have been attempts in the past to define and adopt program structures without doing analysis of any sort.

Programming: The linkage between planning and budgeting. This question arises: if we've been doing structuring and analysis independently before, why both now? Is there a payoff from doing them together—a payoff that adds up to something more than just

doing each one independently? I think that's a relevant question, and I think the answer is "yes." I would like to take just a minute to elaborate, by way of review, on why I think the answer is "yes"; that there is a payoff from bringing these things together. The answer is provided in *programming*. I defined programming a little bit. I said programming means to lay out what your outputs are going to be.

Within a fully functioning system, there are some people called *programmers.* We haven't talked about what a programmer is. I'd like to define for you what a programmer does, and then I'd like to tell you why this linkage gives you something that is more than just the sum of the two parts—structure and analysis. Let me tell you what he does, and you can figure out what kind of a guy he is.

A programmer is a guy who essentially is a human link between a planner and a budgeter. I am going to draw some caricatures which are extreme. I hope nobody comes up here and crucifies me afterwards for this. A budgeter, in the extreme case, is a guy who is worried about allotments, about forms, about procedures, about getting in work order requests from agencies; he sets up numbers and files for them. I was reading the other day that in New York City, if the city council authorizes a new building of any size whatsoever, papers have to go to the budget bureau eleven times before the building finally gets put up. The agency which needs the building sends in its request, it goes out and advertises for bids from architects, it goes in to the budget bureau for approval, it then gets certain drawings, and then it goes back to the budget bureau. It goes back and forth to the budget bureau until finally it gets the building put up. There are lots of forms pouring out, lots of details and paperwork. This is an extreme caricature of the budgeter.

The planner, in the extreme case, is a sort of an odd-looking guy. He might have a long beard. He might even have a mustache; he might walk around kind of gazing up at the walls. He might look out of one eye this way, and out of the other eye another way. He's a guy who is not too concerned with reality of any kind. He's a guy who is not tied down to the forms and the problem of how you're going to implement every detail of a plan. He's a guy that thinks boldly into the future. Not every planner is this, to be sure, but he is oftentimes called a *schemer* and *dreamer.* This is an extreme caricature, but a lot of planners historically have not been too down-to-earth.

The programmer is a guy in between. The programmer is a guy who knows the cost of a lot of things. He knows how to translate grandiose plans into operating programs. He can take the ideas of the planner, and he can translate them into how much money you're probably going to need for travel, how much for overhead, how much for people. He can cost out the plans.

Even the mundane things like buildings and so forth, oftentimes the planner doesn't do the costing out. In some of the more exotic types of systems—the missile system in the department of defense, for example—the planners dream up all kinds of platforms to be put in the sky or underwater, but they don't know how to cost these things out. They may know all about military interactions, but they don't know much about the cost of things.

As you move down the road to PPB, you may get into something like this yourself on the state level. You might get guys who know a lot about the design of a rapid transit system, but don't know much about what it costs. You might get some people who know a lot about all the good things that can come about from a medicare program, but don't know much about the cost. You might get some people who know a lot about some of the fancy educational ideas, but who don't know how much they cost.

A lot of the educational ideas that are cropping up these days have some pretty big price tags on them—for example, the so-called *computer system instruction*. It's not hard to spend $10,000 per child setting up a little center linked into a computer which gives you all the answers, feedback, and so forth. I dare say that this is just the beginning, that

the systems that will be upon us four or five, 10 years from now will be even more elaborate and more expensive. If you have enough money, if you know that money would flow out like it flows out of the Hilton Corporation, you can do all kinds of wonderful things. Look at this place which was created out of a bunch of dead rocks. If you've got all kinds of money, you could create gold-plated school systems. But you don't have all kinds of money. Resources are limited to everybody, everywhere. Even President Johnson finds that out every time he submits a budget. Now, in fact of course, budgeters know a lot about programs; and some planners know a lot about the cost of things, and they act as their own programmers.

Now, I come back to the point that I want to make. Why does programming improve the whole package—why something more than just analysis over there and just a budget over here? The reason is, I think, it brings the planner into the budget process. Now, you who are legislators or administrators know that the budget is *the* plan when it comes to resource allocation. There is no other plan that means anything in the state other than the budget because if the bucks aren't there, nobody is going to do anything. The budget is *the* plan that cuts the mustard.

Historically, we've had lots of planning. I don't know whether you have, but lots of states and government institutions have planners all over the departments doing all kinds of planning—small planning, big planning. Somebody said that subordinates "suboptimize." I suppose, the more subordinates there are, the more suboptimization you have. It doesn't matter. The point is that they are not hooked into the budget process at all, and thus, there are probably more frustrated planners wandering around the world than there are fish in the ocean. By linking these guys (the planners) into the budget, by costing out their ideas, and by making a cost display and feeding it back to them and saying, "Now, look, if we put your plan in here at this cost level, look at what it does to the total budget; it forces the whole budget out of proportion," you enable the planners to go back to their drawing boards with a better idea of where they went wrong, why their plans couldn't be adopted and how they can improve their planning. They will then be able to come out with a better plan which is closer to reality.

Planning is a grossly imperfect process by its very nature. There is need to provide a linkage which gets the planners and the budget types together systematically on a regular basis. This idea of getting together seems to be, more often than not, breached with an object class budget system. One of the real payoffs with a PPB system is this integration, this getting together of the planners and the budgeters, to enable the planners to do better planning and to provide the top people in government—the legislators, the governor, the department heads—with more realistic and feasible plans, with plans that really give them some real alternatives to choose from, and not with plans that just force the budget right through the ceiling.

PPB Is a Human System

By way of a review again, I just want to say one more time that the PPB system is a human system, made up of people in the system. It's not a hardware system; it's not a computer-based system; and it's not just an information system. The PPB system is going to be as good as the people in the system—no better, no worse. It can be killed by humdrum mediocrity; but it can make you the leader among all the fifty states, if you get bright people in there working on the system. If you try to routinize it, you'll kill it. This system depends upon good people at all levels, including good department heads who are pulling the analysis out of the planning and analytic staffs and good legislators who are asking the questions that bite deep of the program people as they come before the legislature. The legislature ought to keep the program people on their toes, really on their toes,

in terms of what the programs are basically accomplishing and not accomplishing, rather than simply nibbling around the edges while the whole goes untouched. If you have good people, you have a good system. If you don't, the system will give you no better results than you've had in the past. It will just be another formalistic system, either substituted for or added on to what you have, depending on how you do it.

Tailoring PPB to Your Needs

I think it has been mentioned, but I want to make it explicit. The PPB system is not a routine thing in the sense that you can come in and program it the way you program a computer to solve a standard type of mathematical problem. PPB system has got to be tailored to your needs, to your situation. There's no cookbook on PPB. I have no cookbook to offer you. I know of no one who can say—and if someone does, my advice is beware of that guy—"I have a PPB cookbook here and I'll sell it to you for a fee." The system needs to be tailored to your state, your institutions, your environment. It can be made to work for you, I think, if you want it to. But if you just try to apply it in a routine cookbook fashion, you won't get much.

Historical Perspective of PPB

I'd like to move on. Unfortunately, Allen Schick has already left, but for the next subject, I stole from him the title of his classic paper *The Road to PPB.* I'd just like to talk for a few minutes about how we came to be where we are and give you a little bit more historical perspective on the PPB system than we've had.

The road to PPB consists of the development of program structures and program budgeting, on the one hand, and of the development of analytic tools which are applicable to the analysis of government programs, on the other. Program budgeting has been around for a long time. I didn't invent it; I don't know who did.

Federal government. You can trace the suggestions for program budgeting for federal agencies at least back to a report submitted in 1909 to President McKinley. The report recommended that all federal agencies adopt program budgets. The report also recommended that the President institute a bureau of the budget. Well, it took the federal government until 1941 to get a bureau of the budget.

Program budgeting is not new. It happens that program budgeting had been adopted as a sort of a standard way of life for most or all of the more recent government agencies. The PBA, which was established in the 1930's, has had program budgeting ever since it was set up. Program budgeting has been its standard procedure, and program budgeting is all it knows; that's all it has ever lived with. The atomic energy commission was set up after the second world war to pool together the various atomic facilities. It has had program budgeting since its very inception. The national aeronautics and space administration has had program budgeting since it was established. Program budgeting was recommended for other agencies of the federal government by both the first and the second Hoover commissions. So the idea of program budgeting is definitely not new; it's not new with the department of defense.

If you have any questions about whether program budgeting can work, that's academic, because, as I said, the federal agencies have been using it for decades and it does work. As a matter of coincidence—and I would mark it as one of those strict correlations, rather than one of cause and effect—the general opinion around Washington is that the AEC, NASA and PBA are three of the best run agencies in the government. I don't think that there's a necessary cause and effect relationship between the ranking of these agencies as the best managed agencies and the fact that each of them has a program budget, but it is, indeed, an interesting sort of correlation to make.

The department of defense took a step towards program budgeting when Mr. McNamara became its secretary in 1961. We all know, more or less, the story there, but initially program budgeting was instituted at the headquarters level only—that is, in the pentagon. The defense department worked with it in the pentagon for about six years before it brought in Mr. Anthony. There was no program budgeting in the field, not even for the whole Pacific fleet. In the first six years, a field commander might not have heard of program budgeting, unless he had had a tour of duty at the pentagon. Now the defense department is trying to spread program budgeting throughout the department down to the field, operating level. This is a major step for an agency as big as the defense department, but it's taken them six years to get that far. This is a brief picture of program budgeting in the federal government.

State and local governments. Let me now give you a brief picture of where we've come and what is going on in terms of the state and local levels. There is a lot of interest and some activity in program budgeting right now. There is a project called the five-five-five project, funded by the Ford foundation and indirectly by the bureau of the budget. The project is headquartered at the George Washington University in Washington, D. C. The five-five-five project has five states, five cities and five counties participating. It is designed to last from a year and a half to two years, counting the early planning and the final wrap-up phases of experimenting with the planning, programming, budgeting system in these various jurisdictions. The five states are Vermont, California, Michigan, Wisconsin and New York. The five cities are—I think these are correct—Detroit, Denver, New Haven, Dayton and Los Angeles. The five counties are Wayne County in Michigan, which contains Detroit; Los Angeles County; Dade County in Florida, which includes Miami; Davidson County in Tennessee, which has Nashville in it; and San Diego County in California. In addition to these five states, five cities, and five counties, there are some other states attempting to get on PPBS.

Wisconsin, New York and California all got into program budgeting before they got into the five-five-five project. About 1964, Wisconsin adopted a program structure as its appropriation structure and made it mandatory and submitted its first biennial budget to the state legislature in programmatic terms. It was the first state to my knowledge to have statewide experience with the program budget in these terms. You can read about some of that in the green book you have—a copy of the Proxmire hearings—in the testimony of, I believe, Mr. Exo, the assistant budget director from the State of Wisconsin. Wisconsin has had some interesting experience when it first did it. It found legislators saying, "Yeah, I can't cut travel pay any more; now I have to go and tell my constituents I cut education. That's no good." You might think about that.

The State of California, I'm told, has about half of its budget on a programmatic basis. The State of New York is moving towards putting the entire state budget on a program basis. It has had its instructions out for, I think, two years. Now it has out additions to their original instructions with which it is trying to carry the system further and take it another step toward full implementation.

New Jersey and Arkansas both have applications in the U. S. department of housing and urban development for some 701 planning grants which would get them into the first steps of designing and implementing a PPB system. Pennsylvania, Oregon, and Utah all have expressed a considerable amount of interest in studying the possibility of starting the PPB system. Of course, Hawaii is, I gather, interested in moving in this direction. You're the first state legislature to my knowledge that has had a session on PPB.

In one session this morning, Graeme Taylor mentioned the City of Philadelphia as having adopted a program budget structure. It started with the school system. It should now be, I guess, in the third year of designing a program budget for the school system.

Philadelphia has come out with one program budget for the entire city. In addition to the City of Philadelphia, Baltimore, Savannah, New York and Cincinnati all have some interest in getting into program budgeting. In fact, Savannah, Georgia, has done some things.

New York City has taken a different tack. It's kind of interesting that most of the people who go into program budgeting have started by going into the design of a program structure, design of forms and how you are going to generate the information. The City of New York, if you read the testimony of Mr. Fred Hayes, the budget director of New York, again in this Proxmire committee hearings book you've got, put out implementing instructions similar to the one the U.S. bureau of the budget put out. It had, however, very few people who could read and understand the instructions—too few to make it worth putting out such instructions. The City of New York has, therefore, taken a different route. It decided to do some analysis first and worry about the structure of the budget later. It just signed a contract with the Rand corporation for about three-quarters of a million dollars to cover the first year of an analytic effort covering four major areas—housing, health, police and fire. The City of New York is the second jurisdiction to my knowledge to jump into the analysis game. California got in on a one-shot deal under Governor Brown. California entered into three or four contracts with some aerospace firms. It spent about $150,000 or $200,000, maybe $300,000. Its three or four studies on various programs have been very widely quoted in California.

This is about where we stand in terms of who's doing what today in the area of planning, programming and budgeting. I should go back and mention that the federal government, as you all know, is now in the third year of implementing PPB widely throughout the government in all major civilian agencies as well as in the defense agency. Well, that, then, is briefly where we are; who is doing what in program budgeting.

Need for PPB

Moving on, I'd like to talk just a little bit about the need for PPB. As I stated at the outset, a lot of interest in PPB arises out of a certain amount of dissatisfaction with the existing budget structure and existing systems.

Of course, governments are big, and they are getting bigger all the time. I was doing a little homework last night, and I added up the capital budget and the operating budget of the State of Hawaii, and I noticed they total almost half a billion dollars right now, spread among various items. This is not a small sum of money to be spending each year—$500 million. With a little bit of growth over the next 10 or 15 years, I dare say that there's a good chance that the budget will approximate a billion dollars easily. I believe your government's not small, and it's growing. Moreover, there seems to be some pressure arising in the federal government for some block grants for the states—blocks of money to the states to spend as they see fit. If this comes to pass, this will give you another chunk of money which the legislature will have to seriously think of allocating each year. It won't be a question of just matching federal grants within certain program areas. This gives you considerably more latitude with considerably more money to worry about, considerably more programs that you will have responsibility for. Real responsibility would start with the state level.

Government is big business even at the state level. Ultimately we are interested in the results that come out at the end of the system. Now, let's just think about the system and see what we've really got. In the education department, which takes a lion's share of the money here, the results come out of the classrooms. That's where the students are. If you don't educate these students, you haven't done anything. In the classrooms, you only have three things—the students, teachers, and whatever educational material which you supply the students and the teachers with. But above that, you have the principals; they

even have some assistant principals. Above the principals you have probably some kind of supervisors for small groups of schools. Above them, you have another level of supervisors, and finally at the top, you have the superintendent of education.

What this means is, you've got the superintendent of education who is answerable to the governor and you for the school system. He doesn't have a chance to get out and talk to many of his 210 principals in the system, and he doesn't have a prayer of talking to the teachers who are really on the firing line where the education is supposed to be taking place. The information starts in the classrooms, the basic information about where the education of the children is taking place. This information filters up to the principals; from the principals to the next level of supervisors and then to the next, and finally up to the superintendent who's got the responsibility for giving some kind of leadership direction to the whole thing. That's why he needs a system to help him run this show. It's big and getting bigger as the population grows.

Earlier we posed the question, when do you reach the threshold where you need some kind of a system to help you manage? I don't know whether it's a cause and effect or what, but government programs seem to be subject to what economists call a "diseconomy scale." As a program gets bigger and as governmental units get bigger, some sort of inefficiency seems to crop in. You know, we have today a lot of things which are subject to an economy scale. In printing newspapers, telephone books and the like, the more you print, the cheaper they get per unit. But, as governmental organizations get bigger, they seem to acquire the undesirable characteristics of being less efficient. There's always the problem of keeping bureaucracy from falling in like a house of cards, on itself. And, as governments get bigger, the projects and the programs which get thrown out for governmental approval and review seem to get bigger.

In small governments and small situations, you don't have a chance to make very many big mistakes. You're not spending much money. What you're spending are on things that are so basic that they are above questioning really; but as you get bigger, more money is going through and the opportunity arises for you to make all kinds of outlandish mistakes. You can build all kinds of white elephants and monuments to yourselves in the future. I know you'll never do that, but these things do come down the road. If you take a 20-year objective look, you can just see programs like rapid transit coming at you—great, big programs with lots of money involved, with lots of chances to build some real white elephants and lose lots of money. An inter-island ferry is another possibility—I imagine it would be a good money-losing proposition from the start to the end, but somebody might very well propose it one of these days. Medicaid program is still another—New York is already losing money by the bushel baskets; money is going out like the gold leaving the country. California is heavily in medicaid, while other states are looking at it, and I suppose that if you take a 20-year look, you can see some pressure rising to get Hawaii into an expensive medicaid program.

Waste disposal—you've got the whole Pacific Ocean to dump waste into, so presumably you don't have the problems that New York City does. Nevertheless, you may be facing some expensive waste disposal programs one of these days. The general inclination of the sanitation department is usually to dump it on all the beaches because that's the cheapest way to do it. That's what they were doing in New York City—they were dumping it into Jamaica Bay. That's what they used to do in San Francisco—they used to dump it right next to Berkeley; they stopped it 15 or 20 years ago, but even today, every time the tide is out, it smells like a big garbage pit down by the bay. The question, of course, is, how do you design an efficient waste disposal program while the population of the island grows? Fortunately, somebody tells me you get as much as 140 inches of rain up on the top of these mountains. I suppose you don't get into any expensive water pollution control programs. Water pollution—I've seen some studies on water pollution, and there are

systems that range from $X to twenty or thirty times that. Somehow big governmental units, like the corps of engineers, usually come out recommending these systems which cost 40 times $X, instead of those which cost $X.

Another interesting one you may or may not face one of these days is the pressure to put up a residential university or residential college. In other words, how about having students on the university campus get the experience of living away from home? I know that the department of housing and urban development feels this is the way we ought to go in subsidizing college education; it wants to subsidize the housing of it. In bigger states like California, this is a big thing. Are you going to provide dormitories for all these people, or are you going to go the route of junior colleges which keeps the students living at home?

I have a lot of possible programs that may be coming down the road at you—opportunities to spend lots of money if you're in the mood. Each general program will have lots of alternatives associated with it—some more expensive, some less expensive, some with more benefits, some with less benefits. This, I think, argues why you need, as you get into bigger and bigger projects, a systematic way of studying and reviewing these things, why you're going to need staffs with capacity to present you with analyses, why you're going to need staff capacity at different levels—at the departmental level, at the top of the executive branch, in the legislature—to act as a check and a balance on the staff work being done elsewhere.

Where is Government Going with PPB?

In the area of analysis. Where in general is government going with PPB? Let's first trace where we've been and where we're going in the general area of analysis. The program analysis is the basic building stone, the basic foundation of your PPB system. Good analysis is not easy. It is fair to say, I think, that the State of New York is much better now than it was 10 years ago. The courses being offered in our colleges and the younger analysts being trained are better now than they were 10 years ago, and, hopefully, they will be better 10 years from now. You get obsolete in this game pretty fast. The tools of the trade—the tools for analysis—have been systematically developed. The analyses that were done in defense and in other areas 10, 15 years ago are pretty crude by present standards, pretty elementary, pretty simple. Today, we have bigger computers, more data, and, most important, more intellectual capacity for constructing and grouping all the elements of the system that need to be taken into account to have a meaningful analysis and to make sure you haven't left out something very crucial.

We have an increasing amount of federal analysis getting under way, some of which will probably be applicable to civilian and state programs. There are a lot of analyses of child health and other health care programs taking place now in the department of health, education, and welfare. I would hope there will be an increasing flow of good intellectual work coming out in the future, work which may not be tailored to your situation here but which can be adapted by your staff people to the various problems which the State of Hawaii is going to face or is perhaps facing now.

There's some effort taking place right now at state and local levels. The Rand effort in New York City to improve the fire protection scheme is an example. The Rand people are going to try and come up with an analysis of the fire department. They are going to see how there can be better responses to fire alarms, how more can be got out of the system New York City now has or how much of what the city is now getting can be got with fewer fire trucks and fewer firemen, which would be a more effective system for the dollars being spent. The budget director of New York City says the city hasn't in the past ever really analyzed the fire department at all; more wagons, and more firemen have just been added on over the years, and the fire department is just about where it was when it

used to haul fire engines with horses years ago. There's another analytic group being set up to study functional areas within the institute for management sciences. The institute has set up recently a special health section for people who are interested in studying health problems. The operation for research council in Washington, D. C., now has something called the cost-effectiveness perspective.

In the area of management. Let's turn now to government and discuss what we can look forward to with PPB at the governmental level. On the executive side, I think we can look for more *program management* as we move along. What do I mean by *program management*? Well, NASA has program managers. It has people who manage programs. Program managers are told what is desired to be accomplished, generally. It's kind of easy in NASA —they are told to build a rocket to the moon, to orbit a satellite, and the like. Then, NASA also has what are known as project managers. One of the characteristics of the project manager is that he generally has a fair degree of latitude to shift funds within a project from travel to personnel, procurement, and so forth. He's given a budget and he's given something to accomplish.

When I say we're going to go the route of project management which the air force, the DOD and NASA use, I'm thinking of the post office by way of an example. Last year, for the first time in the history of the post office, it appointed a project manager. It gave the guy a project; it gave him some people and some authority to try and get certain projects accomplished. This was a revolutionary thing within the post office—to have a man given a project in this way.

A project might correspond to one of your program elements, and for your purpose you might call the manager a *program manager* or *program element manager*. But I wouldn't be at all surprised to see executive branches organizing somewhat along the lines of project managers, and when a project has a character of being phased out, the program manager will go on to some other program rather than setting up a self-perpetuating institution forever. Now, if you have project managers or program managers, it's possible within a department to then budget by projects as well as by regular units. The project manager gets a budget set up. He has allotments. The allotment system may be by programs rather than by project managers. This is within the executive branch.

On the legislative side, you may or may not—I suspect that there is a trend and that there will be an increasing trend—see legislatures adopt program structures as their appropriation structures in years to come, program structures as their way of reviewing the budget or holding budget hearings. This certainly is a possibility to be considered as you get the system tested and refined.

In the area of evaluation. As experience with the PPB system develops, I expect an increasingly better accountability in program evaluation. The evaluation of government programs is not an easy thing. It is not and will not be an easy thing to get good evaluation of programs. I imagine we'll get right to the middle of that tomorrow when we start talking about the education program—how you really test the effectiveness of your educational system. You get output measures—the number of students trained, the number of English class hours, and all sorts of measurement. How do you know whether the students are really getting smarter, particularly whether they are getting smarter than they would have if you hadn't spent a lot of dough on the lot of extra fringes that you build upon your educational system. This is the real thing that you're after, rather than a lot of money that you could have left with the taxpayer to begin with.

The same thing is true of health programs, welfare programs and all the other programs. Accountability in evaluation by programs in terms of the outputs and what they are accomplishing is not going to be an easy task, but I think that with a concerted effort here and in other states, we will devise methods and evaluators, which will be considerably

better than anything we've ever had in the past. But they won't be with us next year; it will be years in coming. There will be a gradual improvement year by year in this area.

Effect of PPB

Effect of PPB on government organization. There is one question that people frequently ask. Does PPB forebode any kind of massive reorganization of the government? My answer to that is, I think the PPB system as such is neutral in this regard. Governments have been reorganizing themselves as long as we've had governments. There probably will be reorganizations from time to time for a number of reasons.

Incidently, the U. S. bureau of the budget has something called the office of management organization. The head of that office is a friend of mine. He has probably been on the inside of more governmental reorganizations than any other man in the world. We were talking one day about reorganization of government units, and he made an interesting comment which I'll just share with you here. We were talking about the usual reasons you read about for government reorganizations—overlap, duplication, and so on. He said, "The real reasons for a reorganization are usually those which never appear in print anywhere, not even in the basic study which we do."

There probably will be reorganizations for a variety of reasons, but I don't think they will be because of PPB *per se.* Let me state why. I don't think PPB requires reorganization. Suppose you have two programs, each in a different governmental unit, which directly compete with each other or directly overlap each other. Even if you had two such programs in two different units, I don't think, myself, you have to reorganize the units into one organization with one bureau head or one department head. My own feeling is that competition between governmental units can be as good and as healthy as competition in the private sector. I believe that competition between the air force and the navy to see which can develop better offensive missile systems has been healthy for both services and for the country. What you can do, and what I hope we'd do with the PPB system, is to take these programs which we may have scattered in different places and make sure that in the budget review process, we review them together and each unit is aware that it is in competition with another unit or units which have similar programs.

I've alluded several times, by way of a specific example, to the fact that the outdoor recreation program of the federal government is spread over a great number of bureaus in the federal government. Now, I don't believe that we ought to organize the recreation aspect of all these bureaus under one *bureau of recreation.* I believe, however, that in the budget review process, these bureaus should know that they are competing with each other to see which can provide the highest quality, the most, the best recreation for the taxpayers' dollars. This is what should be taking place right now, but is not. Often, one bureau is reviewed by one committee, another bureau by another committee. Even if another bureau in the outdoor recreation business is reviewed by the same committee, it may be reviewed three weeks after a review of the first bureau and after all kinds of other things have gone by. Never are similar programs of different units compared in the review process before the Congress. But I don't see that we need to reorganize necessarily even if they are exactly in the same business and doing the same thing in the same area. We may want to reorganize for some reason, but I don't think it's because we've got a PPB system as such. In fact, if anything, I think sometimes we have too much monopoly within the government—each department wants complete control of a situation, and if anything is to be done, it's always one department and nobody else. I don't feel competition between governmental agencies as a necessarily unhealthy thing. It can be a good jacker-upper.

Effect of PPB on budget levels. Will PPB affect the budget levels? I've gone over this before, but I'd like to just say that I don't think that PPB need affect the budget level. I

think PPB is budget neutral. PPB is oriented much more towards the allocation of some given budget than toward either increasing the budget or cutting the budget. Some people point out that when McNamara went in and adopted the PPB system, the budget went up regularly. I don't think it's because of the PPB system, and I don't know of any budget that's gone down with or without PPB, so I can't correlate PPB with anybody's declining budget.

"Marginal Base Review Budgeting"

Finally, let me mention that in the literature on budgeting one hears about *incremental budgeting* and it's compared with something called *zero-based budgeting.* I've heard this question asked dozens of times by people when we introduce the PPB system. They ask, "Do you mean we're going to go back and review the budget every year starting with our basic assumptions of why we are trying to educate children or why we're trying to preserve forests or why we are trying to sponsor commercial fish? Do we go back to the basic assumptions every year of why we are trying to do things like this?" Of course, if you do go back every year to the basic assumptions in our review, you are, in fact, on zero-based budgeting.

Incremental budgeting, on the other hand, means that you take the base you had last year as sacred—an absolute sacred pal—look only at the add-ons to the base; you look to see whether you can carve a little bit out of the proposed add-on, called incremental budgeting. Too frequently, I think, this is what actually takes place in the budget review process.

Now, to me incremental budgeting and zero-based budgeting are two ends of a spectrum. Neither practice is desirable. It makes no sense to go back to the very foundations every year when you review an agency's budget. If the agency doesn't have some good rationale for being in the basic business it's in, you should abolish it. On the other hand, just looking at the little increment each year makes no sense either, for that assumes that everything in the base is perfect—either it cannot be improved or it doesn't need to be improved. That is usually a false assumption, particularly if it persists year after year after year.

Now, I don't know why the literature that I've read seems to take these two extremes as the only alternatives. I am going to invent a new term here, and suggest that the healthy way of reviewing the budget is through *marginal base review budgeting.* What do I mean by *marginal base review budgeting*? I mean that you look into the base, but that you don't look into the whole thing, you don't go right back to the very bottom, but you look into the base at the *margins.* What do I mean by *at the margins*? Well, the margins differ from program to program. For an education program, you might ask, "Where are our worst schools? Where are our worst-educated children located?—are there just a few in every school or are there pockets where they are not getting an education?" In a water control or water pollution program, you don't look into the whole program, but you might ask, "Where are the worst cases that we are not getting at? Where are we failing in this program? What are we doing at the margins already in this base?" You look at the marginal five percent, 10 percent, 15 percent, whatever it takes, and you try to dig into these troublesome areas each year. By working at the worst part—the margins—of whatever the program is, you try to get program improvement. You don't take the base as sacred, but you don't go back to the very base all the time.

Somebody that might have done this for the employment program, let's say in Los Angeles, might have said, "Where are our employment centers located? what people are they serving? and what people are they not serving, at the margins?" There might have been an employment center located somewhere near Watts before it had a riot, for example. You don't go back every year and say, "Why do we have employment centers?" period. You go after the marginal element that's in the base. You try to see how you can improve those marginal elements each year.

If you take this approach, which to me is a healthy approach, you can be naturally flexible—sometimes you take five percent of the base, sometimes 10 or 15 percent—then, I think, PPB can be made to make sense in the most sensible way. You don't go back every year to the whole base, but you don't just look at the increments either. I think this is the way that the legislature can in its review process most sophisticatedly get at the various programs and get the kind of improvements that the legislature wants in the programs which are funded each year. If PPB enables this, then I think it will be worth all the effort required to make the changeover from the existing system to the PPB system.

I believe Warren Law wants to make a few comments before the day's out. Warren?

The Future of PPB

Warren Law

It's an exaggeration to say "I want to." I've been *asked* to make a few comments. It seems proper that we wind up this seminar in some formal way by a logical thought process—namely, that since I'm the oldest one in the group, I was elected to do it. This came as a shock to me. It seems that all my life I've been the youngest man in the group and suddenly, overnight, I find I am the oldest man.

When I asked what I was supposed to do, they all suggested that I just tie up the loose ends, and then in the last hour I find that there are 20 or 30 loose ends, some of which I'd never even heard of, like *marginal base review budgeting.* I'm reminded of the lady whose small boy fell in the bucket of tar. She spent an hour or two cleaning him up with a kerosene-soaked rag and seemed to be simply rearranging the tar. Finally, she just threw him back in and said, "Oh, hell, it'd be easier to have another one than to clean this one up." I think it might be easier to run another three-day seminar than to tie up what seems to be all the loose ends you have dangling in the air here. So, I simply will make two or three most glittering generalities, and I am a master at making glittering generality.

PPB is a very simple concept. I remember once teaching in a three-day economic seminar. At the end of the seminar, one student came up to me and said, "Three days ago I didn't know what an economist was and now I am one." In three days you're all PPB experts. It is very simple. It's simply a thought process; it's a way of thinking about running a government, of raising the simplest kinds of questions: "What am I trying to do? Does the cost of doing it equal or exceed or is it less than the benefits of this way of doing it? Or is there some other ways I could do it? What should I be comparing this against?" We've said these things to a point of nausea, and I'm not going to say them any more. It is a very simple set of ideas, but painful to implement sometimes. It's largely a matter of thinking, which is kind of painful, and it does require re-thinking of ways of doing things.

PPB is in its infancy. I have on my bookshelves in my office probably two shelves full of books on taxation—on the optimal ways of collecting money. Is it better to have an excess profit tax or a turnover tax?—all kinds of highly theoretical work. But there's very little written in the economic literature about how to spend money in an optimal way. We're just beginning to come to grips with it. I can endorse what John Haldi said, that in the past the government wasn't expected to do very much, and cost-benefit analysis may have seemed rather useless; that it was clear that we needed everything that the government was doing and it benefited us and no one had to argue.

Today, what I think Allen Schick called a *Santa Claus list* of everything the public thinks the government should do is staggering. Four years ago, to propose that the federal government should support the East-West Center would have caused a march on Washington –that would be an interesting subject for a cost-benefit study, which, by the way, I am not going to engage in. We expect the government to do a lot of things today, and it's odd that now we have an $800 billion gross national product and we don't seem to be able to manage to do all of the things that we want the government to do. We seem to have a harder time making ends meet with our governmental activities than we did when we had a $200 billion gross national product because what we think of as needs are expanding faster then capacity, and the world simply has changed.

I don't feel that old, but I remember when Shirley Temple was a movie star, and now she's a politician. I could have voted for her then, but today I don't know–and that's only 20 years ago. The world alters as we walk in it, and to believe that whatever inherited way of budgeting is the optimal way is to believe that we are dealing with something that was revealed in the Bible, and we aren't. It was Lincoln, I think, who said, "The dogmas of the quiet past are inadequate to the stormy present. We must think anew; we must act anew; we must disenthrall ourselves." This was the favorite quotation of President Kennedy. There comes a time when you really do have to think anew and try to disenthrall yourselves from whatever you've been doing.

On the other hand, I am guilty like everybody else of speaking in hyperbole, and it may be that we have spoken in hyperbole about PPBS. We may have exaggerated. John said that there are more planners than there are fish in the sea. I suspect that this is thought by some as a modest number, and I wouldn't want to leave you with the impression that PPBS will in fact "save the nation." That, incidentally, was the final phrase of the quotation from Lincoln–"We must disenthrall ourselves and then we shall save the nation." Now, the world isn't going to end without PPBS. I think it was Winston Churchill–when somebody said, "What you're proposing is to the ruin of the nation," Churchill said, "The nation can stand a lot of ruin." And in fact it can, and so can a state. People have been at work trying to ruin Mississippi for decades and it's still there and surviving. Here's a state with much more going for it than Mississippi and it has a group of legislators, I would say, a thousand times as efficient as the ones in Mississippi. This state is going to do very well with or without PPBS; your state isn't going to collapse, the world isn't going to collapse, and the sky isn't falling.

We're talking, of course, about marginal benefits. I've said that several times, but we are not going to have a 100 percent efficient government. We are talking about moving from "60 percent to 65 percent efficiency." When you're applying that to $500 million, it's worth trying to squeeze out the extra five percent. I for one am not sure I want to live in a 100 percent efficient government. I think it was H. L. Mencken who said, "It's a good thing we don't get all the government we pay for," and that's probably true. I don't mind seeing some inefficiency; there are even some advantages in it. John Haldi's mentioning about competition in the military reminds me of the wonderful fight they had in the pentagon over belt buckles. You may or may not remember it. The fact was McNamara was trying to have one belt buckle for all the services and the marines resolutely refused. They said it's part of their tradition. They never revealed the fact that the marine buckles could open a beer bottle and none of the others would. I saw that; but I didn't mind, for there are certain intangibles, clearly. I'm not at all sure the marines would be as willing to charge up the hill at Iwo Jima if they had the same belt buckle as the other services, and I'm serious about this. There are certain seeming inefficiencies that in fact I'm quite willing to tolerate or endorse.

I was in the navy, and I gave some thought to staying in the navy until I remembered that shortly after the war, a memorandum came around which said that the navy wasn't going back to epaulettes and boat cloaks and cocked hats; and that made up my mind. I was kind of thinking of staying in just so I could wear epaulettes and a boat cloak and a cocked hat. I'm sure that there are types of governmental expenditures that appear inefficient but nevertheless we may be willing to permit. I'd hate to apply cost-benefit studies to the royalty in England. I'm sure that it costs a heck of a lot of money, and I'm not sure what the benefit is, but I'm glad it is there and I'm sure most of the Englishmen are glad. So the world is not coming to an end.

To endorse what John said, I will offer as a maxim which we can call *Law's Law*—that is, as the organization gets bigger, particularly organizations with power at the top (and this is true of government as of a corporation) the fewer mistakes it's likely to make, but when it makes one, it is a dilly. The bigger the organization, the better the staff work and the numbers add up. You don't make small mistakes in General Motors, but, boy, when you make one, you make a dandy. At Ford it was the Edsel; in the United Kingdom, it was that ground nut scheme in Africa where they tried to grow peanuts at enormous cost. I won't repeat John Haldi's list of boondoggles, but he has some antipathy to public transportation. I'm not quite sure; I haven't explored that with him. But he keeps using that as an example of a way to throw money away. I like rapid transit, as a matter of fact, and I'm not ready to dismiss it out of hand. At any rate, I think it is true that without some kind of logical thought process, eventually the State of Hawaii or any other large organization is going to make one dandy mistake at some unknown time, but it will make one. PPBS may not avoid the mistake, but it, I believe, may help avoid it and may avoid some of them entirely.

I am not trying to sell PPBS; I certainly have no vested interest in it. It's not going to break my heart if you don't accept PPBS as the coming thing. Remember the old farmer in one of the oldest stories known to man—the county agent was trying to teach the fellow how to farm and he got no acceptance at all and the farmer said, "I already know how to farm better than I'm farming and I don't want to learn any more." You may already know how to run a better budgeting system than you're doing and you don't want to improve on that, and I think this is quite acceptable.

On the other hand, if I had to make a prediction, I would make it in the form of one of my favorite jokes which involves a Harvard student who was caught out West in the summer. He had run out of money and couldn't get back to Cambridge to finish his education, until he got a job. When he started thinking about it, like most Harvard students do, he realized that he really wasn't cut out to do anything that was a sort of gainful employment. But like most Harvard students, he was also fairly bright. He began to think of his assets and he realized that he was probably better at making drinks than anything else, and so he applied for a job as a bartender. The saloon keeper tested him and found that, in fact, he could make almost every drink and make it well, so he said, "All right, you're hired." Then the saloon keeper said, "If you're going to work here, there's only one thing you ought to know. You may, while you're employed here, hear somebody yell 'Big John is coming!' If you do, here are the instructions." And he gave him a printed list. The instructions said: "What to do when Big John is coming: (1) bar the door; (2) lock up the liquor; (3) take down the mirror," and a long list of other instructions. A couple of weeks later, sure enough, a fellow did put his head in the door and yelled, "Big John is coming!" In about 30 seconds, everybody ran out of the bar, and the student thought for a second and he ran and grabbed the list and locked the door, put down the mirror, and just about had the liquor locked up when there was a splintering crash. The door was ripped off the hinges and in came this man. He appeared to the student to be 10 or 11 feet tall; he was riding a buffalo, and he had a wildcat under his arm that seemed to be some kind of a

house pet. He rode up to the bar and said, "Whiskey!" The student was a little nervous and poured out a glass, and the man, just like in the movies, knocked the glass aside and broke off the neck of the bottle and drained the bottle of that stuff. The student said, "What's your hurry, mister?" and the fellow said, "Boy, I've got to get out of here; Big John is coming!"

The theme of the story, I think, has some relevance. Although I have no vested interest in PPBS, I suspect that what you're going to see tomorrow—some of these scared stories you've heard about what's going on in other states and in the federal government—is really not Big John yet; but only that guy who's riding in on the buffalo, because there's going to be a lot more of this out there in the future. The reason I predict this is simply that I think it's better than what we now have, and I think democracy works in the long run. It may work very slowly, but it works. Democratic governments do improve themselves, and there may be something better than PPBS, but so far, PPBS is better than what most of us are doing now. I'm pretty sure it's going to be implemented in a significant way.

Let me now close with a soft sell. I am equally sure that PPBS is not the answer to cancer or anything else. It is useful. In fact, I am feeling my age—I feel considerably more than three days older than I did three days ago—and the older I feel the more I realize that the obvious black or white solutions to problems probably aren't here. My favorite musical is *The King and I,* and if you remember, in one of the songs the king suddenly realizes that—I've forgotten the title of the song but the words go something like this—"When I was a boy the world was a simpler spot. What was so was so, and what was not was not. But now I am a man and the world has changed a lot. Some things are nearly so, and some things are nearly not. I only find confusion in the conclusions I concluded long ago."

Well, PPBS is not perfect. I used to think it better than I now think it is. It is not the answer to everything. On the other hand, it is better than what we are doing in most cases, and if I were a citizen of Hawaii—and I wish to gosh I were—I would endorse the legislature to giving it serious consideration.

I'm staring out the window, thinking that I'm going to have to go back to Boston tomorrow, and I remember what John Haldi said the first day that much to his horror, 80 percent of the recreational land is west of the Mississippi and 80 percent of the people live east of the Mississippi. He thinks that's bad. I think it's absolutely understandable that nobody living east of the Mississippi wants to get out of doors. It's absurd to have recreational land east of the Mississippi.

On that rather quizzical note, I simply would conclude, I think, by stating the unanimous opinion of all four of us—of Allen Schick who said it several times while we were clustered around the bar—that we are incredibly impressed with the quality of the people in the administration and in the legislature that we've met here. Now, I also say, so as not to be accused of being maudlin, that my standards of comparison are those of the State of Massachusetts, and it may be fairly easy to be impressed once you get out of Massachusetts. But, I feel reasonably confident that, if I were out of any of the other forty-nine states, I would be impressed. I think Hawaii is fortunate to have the legislature and the administration you have, and you've just seen the beginnings of this state. Undoubtedly Big John is yet to come. He is coming, and I hope I'll get a chance to come back and see it.

Friday, February 2, 1968

THE DEPARTMENT OF EDUCATION'S ENGLISH PROGRAM

I. An Introduction: The Background of the DOE PPB Effort

Senator Nelson K. Doi, Chairman
Joint Senate-House Education Interim Committee

I've been asked to speak for the legislature on the department of education's language arts program, the budget for which, as you know, was mandated by the legislature to be put on a PPB format. No one legislator can speak for all 76. Therefore, I'm going to rely on the data and information contained in conference committee report no. 22 (on the 1967-68 operating budget), dated April 29, 1967, to retrace the steps which led to the request made of the department to present its fiscal 1969 budget for the language arts program on a PPB format.

I think it is pertinent to note the series of legislative actions which occurred over the past several years which led to the mandate contained in conference committee report no. 22. To begin with, we ought to go back to 1965. It was in 1965 that we adopted the school-by-school budgeting system. As I understand it, the idea then was that we would allow each school principal to formulate a budget for his school. We adopted the school-by-school budgeting concept, not because we were going to appropriate money in that manner, but because we felt that the different schools had different needs and that fact could be reflected in the total education budget. We felt that a school-by-school budgeting system would lead to a more meaningful allocation of the education budget.

In 1966, the legislature felt that if the educational funds were to be put to work in the most effective fashion, the department of education should have some flexibility in the use of the money appropriated to it. Thus, in 1966, for the first time, we appropriated the entire education budget in lump sum. In my opinion, the lump-sum concept is good. I might note, however, that the lump-sum budget which we enacted in 1966 did not provide meaningful flexibility to the department as was intended. This was because about 83 percent of the budget was committed to personnel salaries. Add to that the cost of equipment, supplies, books and materials, and you'll find that there remained very little area for flexibility.

In 1967, the legislature was faced with another development. The people of Hawaii, at the 1966 general election, approved an amendment to our constitution which, as amended, provides for an elected school board. Thus, in 1967, the legislature had to face the problem of accommodating the concept of an elected school board. It appeared to us that an elected school board deserves more flexibility than an appointed school board. Therefore, it was generally felt at the 1967 session that we should continue to appropriate money to the department of education in a lump sum as before, but with added flexibility if possible. To provide this added flexibility, the legislature removed the ceiling on the number of personnel the department could hire.

While granting the department this added flexibility, the legislature felt the need for some system by which the board of education and the department could account back to the legislature—an accounting back which would be meaningful and which would give the legislature a means of quickly assessing the efficiency, effectiveness and direction of the department. The legislature's concern here was that it was not receiving from the department

of education that kind of information needed to assess the department's efficiency and effectiveness in the use of the funds appropriated to it. It was felt that with continuing lump-sum appropriation, there was a greater need for some way in which the department could account to the legislature.

I want to read portions of the conference committee report no. 22, because that would be the most exact and correct way of presenting the attitude of the legislature in the 1967 session. On page 14, the report says:

> *"Your Committee is disappointed in the Department's reports to the Legislature and to your Committee and in the method in which this fiscal year's lump-sum was allocated and expended. They reveal little overall progress in the development of educational programs within the framework of the legislative directives, and they fail to supply that kind of information which the Legislature needs to evaluate the effectiveness and efficiency with which the Department is operating. Neither the reports nor the allocation method provide information as to where the Department is headed, what results the Department is striving for, what programs are being pursued in an effort to attain those results, how much resources are being used in each program, and how much more resources will be required in future years."*

I'd like to quickly jump to page 17 and read this, however:

> *"The inability of the Department to report and account in a manner which would permit the Legislature to carry out its responsibility of reviewing and accounting for the funds expended by the Department stems in part from the Legislature's own failure to spell out more clearly and specifically its directions to the Department."*

Fortunately, at the last session, the legislative auditor's office made a presentation on the PPB system. The legislature bought the system in concept, and felt that it could be applied to the department of education, that its application to the department of education would solve its need for some meaningful accounting by the department. During the 1967 session, the department and the legislature had several sessions on the concept of PPB and the format in which to make this accounting. At these meetings with the department of education and the representatives of the board of education, we agreed that the format should provide the following information: the needs of Hawaii's children, overall goals, specific objectives, measures of progress, alternative programs, costs and benefits of each alternative, and programs to be pursued to meet the objectives on a long-range basis, 1968–1973. This, I want to point out, was a request from the legislature because, as the committee report indicates, we felt that the reports from the department had been inadequate; we wanted the reports to give us more information, more direction.

The report circulated to you people here by the joint interim legislative committee sets out the reasons why the language arts area was selected. I won't go into that now. I want to point out that in our interim work, we had our differences of opinion and there was some strain, yet overall I think the working relationship was wonderful. I think the results of the interim work will attest to that fact.

I want to commend the committee from the education department, headed by Mr. Harrison and consisting of Mr. Harker, Mr. Honda, Mr. Kiyosaki and Mr. Tokushige, for cooperating with the joint legislative interim committee. I think we should especially recognize and express thanks to the two working staff groups who worked beyond the demands of their particular offices of employment to put out this report. The people I am referring to are those from the department of education–Mrs. Margaret Oda, who acted as the head of the DOE group, and members, Mr. Ichiro Fukumoto, Mr. Lionel Aono, and Mr. Sus Ono, who, I believe, worked part-time on the committee–and, of course,

those from the legislative auditor's office. You have the names of the members of the joint committee of the legislature; they also put in time and effort beyond the usual demands of interim work. The chairman of the House members of the joint committee was Mr. Takeshi Kudo and the members, Mr. Kamaka, Mr. Taira and Mr. Judd. The Senate members on the joint committee included myself and Senator Anderson.

I want to also read the last page of the education portion of conference committee report no. 22 to indicate another attitude of the legislature in requesting for this format.

> *"We do not pretend or suggest that our approach is without error, or that it is a magic talisman or panacea that will provide a quick and ready solution for every problem that lump-sum budgeting presents. However, we do hope that it will be a giant step forward."*

We believe that we have taken a giant step forward. For the details of the work of the joint interim committee, I would like to call on the members of the working staff. Before they come on, however, I'd like to ask Mr. Kiyosaki, the superintendent of education, to say a few words. Mr. Kiyosaki.

Ralph Kiyosaki: I'll take a few moments here just to tell you the kind of adjustments we've tried to make internally to get on with this effort of working on a PPB format for the English program.

In July, we asked every office at the State and district levels to try to begin to describe what it was doing in some programmatic form. We ended up with, of course, statements of job descriptions or functions, and we found a lot of anomalies, a lot of monsters, a lot of repetitions in functions in the various offices. We had hoped to be able to restate some of these descriptions in a program format, but some of the kinds of things that our consultants said would surface with PPB did in fact surface. We asked the various people first to try to draw a background of their programs, and from there make descriptions. I believe that now we will have to try to restate or redescribe some of these functions along program lines, but this is where we are.

Initially, to come up with a PPB format, we tried to work within the department with a joint committee composed of people from the schools, myself, and some of the program specialists in English or language arts. This was an abortive first effort. I think our consultants here said something to the effect that people who are within programs generally become defensive or are too closely involved to be analytic. We had difficulty, of course, with the fact that we didn't particularly understand all the terms used by the program specialists—the semantics of the situations. Some of our usages in education were meaningless. In any case, we designated a new team to work directly within my office, and the people on this team were named by Senator Doi. Actually Mrs. Oda was brought to the State office as the director of elementary education. She's never been to that office up to this date; we had her working with the PPB project. Mr. Ichiro Fukumoto was a school principal at Radford High; we pulled him out of that spot. He had served as an administrative intern with the business office during the summer and had, I was told, qualities of analysis, so we asked him whether or not he wished to remain at Radford or to join the team. He joined the team. In addition, of course, we had two fiscal analysts serving on this team.

The other thing I want to relate is this, that our research office has annually taken one curriculum area to analyze, not in great depth, but to surface all the problems and the issues within the curriculum. We are at a point now where we have about three, four, or five of these, including those for vocational education and counseling and guidance. These might well serve as the bases for our future PPB analysis.

I want to mention that this effort with the language arts surfaced many problems related to other aspects of our educational system. When you deal with one program, you

begin to surface problems about personnel practices, the information system, and a whole host of things in the general support area.

I will close by saying that as an educator it has been a learning situation for me and for our people. I am particularly happy that we did find that we had three or four talented people, talented enough to, I think, make a substantial contribution to this effort. And now, I would like to introduce the leader of that group, Mrs. Margaret Oda.

II. THE PROPOSED ENGLISH PROGRAM: 1968–1973

Mrs. Margaret Oda and Mr. Ichiro Fukumoto
DOE PPB Staff

Oda: The result of the work of the task force is in the three documents that you have before you. What we'd like to do this morning is to go over these three documents to see what kinds of things are in the documents, how you utilize the three documents and how these documents are interrelated. I'd like to ask Mr. Fukumoto to come on up here, and he and I will do the presentation in terms of the content format and the scope of the documents, after which Mr. Yukio Naito from the auditor's staff will discuss with you the limitations of the work done and present some ideas as to the ways in which these documents will help you as legislators.

I'd like to ask the legislators this morning to cast aside your formal role as legislators and to take this presentation in the same spirit that you spent the past three days of this seminar, that you take this presentation as yet another case study. Of course, this language arts problem is somewhat close to home and something of continuing interest to you.

A General Description of the Three PPB Documents

The procedure which we will follow to go through the three documents is as follows. First, we will discuss the content scope by giving examples from these documents; second, we will point out some of the constraints under which we worked and some of the problems that came up as we worked on these documents; and third, we will explain the interrelationship of the three documents.

Volume I is the financial document, which gives you the five-year financial and output plan. It reports, in tabular form, the costs of all of the English programs for the five-year period. Volume II is the program memorandum. This document gives you a very concise explanation of the recommended English program, with its related costs for the next five years. If you look at this document, you will get an overview of what our English program is and what its costs will be. Volume III is a rather thick document. It contains our special studies on the various areas within the English program. It is the analytic portion of our report.

The Process Followed

The first step in our effort required the formulation of our goal of public education. We discussed this matter with the superintendent, Mr. Kiyosaki. Mr. Kiyosaki developed the goal of public education in Hawaii and presented it to the board of education. On page 1 of the program memo we set forth the goal of public education as it was adopted by the board of education. This gave us the overall umbrella under which our particular task could be performed, which was to develop the five-year plan for English.

At this point, we had to make two assumptions. First, we didn't have the time to formulate the overall objectives of the department of education, and so we had to assume that whatever objectives we developed for the English program would somehow fit within the overall objectives of the department. Second, again, we did not have the time to structure the entire public education area in a programmatic fashion, and so we assumed that in any program structure which may later be developed, one of the major program categories would be curriculum, and one of the subcategories under curriculum would be English.

We broke down the English program subcategory into its elements—language, listening—speaking, literature, reading, and writing. We needed to see each of these particular areas of English as separate parts and to identify the outputs for each, since each is a different skill requiring different inputs.

In addition to these elements, we identified still another program element, and called it *general support services*. This element includes three supportive kind of activities: in-service education of teachers, the relationship between the Hawaii curriculum center and the department of education, and the overall supervisory staff for the English program. While doing our studies of the program elements of listening—speaking, and so on, we kept on seeing problems in the supportive areas. We, thus, made special studies on these support areas and came up with certain recommendations. We'll talk more about them a little later.

We then tried to determine the goal of our English program, and to identify our objectives in English in some quantitative form. Having identified our objectives, we looked at our existing programs in each program element to formulate some alternatives. We weighed the alternatives in terms of their costs and benefits, as described in volume III, the analytic document, and settled on certain recommended programs. These programs were presented to the superintendent, who made his decisions.

The program in English that you see in volume II is the recommended program approved by the superintendent. We then worked out the related costs in greater detail and this is presented in volume I. So this is the general procedure we followed in coming up with these three documents.

The Constraint

I mentioned some of the general assumptions we made in our analysis of the English program. In addition to those assumptions, we worked under one important constraint. Within the next five or six years, the Hawaii curriculum center is coming out with an entirely new curriculum in English for the public schools. We determined early in our work that whatever programs we finally decide upon ought somehow to relate to the Hawaii curriculum center's probable English program, so that the transition into that program would not be a chaotic one, but a gradual and orderly one. We, thus, worked very closely with the members of the English project at the Hawaii curriculum center as well as with the staff specialists in language arts in the department of education at the state and district levels.

Objectives, Generally

We found that it was very difficult to state our objectives specifically for each of our program elements and to spell out the quantifiable indicators by which to measure progress. What we finally came up with is the best that we could get at this time.

An example of the kind of statement of objective we came up with is on page 12 of your program memo (volume II). There, you will note, listed at the top is *Program Element: Reading*. Item no. 1 is our objective for the reading program element. It says,

"It is the objective of the Reading program element to raise the average performance of Hawaii's students to levels which will equal and later exceed those attained by their contemporaries throughout the nation in reading. These levels shall be determined and the success of the program measured by standardized tests administered in the Department of Education."

Item no. 2 lists the particular skills that we hope the students will acquire. Item no. 3 notes what the present levels of attainment of our children are in reading. If these are our present levels of attainment, what do we hope to attain in five years? Our expectations are presented at the top of page 16. Incrementally, within the next five years, these are the skill levels that are to be attained by our students.

For each program element, the program memorandum notes the objective of the element, the learning outcomes we hope the students will acquire, the present levels of attainment and the levels of attainment we hope to achieve.

At this time, I would like to ask Mr. Fukumoto to discuss with you how we arrived at these objectives—what some of the constraints and limitations were and what the rationale was in developing these objectives.

The Rationale in Establishing Objectives

Fukumoto: A large part of our program memo and analytic document follows the traditional textbook approach, so perhaps our documents are somewhat different from those contained in the cases we studied during the past three days.

Our presentation will probably reenforce what has already been said by our speakers; hopefully, however, we will add to it.

Two classes of objectives distinguished. We feel that there are two classes of objectives. One, for the lack of a more appropriate term, we call *terminal objectives,* and second, what we call *intermediate objectives.* The terminal objectives are expressed in behavorial terms —in terms of the changes in the kids' behavior. We like to think that this is the end product of our educational system. Something happens to the young kids after you give them something. Terminal objectives are associated with the instructional programs.

Please turn to page 3 of your program memo. At the top of page 3 is an example of a terminal objective. The objective here is stated in terms of the average performance of Hawaii's pupils in the skills in listening—speaking which we want to achieve.

An example of an intermediate objective can be found on page 23 of the program memo. Here, we have to confess that the objective is couched in terms of inputs. This is in the area of support services, and our objective, basically, is to assist with the planning and implementation of the instructional program. More specifically, we would like to establish new directions, content, and teaching strategies for our entire English program through research. You will note the difference between this intermediate type of objective and the terminal or behavior-oriented type of objective noted on page 3.

Effectiveness measures. To measure the attainment of our terminal objectives, we resorted to test scores. If you will turn to page 16, this gives you an idea of what our expectations are in terms of the students' behavior changes for the period 1968-69 to 1973.

As to the measure of success in attaining our intermediate-type objectives, we had to use volume measures or what we call *product measures*. These are terms that we invented, by the way, and they probably will not be found in any other PPB document. On page 30 in paragraph C is an example of how we intend to measure the intermediate objectives. Paragraph C says:

"By the year 1973, 75% of all elementary and secondary teachers of English will have completed a course in (1) General Language . . . and (2) Literature Interpretation . . . ."

This is what we mean by volume measure—the number of teachers trained.

On page 23—and this is again under *general support services*—near the bottom of the page, paragraph I-B-1-b says: "*Output*: The output sought by September 1973 is a new English curriculum for the State." Now, this is our output; it is our objective of the *English project of the Hawaii Curriculum Center.* We intend to measure that by waiting until 1973, and see whether or not we can come up with a comprehensive, complete instructional program for English for the State of Hawaii.

Thus, I have explained what I think is the first distinguishing feature of our program memorandum—that is, the objectives are of two kinds, (1) terminal objectives which are behavior-oriented, and (2) intermediate objectives, which are more volume-oriented. I wish now to touch on the second distinguishing feature of our program memo—the use of test scores to measure effectiveness.

The use of test scores as effectiveness measure. Let me go back one or two days ago. We were studying then a number of cases which generated a tremendous amount of discussion on the appropriateness of output measures. We discussed such matters as quality measures versus quantity measures, personal benefit measures versus society benefit measures, and so on. This kind of discussion, I suppose, can go on forever, and we experienced some of them in our efforts with the English program.

We spent a lot of time discussing what would be the appropriate method of measuring attainment of our objectives. Finally, we agreed upon a set of guidelines to assist us in determining the appropriateness of any measuring device. The guidelines are noted on page 191 of volume III, *Analytic Documents.* There are many, many ways of measuring pupils' progress, I suppose—test scores, teachers' marks, the parents' evaluation of their children, and so on. But, what we needed was a standard of measurement. The guidelines we developed indicate what we think are the desirable qualities in any measuring device.

First, we said there has to be a common yardstick to measure learning throughout the state and to relate that learning to other pupils throughout the nation. Here we were trying to work with *absolute* as well as with *relative* types of measurement. Second, we insisted that we need to have a fairly comprehensive kind of measure that would take in the whole range of pupil performance. Third, we said that the measurements must be continuous from grades K to 12. Fourth, we said that the measurement must be such as to give the schools and districts an opportunity to form or to fix their own objectives that would be consonant with the objectives established for the entire state. Fifth, we said that the measurement must utilize the reservoir of test data gathered by the department of education in recent years.

Let me explain this fifth standard just a little bit. We have a tremendous amount of data at the DOE—data that are basically usable. In our effort in the English program, we were prepared to use any device based on data that are available right now in the department.

These, then, were the five criteria we established to determine the appropriateness of any measurement of success in attaining our objectives, whether it be test scores, teachers' marks, parents' evaluation of pupils, etc. Finally, we decided that the best index at the present time is standardized test scores.

The limitation in the use of standardized test scores as effectiveness measure. We recognized very early in our study that there are many, many limitations in the use of standardized test scores. For example, if you will turn to page 12 of the program memorandum,

you will note that we identified the following as the *learning outcomes* of the reading program:

"2. Learning Outcomes

"a. Comprehend information through certain skills development, such as extending vocabulary, finding answers to specific questions, reading in thought units, selecting main ideas, and following directions.

"b. Develop, reinforce, and extend reading and study skills needed to work with all forms of printed materials.

"c. Adjust reading rate to purpose and material."

Now, we don't pretend that we can *fully* measure by a standard test all of a, b and c of paragraph 2. We can, however, measure rather well that part of *a* which deals with comprehending information through certain printed materials.

Another limitation with test scores, I suppose, is the fact that it's almost impossible to measure certain kinds of learning, such as values, appreciation, and the other performance-type skills. For example, in our literature program, we say that one of the learning outcomes is to *develop greater sensitivity to quality literature.* Now, I'm not too sure that we can measure this kind of outcome with the traditional, educational, standardized tests. So, we recognized early that we would be unable to measure such things as values and appreciation, although they are rather important parts of our language arts program in Hawaii. Take another example, this one in listening–speaking. One of the learning outcomes is to equip the student with the ability to *compose ideas and express them logically.* Now, we can't measure that.

While we recognize that we can't measure many of these things by the present standardized tests, we have made allowances in our program by recommending that moneys be set aside for the purpose of developing measurements to determine success in the acquisition by students of learnings in values, appreciations and performance-type skills. To use the educators' jargon here, we can do a fairly good job of measuring what we call *cognitive skills*, but we can't, at the present time, measure *affective skills* or *psycho-motor skills.* Now, if we can come up with some kinds of measurements for these skills in literature and speech, we see a tremendous amount of implications for all other subject areas.

Objective evaluation cycle. There is one other thing I would like to mention about our objectives. We need to reevaluate our objectives from time to time in the light of our success or failure in attaining those objectives which have been set today. We have built into our English program an opportunity to formally evaluate the program. To prevent the program from going to seed, we have planned to take stock of what we have accomplished at the end of the third year. It may be that we'll need to restate our objectives and change our procedures and programs. At the end of the third year, we will be preparing for the next five-year cycle.

These then are the distinctive qualities of our objectives as noted in our program memorandum.

The Analysis Performed

Oda: Once we had established our rationale for our objectives, we were ready to analyze our present programs. Here we met with a number of problems. First of all, there was lacking a concise and accurate description of what the English program was. We worked with the program specialists on the state level in describing what each program element was. From this take-off point, we were ready to do analysis.

In doing our analysis, we welcomed the technical PPB skills of the auditor's staff. We also relied upon a collection of concept skills and techniques, drawn from the various disciplines, such as mathematics, logic, and science. What our analysis boiled down to, from both the conceptual and procedual standpoint, was the kind of scientific inquiry concerning the ends and the means.

Limitations. Our analysis was hampered by the lack of empirical data. The department of education did not have the kind of data that we needed to do any sort of that rigorous cost-benefit analysis to which you were exposed during the last three days. What we did then was a rough sort of analysis. We identified the deficiencies in existing programs and made certain recommendations in our instructional programs for the next five years, with an eye to the eventual incorporation of the new English program being developed by the Hawaii curriculum center. Our analysis further excluded, because of lack of data and lack of time, the special instructions area, such as those for the mentally retarded and physically handicapped. We also excluded from our analysis, the post high school, adult education and the summer sessions. Volume III, *Analytic Documents*, points out these and other limitations of our analysis.

Assumptions. After having set our limitations, we then made several assumptions before going into our analysis. These assumptions were as follows.

First, we were aware that people generally point out the fact that English is a total discipline, and thus, when we sectionalize it into specific skill areas of listening–speaking, reading, writing, and so on, this may give the impression that English is not a totally integrated program. Nevertheless, we divided English into language, literature, reading,writing and listening–speaking, for efficiency in assessing pupil learnings in each of these particular skills. For analytical purposes, we found this division particularly necessary.

The second assumption was that our program analysis should be focused on correcting deficiencies as we see them. This procedure, of course, in no way suggests that the more successful activities in English are not being conducted in many of our schools at present.

Third, we assumed that the non-instructional factors which might affect the English program would be held constant. This assumption permitted us to focus on the concepts involved in the various skill areas of English. We are aware that four-fifths of the youngster's total learning situation consists of such things as home environment, innate ability to learn, emotional well-being, and so on. We do not underestimate the importance of these non-instructional elements. However, in our analysis, we assumed these factors to remain constant.

The procedure used in analysis, generally. With these assumptions in mind, we proceeded with our analysis. We used the following procedure.

First of all, we tried to assess the weaknesses in our English program. We looked at the curriculum survey that was done in 1966 and at the deficiencies that were pointed out in that survey. We also looked at our standardized tests that are administered to all of our students from grades 2 to 12. It should be noted here that the availability of the test scores was limited. The total test results of our students were available at the department of education only since 1965; those for 1966 were not available at all at the time we started this project. We also looked at the program budget documents of the districts, which contained an assessment by each district of its own weaknesses and strengths.

We then consulted our specialists, those in our department of education as well as those at the Hawaii curriculum center, to secure their assessment of the deficiencies in our English program and their knowledge with respect to the recent trends in English in the United States. We discussed with them the direction in which we ought to be going and what some of the considerations are in formulating new approaches and programs.

Example: reading program. I'd like to go over with you one particular area in English to give you an idea as to how we did our analysis. Let's take the reading program element, noted on page 12 of the program memorandum (vol. II). This is an area, I'm sure, which is of great interest to you. Let's take in particular *Beginning Reading*, shown on page 13.

After a youngster is prepared for reading in kindergarten, there follows a stage called *beginning reading*. This step is quite different from *developmental reading*, which follows beginning reading. In beginning reading, the program concentrates on the teaching of the reading skill itself, and is usually carried on in grades one to three. The instruction is focused on recognition of words, phrases and simple sentences. Now how did we decide on the recommended beginning reading program noted on page 13?

We found in our study that the achievement of our youngsters in reading in the lower grades was fairly good and comparable to the national norm. However, as they advance through the grades, the achievement tends to become lower and lower than the national norm. Although, at first glance, our students at the lower grades compared well with the national norm, a closer study of the test results revealed certain specific deficiencies. We found that those on the lower ability level and those on the highest ability level in grades one to three were not doing as well as the averages indicated. We thus felt that emphasis should be placed on these students, and that programs should be devised which would strengthen these areas of weaknesses.

Since we were doing a fairly good job with the greater portion of our students, you will note that we recommended the continued use of the basal reader for this bulk of students, but for low achievers, we needed to introduce a new set of reading approaches. We considered two alternatives. These are noted on page 46 of volume III, *Analytic Documents.* The first alternative (alternative A) was to continue with the basal reader for the low achievers; the second (alternative B) was the introduction of the code emphasis and language experience approach.

We analyzed and compared the cost of the present basal reader program and the cost of the other approach. The cost for the basal reader approach is listed on page 54 of volume III. It tells you what the operating cost is now and what it will be for the next five years if we continue in the same manner as we are doing now. The cost of alternative B is listed on page 55. Pages 52 and 53 explain how we developed the cost for alternative B. You will note that for alternative B, there are initial investment costs for equipment and training of teachers. There is no initial investment cost for alternative A, since it is the on-going program.

Page 13 of the program memo, volume II, simply summarizes concisely the detailed explanation given in the analytic documents. On page 13, program memo, we state that the basal reading program is to continue for those students who are doing all right, that this would include approximately 32,790 students, and that the cost for the first year will be approximately $3,000,000. We also state that, for those youngsters who are low achievers in reading, we are introducing the code emphasis and the language experience approaches and that the cost for the first year will be $4,000,000.

Now if you will turn to page 56, volume III, you will note the benefits of the two alternative programs. Due to the lack of data, this was about all we could do at the moment in identifying the benefits. We hope that in future years, as we develop our information system in the department of education, we will be able to do a much more rigorous type of analysis, more of the type that is called for in PPBS. At any rate, I would like to briefly run over the benefits noted on page 56.

We say here that if we continue with the basal reader, the achievement would be the same as it is right now; we cannot expect much more. However, if we accept alternative B,

or a mixture of the basal reader and the code emphasis, we can expect those youngsters who do not speak standard English and those youngsters who are having difficulty learning to read, to learn to read much faster and better.

We have also listed other considerations on page 56. We felt that it was very important that we discuss these. There is a great deal of new knowledge today about how children learn to read that we felt we ought to list them. The writing here is the work of the Hawaii curriculum center specialists and our language arts specialists. It documents the work of such experts as Jeanne Chall of Harvard University who have made studies on the methods of teaching reading to our youngsters.

For each program element, we did a similar kind of analysis. After we completed our analysis and decided on the programs to recommend, we costed out the recommended programs with greater particularity. I'll ask Mr. Fukumoto to explain to you our rationale in costing out our programs.

Costing the Programs

Fukumoto: Will you please turn to the table of contents in volume I, the long, legal-size document, on pages 1, 2, and 3. From the table of contents you will note that this volume I is divided into three parts:

A. State Summaries
B. Cost Data by Program Elements
C. Comparative Cost Data.

In the *Comparative Cost Data* portion of the volume, we have the cost data by districts, and we have cost data of the English program as it relates to all other instructional programs in the State of Hawaii. I'm going to use the program element, listening–speaking, to explain to you how this document is put together.

An explanation of volume I, the "Five-Year Financial and Output Plan." Let's look at page 1, *Summary of Five-Year Financial Plan*. The extreme left hand vertical column lists the program elements and also the means of financing. Under *Means of Financing,* we have shredded the cost of the English program into three parts–special funds, federal funds, and general fund.

After the first column, there are seven columns, one for each fiscal year 1967 to 1973. Taking the program element, listening–speaking, in the fiscal year 1967, we actually spent $2.1 million. In this current fiscal year 1968, which is not over yet, we estimate that the total cost of the listening–speaking program will be $2.4 million. For the next fiscal year 1969, the listening–speaking program as recommended calls for the expenditure of $2.7 million. The anticipated costs of the program for each succeeding years to fiscal 1973 are noted in the other columns.

In the extreme right column, we have $15.5 million for the listening–speaking program. This represents the last five-year cost (FY 1969–FY 1973) of the listening–speaking program.

On page 2, we report the cost to you in another way–by cost per pupil. We think that showing the cost this way is meaningful. It is more manageable for one thing, and we can get a better feel of what our pupil categories are. Again, taking the listening–speaking element, we divided the total cost of the program by the number of pupils that program will cover. For the fiscal year 1967–68, the per pupil cost of the listening–speaking program will be $14.83. If you want an idea as to how the per pupil cost is funded, you can refer to the bottom of the page.

On page 3, we have the cost of the English program summarized by cost categories and cost elements. Cost categories are those items numbered 1, 2, and 3—research and development, investment, and operating. The cost elements are those items numbered a, b, c, d, e, under each of the cost categories. Thus, under research and development, the cost elements are (a) research, (b) planning, and (c) testing and evaluation. Under the cost category, *Investment*, the cost elements are (a) buildings and facilities, (b) equipment and vehicles, (c) initial training, and (d) textbooks and manuals.

On page 4, we note the amount of the additional cost which will be incurred because of the new programs we are recommending—programs which are in addition to what we have going on right now. The figures are the net additional amounts. For example, in the listening—speaking element for the program, the net additional cost for fiscal year 1969 is $28,000. We have done this for all of our program elements. This table continues on page 5.

From page 6 to page 45, the cost data for each program element and subelement are displayed in detail.

On page 46, the cost of each program element—reading, language, literature, and so on—is given by districts. When I say districts, I'm talking about the school districts in the State of Hawaii. There are seven. At the bottom of the page is the means of financing.

On page 47, the cost of each program element per pupil by districts is given. You will note that the per pupil costs for the reading program element and supervision-consultation differ from one district to another. This generated a tremendous amount of discussion at some of our meetings with the district superintendents. We had to think of how to explain these large differences, but I think we have some good reasons here that explain away the large gaps. By the way, these are live figures; we're not fudging anything. We went into the field and we used calculators to come up with these figures.

On page 48 is a comparison of the cost of the English program and the cost of all other instructional programs. For example in 1966–67, the English program cost $19.1 million in total and $117.54 per pupil. All other instructional programs cost $43.2 million in total and $265.73 per pupil. This comparison gives you an idea as to what percentage of the budget is devoted to the language arts program.

The rationale for determining costs. Let's turn to page 183 of volume III, *Analytic Documents.* As I indicated earlier, we broke the costs down into three categories: (1) research and development costs, (2) investment costs, and (3) operating costs. As you would suspect, operating costs, including wages, consume a large segment of the educational budget for the English program, followed by research and development and investment.

On page 184 is an explanation of the *in-service training* and *salaries* cost items (or cost elements). *In-service training* can fall under either the investment or operating category. Wages would be an operating cost. You might note that wages represent 93 percent of the entire cost of the English program. This is, again, by actual computation.

At the bottom of page 184 and continuing on pages 185, 186 and 187, we discuss how we went about apportioning the total cost of the elementary and secondary programs to the English program. We encountered almost no problem in allocating the total secondary school cost to the English program since the language arts teachers were readily identifiable. For example, if you teach speech, you're a language arts teacher; if you teach English, you're a language arts teacher. You can cost that out rather easily. However, we did have a great deal of difficulty allocating the total elementary school cost to the English program. In the elementary grades, the teacher carries one classroom and teaches many things. Our job was to somehow split the cost between the English program and the other programs. It's always awfully difficult to do this because the teachers will scream at you

and say that math and science and music and so on all contribute to language arts. What we did was to call in a group of principals and do a sort of sample study. We asked this group of principals to tell us what portion of the school day was devoted to the teaching of language arts or English. The result of the group's response is shown on page 185.

Once we secured the amount of time allocated to the English program, we then had to shred this further into our program elements–speaking–listening, language, reading, writing, and so on. The percentages you find on page 185 are not to suggest that these are the proper or normal or standard amount of time which *should* be spent on English and the various elements. These are what they are right now. What should be the proper amount of time to be spent on English and the elements can be determined only by relating the language arts program to all other programs. Thus, the percentages noted are not an attempt to say, for example, that 35 percent of the teacher's time should be devoted to the teaching of language arts between grades four to six. They merely tell you that this is the amount of time being devoted right now by the teachers, and this information is being used to cost out the program.

On page 186 is the amount of time spent at the secondary level on the English program elements. As I said earlier, it was rather easy to get the total English program cost figures here, since the classes on the secondary level are clean and you can easily categorize many of these classes into your English programs. There was, however, a problem in allocating the cost of the so-called *required* English program to the proper elements which make up the *required* course–reading, writing, language, and so on. So, here we again talked to a lot of people and decided that 50 percent of the required program is devoted to literature, 25 percent to language and 25 percent to writing.

At the bottom of page 187, we discuss fringe benefits. In costing the English program and the program elements, we included fringe benefits. We believe that this is a pertinent item to include; we couldn't very well leave this item out because, as you will note on the next page, 18.7 percent of the wages consists of fringe benefits. The cost of these benefits are currently included in the budget of DAGS or B & F, and not in the DOE budget, but to get a full picture of the cost of the English program, we extracted these costs and reported them in this manner.

There is an interesting item there on page 188. The seventh item down the list is *Sick Leave (Substitute Teacher Costs).* Whenever a teacher is ill, we of course have to hire a substitute, and substitutes cost us money. In other agencies, this cost probably never appears–probably if a person is ill for the day, the other agencies would do without the services of that person. But at the DOE, whenever a teacher is taken ill, it costs us double. We have to pay the sick employee plus, of course, we have to pay the substitute.

Near the bottom of page 188, in the last line, *B* and *C* refer to supplies and equipment costs, which represent only seven percent of the entire English program budget. On page 189, we indicate that we left capital improvements costs almost completely out in determining the cost of the English program. Only where we could relate a capital improvement item specifically to a program did we include the capital cost. This is because if, for example, there is a 10-classroom wing coming up at Aiea Intermediate School, it's awfully difficult first to cost this wing out from the cost of the total building, and second, to allocate a portion of the wing to the English program. That particular classroom wing can be used for a variety of subjects and for a variety of purposes.

Basically, then, this is the manner in which we went about costing out the English program. Much of it is by formula, I realize, but it is my judgment that the rationale is sound.

General Support

Oda: I'd like to say a few words about our *general support services* category. As I said earlier, it was impossible for us to leave this out of our English program. There are a number of things in the support area which are important to the achievement of our objectives in the English program. The support areas are: research, supervision and consultation, and in-service education for teachers. Each of these produces a sort of intermediary product which ultimately contributes to our terminal objectives.

In research, there are currently two particular projects in the mill. One of these is the English project of the Hawaii curriculum center. The center is coming out with an entirely new English curriculum by 1973. We felt that we ought to have some checkpoints between now and 1973 to see if the kind of thing the center is developing is the kind of thing we really want. Our English program, in the general support services category, sets up the mechanism to make these checks.

The second research program which is currently being carried on is the one in Keaukaha. This project is financed by the United States government and the Hawaiian homes commission. This project is trying to come up with serials in English to teach standard English as a second language to children using non-standard island dialect. This project is scheduled for completion by 1969. We hope that this serial will be available to us in the DOE.

In the area of supervision and consultation, we found several overlaps and we felt that this program requires an intensive evaluation. Our recommendation therefore calls for an evaluation by June 1969. We hope that out of that evaluation will come recommendations for future supervision of the English program.

In in-service education, we felt that it was most necessary that the teachers have background information in not only the substantive areas in English, but also in terms of the new approaches to teaching English. Our recommendation calls for such in-service training on a continuous basis between now and 1973.

This about wraps up our description of what we have done in the English program. I'd like to turn the next part over now to Mr. Naito.

III. AN ANALYSIS OF THE DOE PPB EFFORT AND SOME COMMENTS ON THE IMPACT OF THE PROPOSED FORMAT ON LEGISLATIVE DECISION-MAKING

Yukio Naito

Deputy Legislative Auditor

Some Comments on the Analysis Performed

Let me start off by briefly commenting on the analysis performed by the DOE PPB staff. The product of the DOE effort is far from perfect. There are a number of weaknesses in the analysis which was performed. I think we all know this, both the DOE staff and the joint legislative committee. Despite these shortcomings, the product is a good one. Let me quickly point out what some of these shortcomings are.

Some shortcomings. First of all, I want to correct one statement which appears over and over again in volume III, *Analytic Documents*. Its appearance in the volume is in part the fault of the auditor's staff. We inadvertently overlooked this error in our review of the documents prior to their submission to the joint legislative committee.

The statement which inadvertently crept into the analytic documents is that one which appears, for example, in the paragraph at the bottom of page 8 of volume III. It states something to the effect that the basis of selecting the preferred alternative is ideally that one which gives the greatest gain for the least cost. This is an incorrect statement. If you stretch this statement to the ultimate, of course, what it is saying is that we want that alternative which will achieve the *greatest gain* at *no cost* at all, since the *greatest gain* is infinite, and the *least cost* is $0. This is not really what we intended to say. I think what we intended to say here was that the basis for selecting the preferred alternative is that program which will give us that specified gain we want, at the least cost. I want to make that correction because this statement appears throughout the analytic documents.

The second shortcoming of the analytic documents has been alluded to by Mrs. Oda and Mr. Fukumoto. The alternatives which appear in the documents are somewhat limited. Generally, the alternatives are: (1) to continue the present program and (2) to go on to another program. This is not bad, except that when we talk about a new program, we are talking about *one* other program. Ideally, of course, there ought to be more than one alternative to the on-going program, since the on-going program is not really an *alternative*, but the baseline. The lack of more than one alternative is due in part to the work being done by the Hawaii curriculum center. The DOE staff sought those alternatives which would gradually phase-in those programs which the Hawaii curriculum center hopes to develop over the next five years.

The third shortcoming, if it is a shortcoming, is that the analysis that was performed is gross. There was no sophisticated cost-benefit analysis performed here. This, in and of itself, is not fatal to the analysis, At this stage of the game, a sophisticated cost-benefit analysis is not to be expected; at the most, only a gross sort of analysis can be expected. However, even this gross analysis has weaknesses and falls short of some of those things which the experts have been saying during the past three days.

There was, for example, a very significant assumption made, that if we continue with the existing programs, we will not reach the desired objectives, but that if we adopt the new programs, we will probably attain our objectives. No rational connection has been established in the analysis between the programs recommended and the resulting test scores. This assumption runs right through the analytic documents for every program element.

There is also no probability of success noted anywhere in the documents. No sensitivity tests have been performed to see what would happen if certain assumptions were altered. No marginal analysis has been performed to determine what would happen in terms of results if more or less money is appropriated to a program than the amount recommended. No trade-offs have been analyzed to determine whether it would be better to put the next dollar in beginning reading or developmental reading, or in language or literature, for example.

Despite these shortcomings, it is our feeling that the analysis which was performed is a good step forward. It is a very good beginning. For the first time, many weaknesses in the department of education have been revealed by this analysis.

Agreement on format. I would like to direct your attention to that statement contained in the joint legislative committee's report. The committee report states quite clearly, I think, that the *content* of the three documents is the result of the work of the department of education and not of the joint legislative committee. The joint legislative committee has not yet formally agreed to all of the content. The joint committee, as well as the legislature, will have an opportunity to review the content and to make such revisions as may be necessary when the legislature considers the DOE budget during the

on-coming legislative session. What the joint legislative committee has agreed to is, not the content, but the format—the way in which the information is to be presented and the kinds of information to be presented by the department of education to the legislature.

The PPB Format and the Present Budget Format Compared

For the past three days, the experts have been telling us about the advantages of the PPB format over the current format. They have told us that one of the things the PPB format will do is to reveal the kind of information which the legislature needs for decision-making. I think the best way to illustrate this is to compare the DOE English program PPB documents with the current method of presenting budget requests.

I am going to shoot on the screen, here, some excerpts taken from the budget document which is currently prepared and presented to the legislature by the department of education. I am sure that all of you are familiar with this blue-covered budget document—sometimes it comes in a different color, but for the fiscal year 1967–1968, it came in blue covers. This budget document is in two volumes. I am going to take some excerpts from this document and point out to you some of the differences between the current method of making budget requests and the method in which the budget request is presented in the three PPB documents.

The financial plan. Currently, the financial requests are presented in the following format. *First* of all, the financial tables are structured along organizational lines. Slide no. 1 illustrates this.

Slide No. 1

TABLE OF CONTENTS

Volume I

	Page
Introduction and Overall Summary	i
Departmental Summary	1
Instruction and School Services	I- 1
Elementary and Secondary Instruction	I- 3
Regular Schools	I- 5
Supplementary School Programs	I-13
Lahainaluna Boarding Department	I-14
Neighborhood Youth Corps	I-19
Community Action Program	I-22
Vocational Education–P.L. 88-210	I-25
P.L. 88-10, Title I–Special Projects	I-28
Driver Education	I-31
Special Schools	I-34
Linekona	I-35
Pohukaina	I-38
Diamond Head	I-42
Olomana	I-47
Home-Hospital Instruction	I-51
Hospital Schools	I-54
Instructional Aid	I-58
School Library Services	I-59
Audio-Visual	I-63
Educational Television	I-66
P.L. 89-10, Title II–ESEA	I-73

As shown on the slide, the budget structure has at least three levels. Each successive level is respectively called by the department, *division, program* and *activity*.

A *division* is illustrated on this slide by the words, *Instruction and School Services.* The other *divisions* (which do not appear on this slide) are *District Administration, Post High and Adult Education, Library Services,* and *State Administration. Programs* are illustrated on the slide by the words, *Elementary and Secondary Instruction* and *Instructional Aid. Activities* are illustrated by the words, *Regular Schools, Supplementary School Programs,* and *Special Schools.* There are also subitems under the activities.

Compare this present format with the PPB format shown on page 1, volume I, of the PPB documents, and you will note that the PPB format, instead of being structured along organizational or functional lines, is structured in terms of what we call *missions*—that is, along that line which spells out what it is that we are teaching our children. In the PPB format, the first level of the structure is the category, *Instructions.* One of the major subcategories is *English.* Below *English* are the elements, *listening—speaking, language, reading, literature, writing,* and *general support services.* A further breakdown of these elements are the subelements—see, for example, page 6 of volume I, which notes *enrichment* as a subelement of the *listening—speaking* program element.

The *second* distinguishing feature between the current financial format and the PPB format is that the current format is a one-year document (slide no. 2), whereas the PPB format is at least a five-year document (see page 1, volume I). The five-year document tells the legislature what the future implications are of the various programs. Such future implications cannot be discerned from the current format.

Slide No. 2

PROGRAM BUDGET REQUEST SUMMARY
FISCAL YEAR 1967-1968

Department: Education
Division: Instruction & School Services
Program: Elementary & Secondary Instruction

	2	3	4	5	6	7
	Actual 1965-66	**Approp. 1966-67**	**Current Services Request**	**Workload Increase Request**	**Expansion Request**	**Total Request**
Regular Schools	(6669) 52,001,684	(7273) 61,452,025	(7275) 64,852,364	(187) 1,567,327	(191) 2,005,216	(7653) 68,424,907
Supplementary School Programs	(6) 3,058,984	(6) 3,623,470	(6) 3,313,795		2,072	(6) 3,315,867
Special Schools	(86.5) 631,154	(98.5) 854,328	(98.5) 864,997	(6) 33,808	(4) 43,771	(108.5) 942,576
TOTAL REQUIREMENTS	**(6761.5) 55,691,822**	**(7377.5) 65,929,823**	**(7379.5) 69,031,156**	**(193) 1,601,135**	**(195) 2,051,059**	**(7767.5) 72,683,350**
Character of Expenditures:						
A. Personal Services	(6761.5) 50,163,541	(7377.5) 60,391,229	(7379.5) 63,622,143	(193) 1,085,777	(195) 984,452	(7767.5) 65,692,372
B. Other Current Expenses	2,201,309	3,034,679	2,897,274	69,230	244,631	3,211,135
C. Equipment	3,326,972	2,503,915	2,511,739	446,128	821,976	3,779,843
TOTAL REQUIREMENTS	**(6761.5) 55,691,822**	**(7377.5) 65,929,823**	**(7379.5) 69,031,156**	**(193) 1,601,135**	**(195) 2,051,059**	**(7767.5) 72,683,350**
Means of Financing:						
Federal Funds	(9) 8,657,627	(9) 10,070,974	(9) 10,769,537	(6) 33,808	(4) 43,771	(19) 10,847,116
Special Funds	34,028	60,100	60,000		1,525	61,525
General Fund Appropriation	(6752.5) 47,000,167	(7368.5) 55,798,749	(7370.5) 58,201,619	(187) 1,567,327	(191) 2,005,763	(7748.5) 61,774,709
TOTAL MEANS OF FINANCING	**(6761.5) 55,961,822**	**(7377.5) 65,929,823**	**(7379.5) 69,031,156**	**(193) 1,601,135**	**(195) 2,051,059**	**(7767.5) 72,683,350**

The *third* distinguishing feature is also noted on slide no. 2. The current budget format summarizes the budget requests by *activities–Regular Schools, Supplementary School Programs, Special Schools,* etc. The PPB format, as noted on page 1, volume I, summarizes the cost information by program elements–*listening–speaking, language, reading,* etc. The PPB format further summarizes by subelements (see pages 6, 13, and 18 of volume I).

Slide no. 3 illustrates the *fourth* distinguishing characteristic.

Slide No. 3

PROGRAM BUDGET REQUEST SUMMARY
FISCAL YEAR 1967-1968

Department: Education
Division: Instruction & School Services
Program: Elementary & Secondary Instruction
Activity: Regular Schools

1	2	3	4	5	6	7
Character of Expenditures	Actual 1965-66	Approp. 1966-67	Current Services Request	Workload Increase Request	Expansion Request	Total Request
	(6669)	(7273)	(7275)	(187)	(191)	(7653)
A. Personal Services	47,807,988	56,870,582	60,209,789	1,055,708	947,780	62,213,277
B. Other Current Expenses	1,647,333	2,129,198	2,156,131	69,080	241,106	2,466,317
C. Equipment	2,546,363	2,452,245	2,486,444	442,539	816,330	3,745,313
	(6669)	(7273)	(7275)	(187)	(191)	(7653)
TOTAL REQUIREMENTS	52,001,684	61,452,025	64,852,364	1,567,327	2,005,216	68,424,907
Less:						
Voc. Ed. Smith Hughes–George Barden	(9) 82,833	(9) 93,333	(9) 93,333			(9) 93,333
P.L. 88-210–Voc. Ed.	86,277	90,420				
P.L. 874–Defense Area	5,367,000	6,400,000	7,500,000			7,500,000
P.L. 864–Title III	138,768	100,000	100,000			100,000
P.L. 864–Title V	79,379	93,821	93,821			93,821
	(6660)	(7264)	(7266)	(187)	(191)	(7644)
GENERAL FUND APPROPRIATION	46,247,427	54,674,451	57,065,210	1,567,327	2,005,216	60,637,753

The cost information is currently displayed in terms of the *A, B, C* expenditure categories –personal services, other current expenses and equipment. This is done for every activity. The PPB format's cost categories are, as you will note on page 8, volume I, *Research and Development, Investment,* and *Operating.*

Research and Development includes the so-called *pilot* programs of the department of education. By separating research and development costs from the other costs, and by presenting the cost information on a five-year basis, the PPB format enables the legislature to see exactly when a *pilot* program is destined for evaluation as to whether it is to be terminated or it is to be continued as an on-going program. Currently, without this separation, *pilot* programs have the habit of becoming *on-going* programs without the legislature becoming aware of that fact.

The *investment* category spells out what the one-time costs are–costs which are not expected to be recurring year after year. By separating this category from the others, the legislature can see what the timetable is for the acquisition of capital and equipment items. The current budget format lumps all of these categories into personal services, other current expenses and equipment.

The *fifth* distinguishing feature between the current budget format and the PPB format is noted on slide no. 4.

Slide No. 4

PROGRAM BUDGET REQUEST DETAILS
FISCAL YEAR 1967-1968
B – OTHER CURRENT EXPENSES

Department: Education
Division: Instruction and School Services
Program: Elementary and Secondary Instruction
Activity: Regular Schools

Object	Estimated Expenditure 1966-67	Current Service	Workload Increase	Expansion	Total Request	Gov.
Stationery & Office Supplies	155,705	157,828	5,000		162,828	
Educational & Scientific Supplies	1,704,309	1,597,216	48,350	241,106	1,886,672	
First Aid Supplies	11,354	12,500	3,800		16,300	
Telephone, Tolls & Cables	75,000	80,775	2,712		83,487	
Private Car Mileage		26,614	500		27,114	
Field Trips – Excursions		84,618			84,618	
Honolulu Theatre for Youth	10,000	4,500			4,500	
Honolulu Symphony Society	35,000	35,000			35,000	
Transportation for Exchange Teachers	16,000	16,500			16,500	
Armored Car Service	11,830	28,080	3,068		31,148	
Printing and Binding – Health Records and Forms		2,500	150		2,650	
Repairs & Maintenance – Office Equipment & Furniture	110,000	110,000	5,500		115,500	
TOTAL	**2,129,198**	**2,156,131**	**69,080**	**241,106**	**2,466,317**	

The current budget shreds the costs by objects of expenditure. Each *A*, *B*, and *C* category is broken down into the objects on which money is to be spent. The PPB format, as you will note by observing page 9 of volume I, breaks each cost category into cost elements. The cost elements resemble to some degree the *A*, *B*, *C* categorization under the present format. What is important to note, however, is that the PPB format does not require the itemization of the objects of expenditure. Since the PPB system is intended to aid in planning, rather than in controlling expenditures, the PPB document which is presented to the legislature for decision-making need not itemize in detail the objects of expenditure.

The *sixth* distinguishing feature is this. The current budget format breaks down the total requirement into *current services, workload increase,* and *expansion.* (See slide no. 4) Since PPB is concerned with incremental costs, the PPB financial plan presents on page 4, volume I, the incremental cost of launching the recommended new programs. PPB is not concerned with workload increases as such, inasmuch as PPB's focus is on planning rather than on management. This is not to say, of course, that the legislature should not question the validity of the figures presented, but if workload increase is in fact an increase because of an enlargement in the population of the target population, etc., there is very little that the legislature can do about it in a programmatic sense, except to re-evaluate the entire program.

I might mention two other financial data which appear in the PPB format but not in the current budget format. One of these is the comparison figures noted on pages 46, 47 and 48 of volume I. On page 46, a district by district comparison is given, showing how

much money is being proposed to be spent in each district for each of the English elements. Page 47 gives the same comparison but in terms of the per pupil cost. Page 48 notes how much of the total instructional program cost is being devoted to the English program.

The other financial information I wish to note is that in costing the various programs, *all* costs, except general capital improvements and general educational support costs, have been included. Thus, the fringe benefit costs are noted in the financial plan, even though the money for these items is appropriated to the department of budget and finance, rather than to the department of education. These fringe benefits are noted in the financial plan as *non-add* items to indicate that the money is not appropriated to the department of education; they are noted, however, to indicate the full costs of the various English programs.

Narratives. Not only is there a difference in the manner in which the financial figures are presented between the current budget format and the PPB format, but the narratives which accompany the figures are also different.

Slide no. 5 is an example of a *program description* under the current format.

Slide No. 5

The five programs are briefly described below:

1. Instruction and School Services is the heart of our total departmental program. Included in this category are (1) the regular and special schools which provide instruction to about 165,000 students throughout the State; (2) supplementary school programs, including the federally-sponsored projects such as the Neighborhood Youth Corps, Community Action Programs, Vocational Education Work-Study Program, special projects under Title I of P.L. 89-10, etc.; (3) instructional aid programs such as school libraries, audio-visual, and educational television; and (4) school support services including school lunch services, student transportation, and custodial services programs.
2. District Administration includes the seven (four on Oahu and one each in the neighbor island counties) district superintendents and their staffs, who supervise the operations of their respective school districts. The move toward the decentralized supervision of the schools to the district was started in fiscal year 1965-66 with the physical relocation of the three rural Oahu district offices in their respective districts. This has resulted in greater sensitivity to the needs of the individual schools and enhancement of the instructional program at the school level.
3. Post High and Adult Education includes those educational programs that cater to that portion of our interested public who are beyond high school age and who desire to continue their education. Included in this category are the Hawaii Technical School, Adult Education, Civil Defense Education, Manpower Development and Training Program, and the Hoomana Vocational School.
4. The Public Library Services program, through a network of branch and regional libraries and bookmobile services, provides state-wide library services to the general public. In addition to professional reference and advisory services, various library materials are made available for loan including books, periodicals, newspapers, recordings, etc.
5. State administration includes the Board of Education, Advisory Councils, the Superintendent of Education and his supporting staff, who carry the responsibility for broad supervision of the entire state program. The curriculum consulting staff provides leadership in developing curricula and in strengthening the instructional program. In addition, certain centralized staff services are provided in the areas of accounting, budgeting, procurement, personnel, research, data processing, printing and binding, school planning, etc.

Generally, these *program descriptions* explain the duties and responsibilities of the various organizational units within the department of education. Sometimes they include some description of important educational events. Rarely, if ever, do they describe the *missions.*

In contrast, under the PPB system, the program memorandum (volume II) describes the various programs in terms of their objectives, the present levels of achievement, what the programs are all about, the outputs expected, the timetable for the accomplishment of the objectives, the costs of each program and the priorities in which the programs should be implemented.

Furthermore, the narrative in the present budget document, backing up the requests for additional sums of money over the current level, tends to be a *justification* for the increases, rather than an *analysis.* For example, for the fiscal year 1967–1968, the department of education submitted an expansion request of $136,078 for the office of the superintendent. (I picked this example by random—my finger just happened to fall on this page; I do not mean to pick on the superintendent.) Let me read to you from page S-11 of volume II of the department of education's 1967–1968 budget. It says, in part:

"The expansion request of $136,078 includes:

"1. $4,875 to adjust the salary of the Administrative Assistant for conversion of this position to Deputy Superintendent. Presently, the Office of the Superintendent includes a Deputy Superintendent and an Administrative Assistant to the Superintendent. To effect proper control and improve the administrative services, two deputies are needed. The size and scope of the Department and the diversity of programs warrant an expanded administrative support. It is therefore requested that funds be provided to convert the Administrative Assistant to a Deputy Superintendent.

. . .

"3. $3,000 is requested for rental of an IBM magnetic tape selectric typewriter. This item of equipment is a labor-saving efficiency device and will do much to improve the clerical operations of this office."

This is, of course, nothing more than a **justification.** "We need it; it will 'improve' our situation; so please let us have it."

In contrast, the PPB documents, particularly volume III, describe the analysis which went into the request for funds. The narrative is not a *justification* but an *analysis.* Thus, beginning on page 3 of volume III, for example, a detailed analysis is presented for the listening–speaking program element. It describes the program element, notes the objective, states the criteria by which to measure effectiveness in attaining the objective, discusses the alternatives considered, states the basis on which the recommended alternatives were selected, and discusses the costs, benefits, assumptions, risks, etc., of all alternatives. This analysis is a far cry from the justificatory material found in the current budget format.

Other PPB features. In addition to the differences between the current format and the PPB format which I have outlined, let me note a few things that the PPB format does which the current budget format does not do.

First, the PPB format pulls programs together. For example, on page 65 of volume III, *Analytic Documents*, the Nebraska Plan portion of alternative B for the developmental reading program is costed out. At the bottom of the page, however, it is noted that some of these cost items are *non-add* items, since these cost items are included in the literature program. What is being done on this page, then, is to spell out the relationship between the reading program and the literature program. This page pulls together the reading and the literature programs. There are other examples of this in other parts of volume III.

Second, the PPB format puts costs where they belong. Take, for example, the in-service education program for teachers. Whenever an initial training is required to get a new program under way, the cost of that initial training is noted as an investment cost for that particular program, even though *in-service education* is *supportive*, rather than *mission* in nature. Turn to page 52 of volume III for an illustration of this. There, the cost of in-service education to train teachers to teach the new code emphasis approach is included in the cost of alternative B. These in-service costs are given a treatment different from the

usual, operational, continuous in-service training given to teachers. The expenditures for these continuous training programs are noted under the program element, *general support services*, an explanation of which begins on page 159 of volume III.

The same holds true for the other supportive activities. The cost of research is put where it belongs with the appropriate mission. Thus, you will find the costs of doing research to come up with some testing devices in the listening–speaking and writing programs included in the total costs of those program elements. These research costs are distinguished from the *general* supportive research costs which apply to all programs. The costs of research which support all programs in English are noted on those pages beginning with page 159 in volume III.

Third, an item which I already mentioned, the PPB format clearly indicates the terminal date of each experimental or *pilot* project. This insures that no pilot program will become an on-going program without proper evaluation.

The Usefulness of the PPB Format to the Legislature

The greatest, single usefulness of the PPB format to the legislature is that it permits the raising of those kinds of questions which the legislature needs to ask in its decision-making role. Let me enumerate just a few of the kinds of question which the legislature might ask, based on the PPB documents prepared by the department of education for the English program.

1. In the reading program element, if the Nebraska Plan is as good as you say it is, why do we have to wait for the Hawaii curriculum center? Why can't we fully implement this approach now? What would it cost to do so?
2. In the listening–speaking program element, does your recommended remedial program cover *all* underachievers? If not, how much more money is needed to cover all? In what school districts are the bulk of the underachievers?
3. Again, in the listening–speaking, remedial program, what might be the effect if we increased the number of personnel?
4. In a school district where there is a heavy concentration of underachievers, what is the result likely to be, if we took $X from the language program and put it into reading? What are the trade-offs?

You will note that some of these questions point out the shortcomings of the analysis which I noted earlier. Nevertheless, the analysis thus far performed by the department of education provides a springboard to many questions which can be raised by the legislature in its deliberation on the education budget.

Future Implications of PPB for the Department of Education

As the department of education begins to spread the PPB approach from the English area to other areas in education, we might expect at least two things to occur. *First*, the range of questions which the legislature might ask in making education budget decisions will increase. You might begin to ask questions of the following kinds, with the expectation that you will receive definitive replies from the department of education.

1. What are the alternative overall educational objectives?
2. What are the trade-offs between English and social studies? Math and science?
3. How does research relate to curriculum development?
4. How much money do we need, if we are to reach all persons who should be receiving special education by reason of mental retardation, etc.?

5. How does educational television relate to curriculum?
6. What is the relationship between school buildings, school counselors, and library books, on the one hand, and curriculum, on the other?
7. What is the shortage in the number of teachers in each of the disciplines? What would happen if more money is put into books and equipment rather than in teachers?
8. What is the relationship between the department of education and the University of Hawaii?
9. What is the relevance of the current school day and the school year to learning?

Now, these are some of the questions which the legislature has from time to time asked of the department, but which, to date, have not been fully answered. With the PPB system, you can not only raise these questions, but you can expect the department to furnish you with clearer answers than those which you have been accustomed to receiving.

The *second* thing which you can expect to happen as the department begins to spread the PPB system throughout the department, is that you will begin to get more definitive information about the schools and the districts. The PPB system, when fully implemented to the lowest decision-making level—in this instance, probably the schools, under our school-by-school budgeting practice—will begin to surface the peculiar, individual problems of the schools and the districts. The schools and the districts are not expected to do the same kind of analysis which might be expected of the state office. Undoubtedly, the schools and the districts will be constrained by statewide objectives and policies and the dollar ceilings which may be imposed by the state central office.

Within this narrow framework, however, the schools and the districts might begin to probe more critically and analytically about the needs of the students of the respective schools and districts. There might be some trade-offs between and among the disciplines, depending on the weaknesses and strengths of the pupils serviced by the particular school or district. It should not be surprising if one school or one district emphasizes science over mathematics, and another school or district emphasizes English over social studies. You should be able to secure information regarding the levels of spending by schools and districts in each of the major disciplines, together with the anticipated results.

Conclusion

I might conclude my remarks by restating the basic aim of the PPB system. The basic purpose of the PPB system is to aid in decision-making. It is a system which tries to put on a rational basis the method in which the state's scarce resources are to be allocated. The department of education's effort in the English program goes a long way in implementing the PPB system in the field of education.

Friday, February 2, 1968

THE CENTRAL ANALYSIS GROUP

Myron Thompson

Administrative Director
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President Hulten, Speaker Beppu: I think this session has been premature. I just came out of the house appropriations committee, and you should have heard the questions that they posed—rather penetrating. After hearing them today, which was an hour and forty-five minutes, I am certain that this program should have been planned for after the session. They're asking so many questions at the moment.

Some Background on the Establishment of the Central Analysis Group

I think, for the record, I'd like to point out a couple of things. One, I am not a budget man nor a planner. After having gotten into the area of management, I have begun to think that you really need a person in the social sciences involved in it. At any rate, I'm not here under false pretenses. I am the administrative director of the state, and my primary job is to assist the governor in the management of state affairs. Therefore, my presence.

This effort that you will view in a few minutes is an outgrowth of continued expressions of frustration. As I understand it, for some of you, it has been seven years of wanting to know why something is being done, why something is not being done, and how some of the programs relate to one another. Your expressions have been made clear to the governor and he, too, out of his own frustrations, has expressed his desire to know where we have been, where we are, and where we are going. Over the short period of time that I've been in government service, I have known the governor to express this over and over again. In addition to his frustrations, I've heard our cabinet members again and again express some of their inside family frustrations—"How come he's beginning to plan on this program [or moving this program], without connecting it with mine, when it has an effect on mine."

This effort also has a little additive of my own frustration. I'd like to take you back to the first day of our discussion. I think the example that was used as to how PPBS could be utilized was in terms of cutting down the crime rate. At that time, we talked just about the police and the paraphernalia that go with crime—the guns, the cars, the highways, the route system. However, if you really want to cut down the crime rate, you would also have to include our prison system. You would also have to include the economic condition of our state, since economics affect the crime rate. You would have to include our school system, because there is an assumption that a dropout will eventually become a delinquent. Of course, I don't think this is entirely correct; most of our dropouts are not delinquents. But you have to consider the school system nonetheless, and within the school department, you would have to go one step further—move down the line to the fourth grade level. There, at that level, I am told, you can spot almost every potential delinquent child. You might, perhaps, also have to include the kindergarten level; there are a number of children coming into the kindergarten level that you probably can spot as potential delinquents.

Now, you can't stop there. You would have to go out and look at those youngsters who are being abused by adults. We know that there's a direct correlation between a youngster being severely abused before the age of two and his eventual commission of crimes of violence. In almost every crime of violence, you can trace the offender's history

to some abuse during the stage of his development. Therefore, you have to bring in the department of social services. But, you can't stop there. You would also have to bring in the health department, because it appears that there is a correlation between brain damage or minimum brain damage and delinquency.

Thus, the frustration that comes out of this whole bit is to sit in management and to try to put a package together. I don't know how to do this, but I think there is a bunch of eggheads that knows how to do this, and I think some of them are around here who have been conducting our seminar. In our work, we hope to call on them as well as on our own homegrown talent.

Now, out of this frustration came a desire on the part of the governor to look at his management system and to search for improvements. So, when he gave the green light to move ahead in improving our management system, we proceeded.

We had several alternatives. One alternative was to leave it alone. You know, "it will go away" bit, but then we knew that if we let it alone, the frustrations will remain. The other was to really take a look at what we had—the strengths, and the weaknesses—and see what additives we needed in order to improve our system.

What will be presented today is a process of melding the old with the new—and let me tell you that in the last three months, there've been many blue days, and as far as our technical staff is concerned, they have been bruised, black and blue, by some of our departments. At any rate, what we will present in a few minutes is this melding of the old and the new.

I have to beg your forgiveness. The hour is late. I will not give a verbal report which will take longer than an hour, because I'm likely to digress. Instead, I'm going to run this tape. I had my presentation taped, not primarily because I anticipated that time would run short, but because initially, I had a conflict in time and would not have been here personally to make the presentation. Of course, the time for my presentation has since been changed. Nevertheless, due to the lateness of the hour, I think it would be better if we went ahead with the tape.

The Issues in Budgeting

The budget process. Each year we in the state government go through the steps of preparing a budget. The departments prepare annual operating and capital budgets. The capital budgets of the departments are reviewed by the department of planning and economic development and the operating budgets by the department of budget and finance. Both budgets are reviewed by the governor and the legislature. After the legislative review and appropriations, the departments develop their implementation plans which spell out how they intend to spend the funds over the fiscal year, and then they execute these plans. Finally, the departments monitor their progress and submit quarterly financial reports to the departments of accounting and general services, budget and finance, and planning and economic development. Monthly reports on activities are submitted to the governor.

Now, this budgeting process may be thought of as being divided into four stages, the *first* being the budget preparation. In this stage, the departments prepare their capital and operating budgets. The *second* stage is the budget review stage. This stage encompasses the review process which begins after the detail budgets have been prepared by the departments. The *third* stage is budget execution. The *fourth* stage is the monitor and report process. It is through these four stages that the budget of state government is formulated, reviewed, and executed.

The budget as a statement of policy. The budget represents the government's key tool for carrying out its policy, because it is through the budget that you fund a multitude of activities to accomplish this policy. Somebody has referred to the budget as a statement of policy. Just how well does this statement reflect your policy and how effectively is this policy being implemented?

In your review of the budget, you must make decisions on what programs are to be funded, at what level—that is, how large an appropriation. How right your decisions are depends heavily on the quality of the information made available to you and the degree to which it answers the questions you ask departments when reviewing their requests for funds. And, of course, your decisions have a great deal to do with the degree to which the budget is an adequate reflection of your policy and how effectively this policy is to be implemented.

The questions, the answers to which you seek or must seek, seem to revolve around the following: (1) In search for the basic purpose of the program, precisely what will the program accomplish? (2) What are its objectives? (3) Does this program represent the best way of accomplishing the objectives? (4) Are there alternative ways of accomplishing the objectives? (5) Have these alternatives been explicitly considered and compared to the recommended program? (6) Are there other programs or activities being recommended by other departments to the state government that contribute in a significant way to the achievement of the objectives? (7) How does the program being reviewed relate to them? Does it merely duplicate? Is it truly complementary? Or is it conflicting? (8) How effectively does the program accomplish its purpose? What is its impact on the problems? (9) What would be the effect of, say, increasing the funds going into that program? Will there be a very significant effect on the ability of the state to achieve the objective, or perhaps no effect at all?

Questions such as these relate not to howefficiently work is being done, but to the purpose of that work, that is, the purpose or objectives of programs, how effective the program will be in achieving those objectives and the interaction between this and other programs being funded. These questions obviously have been with us for a long time. They are necessary questions, simply because the state government has limited resources available to it, requiring careful decisions on how to allocate these funds.

Past efforts to make budgeting a planning tool. Several formal efforts were made to develop adequate responses to these questions in the past. First of all, the department of budget and finance took steps to review activities that are carried on in the state government in terms of programs—and a program may be thought of as a group of interrelated activities necessary to achieve some given purpose or objective. Thus, the primary test in developing the budget was not simply conceived in terms of the professional accountant, specifying funds spent for personnel and equipment, but in terms of what these physical resources would be accomplishing. This concept of programs was followed up by an initial effort to define budget categories in functional terms, that is, the aggregate cost in categories that tended to reflect the end purpose being achieved.

In addition, the department of budget and finance issued a guide for program evaluation, which called for the preparation of a program evaluation report. The guide represented an initial effort to formalize evaluation efforts by providing a general format for documenting and reporting the results of program evaluation. Among other things, it called for (1) the formulation of program objectives which specified what the program was to accomplish; (2) measures of performance by which progress of the program toward an objective can be traced and evaluated; (3) specification of alternative ways of achieving the objective; and (4) an evaluation of the cost and the effectiveness of the alternative. The program evaluation reports are a part of the budget submission. But their preparation should most properly precede preparation of the detailed budget.

While those in the department of budget and finance were working to bring more analysis into the preparation of the budget, the planners in the department of planning and economic development were attempting to provide a basis for policies to guide the state's long-run goals. The first effort was embodied in the first state general plan prepared in 1960. Those plans made a truly significant effort toward formal planning on a comprehensive scale. It had, however, almost no impact on decisions to allocate the state resources among competing programs—that is, on the formulation of the annual budget which is in fact our plan for implementing policies. These deficiencies were recognized in the revision of the first general plan, and planners preparing the revision began searching for what they called an operational planning system. They argued that planning is a process by which we select among alternative ways to accomplish our objectives, and in the budget, we spell out the detailed resources required to carry out our plan. They were searching for a means to relate planning to budgeting.

While our planners were striving to move away from the sterile concept of planning, our budget analysts were making an effort to give the budgeting practice a planning orientation, that is, to strengthen the stage during which the budget is prepared by introducing more rigorous efforts to specify objectives, identify alternatives and select those alternatives which most effectively achieve the desired objective with a minimum of fuss.

The deficiencies in the present system. While these initial efforts represented a step forward, and a major step forward, the task remains incomplete. There remain some major problem areas in our current budgeting process.

Program evaluation reports serve as justification for budget requests. A program evaluation report remains primarily a description of programs which serves as a justification for budget requests. I think Mr. Haldi referred to this quite a few times in his opening statement. They do not contain an objective analysis of alternatives in terms of costs and effectiveness. They do not pay adequate attention to measures of what objectives the program is to accomplish and how successfully the program is accomplishing these objectives. The reports are often prepared during the hectic period of detailed budget preparation and fail to provide the basis for estimating what it will cost to accomplish the stated objectives. As a result, these reports generally lack answers to the significant questions and do not provide a basis for decisions.

Future efforts must strengthen the initial steps taken to define the program objectives and analysis of alternatives by providing the departments with better guidelines for program evaluations from the upstairs and providing the departments with the capability to respond to these guidelines, calling for more and better planning in the development of a budget. One significant need is for you to have, as policymakers, a more meaningful and comprehensive view of the large number of programs being funded which require broad but basic guidelines.

Remember, that the budgeting process today begins with the preparation of cost estimates prepared by program managers. These cost estimates gradually become aggregated and work their way upward. This puts you in a position of responding and assuming what I call a *watchdog role.* It is a role in which you react rather than initiate, a role in which you cut, trim, deny, but find difficulty in taking positive action by providing basic guidelines. A part of this problem lies in our not putting all of the pieces together to see what kind of an animal has been created. Usually, the best we can do is to know what slices of the budget were going to each department, and compare that to what it had last year.

Now, this disturbs me because the basic economic and social issues which you are attempting to cope with most definitely cannot be neatly sliced into 17 pieces. This means that the information you have on what each department spends not always say very much about what we are doing to get at some of these basic social and economic issues. What we

need then is another view. We need to look at the budget, not by departments or divisions or branches, but by how each of these various organizations is contributing to the basic issues confronting state government. Or, to put it another way, how are the activities we fund contributing toward the basic missions of state government without regard to the department or division in which they are administered?

The need for a comprehensive view of how activities contribute to the basic missions of state government complements the need to develop basic guidelines so that the planning and budgeting process would generate a budget that is in keeping with your concept of those missions and their relative importance. Future efforts, then, must provide a comprehensive view of how resources are being allocated to achieve the basic missions of the state government and provide a framework for guiding the planning, budgeting process.

Other problems. Other problem areas which I believe are contributing obstacles to your assuming a more positive role in the formulation of the budget is the fact that (1) you are forced to concentrate only on appropriation requests for next year, generally without knowledge of the implications of that request for future years; (2) you consider only part of the cost of a program in your decision; and (3) you generally have insufficient facts on integration of any given program with other programs you're being asked to finance.

Considering, first, the problem of time. Decisions are now made on program funding often without any real discernment of the implication of that decision on future budgeting. Certainly, it is of concern where the program costs are expected to significantly increase or decrease over time. Perhaps, an even more fundamental problem is that by being restricted to this year's budget, you are confronted with a situation where most of the alternative courses of actions are preempted and constricted, either because the bulk of the funds are already committed as a result of past decisions or the problems are so current and pressing that there is no course open but to grant the budget request however inadequate it may be. Extending the time horizon with which we are concerned means far more than simply looking at sets of numbers extending five or six years ahead. It permits you to emerge from the pressures of the present and view them in a wider perspective. It opens alternative courses of action that may otherwise not be perceived.

Now, the problems arising from this failure to evaluate implications of our current decisions on future budgets are enhanced by the current practice of funding programs without knowing the total cost to the state, either now or in the future. You consider operating costs quite apart from capital costs and you generally are apt not to consider all of the operating costs.

Finally, your decisions are made on individual programs or on programs within particular departments, with little more than a vague awareness that there is some relationship between these and other state programs. This problem complements the one we previously discussed, which is one of accounting for all activities in terms of the objectives to which they contribute, rather than in terms of what organizations administer them.

In view of these problems and their significance to the process of decision-making, future efforts must focus on the following: (1) a multi-year look at the objectives, programs, and financial implications of these programs must be developed; (2) this multi-year view must spell out the total costs of programs; and (3) programs and activities being funded must be regrouped according to the objectives they serve as opposed to the department in which they are administered.

One further significant aspect of program evaluation is our current lack of an adequate monitoring system. Programs are funded to accomplish some objectives, but information is rarely available that sheds light on how well the program is accomplishing those objectives. In other words, we rarely know whether the program is doing what the program manager said it would do when we granted his budget. Reports of progress are made, but these are

cast in terms of the accountant and not in terms of management needs. It is essential that our future efforts to develop more explicit definitions of program objectives be complemented by an equally significant method to measure the progress of programs towards those objectives.

An implication of the problem areas in our planning, budgeting process is the inadequacy of our current procedure of reviewing the budget. The chief executive and legislative reviews are restricted in terms of their requiring more pertinent information in order to lay basic guidelines for the formation of that budget. Future efforts must focus on developing procedures that permit the following: (1) a program to be reviewed in terms of their contributions to basic government objectives and (2) multi-year financing requirements of programs to be reviewed along with multi-year revenue estimates of the state government.

Finally, we must be clear about the fact that our planning must not produce a document containing a set of general recommendations. It must assist us to identify and select among alternative courses of action. It must respond to the significant questions you have, so that your decisions can be more astute.

A Recommended Program for Improving Management Methods in the State Government.

I have just completed dissecting our planning and budgeting process. I am about ready to move with you into a process of putting this together. I have pointed out what I believe to be certain fundamental problems with which we have been wrestling for many years. Recognizing problems is one thing; finding solutions is another. We have found no instant solutions; however, we do know that it is possible to strengthen the existing efforts to work toward a solution, and I underscore "strengthening existing efforts." To be sure, we'll be coping with similar problems ten years from today. That is, it is time to begin.

The initial steps to be taken are described in a document entitled, *A Recommended Program for Improving Management Methods in the State Government.* As the title of this document suggests, the program is designed to support and strengthen the decision-making role of management. This is accomplished through a strengthened planning process which generates information to make a rational choice among alternatives and by providing management with a means for laying broad guidelines to direct this process.

The primary elements of the program are: (1) the definition of objectives; (2) the formulation of department comprehensive plans; (3) the review of multi-year plans; and (4) the development of a monitoring system. It is to be noted that the first three of these elements occur prior to the preparation of a detailed budget. They represent a much more rigorous and systematic process for arriving at the point where a detailed budget is actually prepared and submitted to you for review.

Defining objectives. In the area of defining objectives, during the initial stage of implementing this program, the first task is to define what we call statewide objectives. These objectives identify the basic missions of the state government and represent the basic framework upon which we will organize and evaluate state programs. At this time, these statewide objectives have been tentatively identified:

(1) improve the standards of living for all of the people;

(2) provide opportunities for formal education;

(3) improve the health of all of the people;

(4) provide adequate transportation;

(5) provide a satisfactory physical environment;

(6) provide cultural and recreational opportunities;

(7) safeguard the individual, his rights, and his property; and

(8) contribute to the attainment of national goals.

Note that the general focus of these objectives is on people—that is, the missions of the state government are stated in terms of their ultimate purpose. Their ultimate purpose—the welfare of the people of Hawaii. More specifically, the individual standard of living in education, health, physical environment, recreational opportunity, and physical well-being are identified as the basic missions of state government.

These statewide objectives, you will note, are basic goals. They represent fundamental reasons for the formulation of state programs. We will not be able to say, "Yes, we have achieved these goals," because they are relative to our current environment. That is, what we mean by adequate health, education or income is constantly changing as we seek higher and higher plateaus of well-being. However, we can work toward these basic objectives and make an effort to measure our progress.

We begin by undertaking the task of refining these broad objectives and introducing with each refinement a greater degree of specificity. As an example, consider the first statewide objective—improve the standard of living. The standard of living may be improved by providing individuals with such potentials that they become productive, and this may be accomplished by the *removal of social and economic barriers* to the development of this potential. But, it is obvious that the ultimate success of efforts to increase the potentials of individuals to be productively employed, depends on the availability of employment opportunities where this potential can be put to use. Next, encouraging the development of the economic environment is a further necessary step to insure that adequate opportunities of the right kind exist for all individuals to become employed. To summarize, the statewide objective to improve the standard of living is subdivided into two complementary subobjectives—(1) remove social and economic barriers and (2) development of the economic environment.

Now we are ready to begin the search for ways to go about achieving these objectives—that is, to consider the means by which these ends will be accomplished. The first subobjective—remove social and economic barriers—may be attained through programs designed to assist families and individuals through the provision of counseling services, direct financial assistance programs, and programs to provide adequate housing. We now reach a level of refinement where we can begin to define the problems, accept specific targets to be achieved during the forthcoming year or during the years immediately ahead.

For example, in the area of employment, we identify the target group and the magnitude of the problem, evaluate the activities now affecting that problem, design measures for the effectiveness of these activities and evaluate the contribution of these activities to our objectives. We may find too many duplication of efforts, too few activities that are really getting to the heart of the problem, and in this light, we begin a search for more effective alternatives and a re-evaluation of our objectives and of our programs.

Note that in the program structure, contained in the documents to be distributed to you, in the process of classifying programs according to objectives, there is an effort to pull together programs which are either competitive or close substitutes under the same objectives. Thus, employment services, counseling services, financial assistance, and housing programs embody complementary and alternative ways of achieving similar activities. By clustering complementary or competing programs in our program structure, we facilitate the analysis of alternatives.

Note, too, that we have only a small number of statewide objectives. This is because a primary function of our effort is to develop appropriate information for management in the terms that I used earlier, to give you a comprehensive view of how the pieces fit

together to contribute to the basic missions of the state government. If the chief executive or legislators are tied down by the vast detail surrounding hundreds of programs, then they will not be able to satisfactorily perform their roles of making strategic decisions and giving broad directions.

Of course, concurrently with the definition of state objectives, we are undertaking the task of reviewing program objectives, and a review of key objectives will be a primary element at the beginning of each budget session. It is here, I believe, that the guidelines for the planning process should originate.

Finally, it is our hope to eventually identify all public resources—county, state, and federal, as well as private resources—being devoted to the attainment of objectives in Hawaii.

These objectives are currently being reviewed and commented on by the departments, but the program structure presented in the document I referred to does not yet reflect their comments, which are now being received.

Formulation of department comprehensive plans. Let us walk through the second portion of our *putting together* process. This is the section on the preparation of department comprehensive plans.

Following this first step—preparing a program structure, to find out where we are today—the next key effort is to take a step toward strengthening the planning efforts of the departments. During the implementation stage, this will be accomplished through what we call the preparation of department comprehensive plans. These plans will evolve from the existing program evaluation reports, and each of them will consist of two major sections.

The *first section* will contain a multi-year plan for each recommended program. The multi-year plan will be related to the specific statewide objectives it serves, and there will be a multi-year plan for each identifiable program in the program structure.

The multi-year plan will consist of three parts. The first part will be a multi-year output plan, consisting of *quantitative measures of program accomplishment*—that is, it will identify the goods or services to be produced by the program. These measures are important to us, because they represent an effort to tell us in as specific terms as possible what the program will accomplish and thereby permit us to evaluate that program, its objectives, and its ability to achieve those objectives. Another part of this first section of the department comprehensive plan will be a multi-year resource plan which will display the physical resources required to achieve the specific outputs of the program—the personnel and capital facilities. The third part of this section will be a multi-year financial plan which will represent the department's best estimate of the financial implications of the resources required by the program. It will spell out the total cost implications of the program over the planning period.

The *second section* of the department comprehensive plan will contain the analytical basis for the recommended program, such as, the basic assumptions upon which the analyses were made and the program plans prepared, the alternatives that were considered, the analysis which served as a basis for selecting the recommended program, the uncertainties which may bring about major changes in the services provided by the program and the procedures for monitoring and reporting on that progress.

Of course, it is very easy for me to say that these plans will be prepared, but the key question, which concerns you, is, just how good will they be? Will there really be an improvement over our present program evaluation report? To answer this question as honestly as possible, I must say that on this first round there will be minor improvements for many programs. Oh, the format will certainly have changed. They will look more impressive

because they will be presented in new terms such as *multi-year financial plans,* but on the whole, the underlying analysis will be of a primary level.

What we will try to do is, first, focus on one department for a model effort to be used as a training device and, second, focus our training on selected departments. We believe that the very nature of the effort requires it to be applied across all programs; that is, it must be a dual effort that cuts across all programs, but may proceed in-depth in selected areas. Based on this approach, we will focus our technical efforts in selected areas. Thus, our initial effort is not expected to be uniform, and planning for all programs will not be upgraded to the same degree.

These plans will represent the first stage in the evaluation of our planning, budgeting system. Initially, we will concentrate on having the departments orient their planning toward the achievement of statewide objectives. As the program proceeds, we'll intensify the planning process on these basic objectives to be accomplished as opposed to the objectives of organizations of the state government.

Review of multi-year plans. The third stage of our walk-through process is the review of the multi-year plan. The third major element of our program is to review the multi-year plan prior to the preparation of a detailed budget. We will review program plans, not as we have in the past on a department-by-department basis, but by programs grouped according to the objectives to which they contribute. This will mean analyzing and reviewing clusters of programs which may be administered by several departments, but which have common outputs and contribute to the achievement of similar objectives. Thus, our analysis and review of programs will not be constrained by the existing organizational structure of the state government. The analysis will be made by a group which, in the implementation stage, we call the *central analysis group.*

Following this review by the central analysis group, the analysis of the multi-year plans, their relationship to statewide objectives and the anticipated revenue trends, will be forwarded to the governor for his review. The governor's review will also be in terms of the contribution of the programs to statewide objectives in a multi-year period. The reviewing process culminates in a decision by the governor on funding levels for the programs, and this decision will provide the basic guidelines for the departments in preparing their detailed budgets. This decision represents a basic step in the formulation of the budget—positive effort to set forth the policies of state government and how these policies will be achieved.

Following this decision on funding, the departments will reprogram, if necessary, and prepare in detail their annual operating budget and six-year capital budget. The budget will then be reviewed by the governor for conformance with his guidelines and then submitted by the governor to the legislature.

Following action by the legislature, the approved budget will become, in effect, a statement of policy and how the policy is to be achieved. It will in fact be the general plan of the state government and appropriate portions may be published as such.

This process is designed to strengthen the planning process which precedes the preparation of the budget and at the same time inject policy guidelines into it.

Development of a monitoring system. The final step of our walk-through process is the monitoring process. This final key element in our program relates to the monitoring of progress. As the year progresses, we want to know whether we are achieving the progress that were established in the output and financial plan. If a program is not performing as expected, then we want to evaluate why not. This evaluation process will come to play a significant role in generating information required for effective assessment of programs and their objectives.

Implementing the Recommended Program

The timetable for implementation of the recommended improvements. I have described the primary elements of the recommended program to improve our management methods. It is appropriate to identify the major targets of the implementation stage which extends to February, 1969.

One, already under way, is a preliminary effort of soliciting comments from the department heads on the statewide objectives and on the drafting of the multi-year output and financial plans. Through this effort we are able to introduce the general concepts of the program to each program manager and to assess the extent to which the information which we are seeking already exists to locate and evaluate the magnitude of the strengths and weaknesses in our current state of knowledge.

Two, the next major target is the preparation of the departments' comprehensive plans. The target date for the initial effort to develop these plans is June, 1968.

Three, the initial review of the multi-year plans and the decision by the chief executive on program funding are anticipated to occur in September of 1968.

Basic assumptions. I would be remiss if I do not mention some of the basic assumptions that underlie this program. As I've already noted, there are no instant solutions. We cannot accomplish in a few months what requires years. The heart of our program is not simply the establishment of new procedures and new forms, but the strengthening of our planning through a systematic, in-depth analysis of alternatives. This will take time, but by taking the right step, we can begin to create an environment that will encourage the emergence of this kind of analysis, and this is what the implementation stage is designed to do.

Our program will call for more and better planning, and the major planning efforts will occur on the departmental level. Our focus is on a decentralization planning rather than centralization. This means that through this program, the departments will be instructed to reevaluate and strengthen their planning process—the general emphasis will be given to planning.

Finally, the success of the implementation stage will depend upon the establishment of a unit capable of providing overall direction to the programs, issuing guidelines, analyzing multi-year plans, giving departments technical assistance, and serving as a staff unit to management. This unit is the central analysis group, and this group will provide management with the analytical support essential to effectively carry out this decision-making function. The central analysis group will be concerned with the analysis and review of multi-year plans and will not be involved in the daily process of detailed budgeting.

The tasks needed to implement the program. The tasks which are required to meet this implementation will be the following. The first of these tasks is designed to improve the departments' comprehensive planning. As a part of this task, we will prepare revised guidelines for planning and budgeting, assist the departments in responding to these guidelines through technical assistance and training programs, and prepare a model department plan that will serve as a training guide.

The second major task involves an analysis of all programs relative to our objectives and review. In this analysis, all multi-year plans will be reviewed and resource requirements examined by statewide objectives. The financial requirements of programs must be considered against the state's ability to meet these requirements as estimated through a multi-year look at state revenues.

The third major task is to develop long-range estimates of state revenues. I believe you will be able to make current decisions more constructively if probable changes that influence the availability of funds can be anticipated at least to the point where our state

is sufficiently well informed concerning the possible alternative revenue patterns. In the implementation stage, the focus of this task will be on methodology, and the initial revenue projections will be preliminary estimates only.

The fourth major task is to identify and analyze a problem area. The fundamental basis of the program is to improve decision-making through the application of systematic analysis. Much of the program is designed to create an environment within which such analysis can occur. In this task, like the model department plan, there will be a model analytical effort, which, in fact, might well be a part of the model department plan. Its purpose is to illustrate the potential contribution of analytical techniques applied at a level of sophistication capable of being achieved by program management.

Cost of implementing the program. Our initial estimate of the number of personnel required for, and the financial cost of undertaking these tasks are spelled out in the documents you will receive. We estimate the cost will run around $400,000, if the salaries for state personnel deployed from the various departments are included as part of the total cost. If we exclude these salaries, the additional cost to the state is almost $250,000, without federal assistance, which we hope will be forthcoming.

A large part of the cost is for a team of consultants to supplement the handful of state personnel, making up the central analysis group. Additional, key, technical staff members can be added to this group from the ranks of the departments, but only at the expense of severely jeopardizing the capability of the departments from which these personnel are to be employed. Hence, we have sought the assistance of a professional firm during the implementation stage.

The staff. The program is an effort to pull together, strengthen and accelerate previously fragmented efforts of several departments. In the implementation stage, responsibility for the program will reside in the office of the chief executive, and it will be my responsibility to provide day-to-day direction to the central analysis group. The group itself will be composed of people employed from the departments. As I indicated, they will be supplemented by a team of consultants. A standing committee for the program has been formed. I chair that committee, which is currently composed of the director of budget and finance, the director of planning and economic development, and the governor's special assistant on SWIS.

Conclusion

In this discussion, I have attempted to outline the current problems and some positive steps we can take toward a solution to these problems. One anticipates obstacles in taking these steps, but even limited success in implementing these recommendations will in time bring about fundamental improvements to the decision-making process within the state government, and as a result, this effort will ultimately contribute to the well-being of all of the people of Hawaii.

At this time I would like to introduce the members of the central analysis group. There are only two of them: Ray Yamashita from the department of planning and economic development, and Dr. Bob Rider, also from the department of planning and economic development. When we initially began our work in October, we had the assistance of Louis Yamauchi, who was then with the department of budget and finance; he is now with the department of education. At any rate, this is our own, home-grown, victory-garden variety kind of staff; we hope to supplement this staff as we go along.