

# Simulations, Games and Experiential Learning Techniques:, Volume 1, 1974

## INTRODUCTION TO PABLUM: A PUBLIC ADMINISTRATION GAME

Edwin L. Heard, Indiana University

Local curriculum requirements created a need for a generalized public administration decision-making computer game analogous to general purpose business games currently in use.<sup>1</sup> A search of the then current gaming bibliographies uncovered urban, environmental and project development computer games as well as board games and role playing exercises in the same areas. The noticeable absence from the bibliographies of a computer game which focused on the operation and interaction of governmental agencies in a manner which would be conceptually generalizable to actual agencies at all levels of government led to this writer's decision<sup>2</sup> to attempt to conceive and develop PABLUM (Public Administrative Bureaucratic Laboratory for Upper Management) [1].

### Game Objectives

Several different game performance objectives were established.<sup>3</sup> At the conceptual level, PABLUM should serve as a learning laboratory suitable for use in practitioner oriented training programs as well as in more traditional academic settings. Consequently, the game environment and operation must be a veridical representation of the executive arm of a generalized representative government.<sup>4</sup> Yet at the same time the activities within the game and the game structure must be specific enough to allow the instructor to introduce and illustrate some selected set of theoretical concepts.

From the participant's standpoint, several experiential learning benefits should accrue to him. The gaming experience should provide him with:

1) understanding of theoretical constructs derived from the opportunity to implement and observe the effects of normative concepts as well as verification of predicted impacts from descriptive concepts; 2) an opportunity to hone decision-making and improve human relations skills through cooperative and competitive interaction with his peers; and 3) heightened awareness of his own comparative strengths and of areas in which he needs further improvement.

At a procedural level, the game framework should be suitable for the introduction and illustration of certain economic, financial, accounting, quantitative and systems concepts. Few of these should be required for successful game utilization but potential benefits from their use should be adequately rich. Finally, computer operation should require minimal initial time investment by the student and administrator and the computer program should be as nearly "idiot-proof" as possible.

---

<sup>1</sup> Master's of Governmental Administration curriculum at Georgia State University, 1973.

<sup>2</sup> Research effort funded through Dean's Budget, School of Business, Georgia State University.

<sup>3</sup> These objectives follow directly from the author's educational philosophy and bias toward the appropriate relative emphasis on instructional versus experiential learning. Hence, justification is not attempted here.

<sup>4</sup> No mean feat since governmental agencies engage in activities ranging from building superhighways to dispensing birth control information.

## Simulations, Games and Experiential Learning Techniques:, Volume 1, 1974

### Game Government

PABLUM is based on a highly simplified representative government which is comprised of the familiar legislative, executive and judicial branches. For game purposes, the executive branch collects taxes and provides services to the general population while the major function of the legislative branch is to act on budget requests from the executive arm [2, pp. 138—139].

#### Executive branch

The executive branch consists of an elected head and several governmental agencies. Each agency offers one or more service programs for the benefit of the general populace. Of all service programs offered by a single governmental agency, one is somewhat substitutable with a similar program offered by one or more other governmental agencies. All other service programs offered by an individual agency are non-substitutable. In addition to offering multiple service programs, each agency engages in a number of activities which support the major programs. All government services are financed out of general revenues which result from tax receipts.

#### Legislative branch

Representatives are elected by the population to a legislature. Budget request review responsibilities are divided among legislative review committees. There is one committee for each non-substitutable service program and one committee for all service programs which are reasonably substitutable. Budget requests are revised by the individual committee and submitted for approval to the entire legislature which approves, refuses or modifies them on an individual basis within the limits of some blanket appropriation for the operation of the entire executive branch.

#### Simplifying assumptions

Since game objectives do not relate to the judicial process, no attempt was made to include it within the game. Although an elective head of the executive branch is specified, any bargaining behavior between the elected head and the legislature occurs behind the scenes and does not influence individual agency operation.<sup>5</sup> No attempt is made to specify the types of services offered by the individual agency. Instead each agency offers “units” of its services to the population as well as engaging in other activities including internal administration, public relations, program development, and fund seeking. For simplicity’s sake,

---

<sup>5</sup> A crucial assumption which attempts to remove any doubt that this is a political science game rather than an agency operations game. It may be realistic for the majority of agency administrative employees who do not participate in budget bargaining.

## **Simulations, Games and Experiential Learning Techniques:, Volume 1, 1974**

all financial accounts are classified as either operating expense or personal<sup>6</sup> expense.<sup>7</sup> Finally, in order to assure generality, no specification is made as to the level of government involved. The game appears to be equally generalizable to local, state and federal governments.

### **OPERATING CYCLE**

Two major time cycles influence the operation of PABLUM. The budgeting process operates on an annual basis and budget requests must be submitted by each agency at the beginning of the second quarter of each fiscal year. Budget request review requires the remainder of the year with approved agency budgets released at the end of the last quarter of the fiscal year. Budgeted funds remain in the General Fund until allotment requests are filed by individual agencies. Since allotment requests can only be filed quarterly, their filing constitutes the second major game time cycle.

Each team (agency) files Service Provision and Peripheral Activities budget request forms. For every activity the team wishes to engage in, dollar figures must be specified for Operating Expense and Personal Expense. A team can request funding for one competitive (substitutable) service and up to four non-competitive services while requesting funding for internal administration, public relations, development and testing and fund seeking.<sup>8</sup>

The budgeting process operates somewhat like a Zero Base Budgeting System. Not only can a team request funding in each of nine activity categories but they can also specify up to three different activity levels per category. Of course, justification for each level must take place outside the computer restricted inputs and, of necessity, must be evaluated by the game administrator.<sup>9</sup> Regardless of the total number (N) of activity levels specified by an individual team, it must also provide a numerical ranking (1 to N) across all activity levels. This ranking is used in determining the level of support by activity to be furnished to each agency.

---

<sup>6</sup>Unusual use of the word appears to be common governmental practice (not a misspelling).

<sup>7</sup> Another crucial assumption and perhaps the most questionable. Yet a review of governmental accounting indicates that summarization into these two accounts frequently occurs.

<sup>8</sup> Some of these activities are camouflaged in the usual budget. They are specified in the game context in order to create awareness of the need for and illustrate the effectiveness of funds spent on operating system improvements, development and testing, etc. as well as to provide a frame-work within which to introduce several traditional business school topics market research, statistics, systems concepts, etc.

<sup>9</sup> Since justification takes place outside computer restrictions, it may also be possible to incorporate PPBS into the gaming exercise.

## **Simulations, Games and Experiential Learning Techniques:, Volume 1, 1974**

### Budget Determination Process

The total executive arm budget is determined primarily by three factors. The current attitude of the general population toward government is a control variable manipulable by the instructor to reflect current local feelings.<sup>10</sup> An internal factor is an aggregate performance measure of all agencies' past performances up through the current quarter. Naturally more recent performance information is weighted somewhat heavier than are relatively old performance indicators. Finally, the aggregate dollar volume of agency requests exerts considerable influence on the total executive arm budget primarily through severe reactions to drastic increases from year to year [3].

### Agency budgets

The size of an agency budget depends on the size of the government budget, the total amount of the agency request and the performance of the specific agency compared to other agencies. Here again, recent performance is weighted most heavily with progressively less weight on earlier performance. Once the total agency budget size has been determined, levels of support must be established for all eligible activities. Determining levels of support for the individual activities involves simply running down the priority list furnished by the agency until all funds are exhausted or until the amounts required for each of the next three priorities are greater than the funds remaining. While the sum of operating expense and personal expense for each requested level is used for this purpose, the approved budget reflects exactly the amounts requested individually for operating expense and for personal expense for each activity.

### Quarterly Allotment Decisions

While an agency's funds are retained within the General Fund until needed, those funds are earmarked by activity by expense category. Each quarter an agency may request an allotment by expense category for each of its approved activities. While an agency has virtually complete freedom to allocate operating expenses in any pattern it desires, its range of options for personal expense deviation from twenty-five percent per quarter are quite limited.<sup>11</sup>

The Quarterly Allotment Request form is used by an agency team to specify the number of "units" of service they anticipate providing within each approved service program and to request earmarked funds from the General Fund. Requests for allotments are indicated by activity by expense category and are expressed as dollar deviations from twenty-five percent of

---

<sup>10</sup> This is a very logical place to make use of a game newsletter describing program successes, failures, grafts, scandals, etc.

<sup>11</sup> This is an attempt to reflect the existence of merit systems within many governmental systems which would prohibit hiring and firing at will. At the same time, deviations in operating expense between quarters represents variations in service demand patterns.

## **Simulations, Games and Experiential Learning Techniques:, Volume 1, 1974**

the approved annual total. Any unspent funds at the end of a quarter carry over to the next quarter with one exception. Unspent funds at the end of the last quarter of the fiscal year are forever lost. Overspending in the final quarter is deducted from the following quarter's beginning balance for that activity.

### Game Output

Each team receives three types of feedback from computer operations. At the end of a simulated fiscal year they receive an Approved Budget Request (ABR) which identifies by expense category and activity the dollar amounts available for the following year. At the end of each quarter, the team receives an Administrative Information Report (AIR) and a Financial Statement (FS).

### Financial statement

This report presents relevant financial information in the following fashion. Accounts are identified by activity by expense category. For each account the final balance, quarterly expenditures, beginning balance, year's budget, and year-to-date expenditures are reported.

### Administrative information report

This report is broken down into service provision and supporting activities sections. For each service activity, five items are reported -- "units" of service demanded, a demand effectiveness index, actual cost per unit, ideal cost per unit, and a resource utilization efficiency index. Only two items are reported for each supporting activity -- administrative efficiency and activity effectiveness.

## OPERATING CHARACTERISTICS

The computer programs for PABLUM have several interesting features, some of which relate to internal operations and others to user flexibility. No attempt is made to report all such features here although some are mentioned. The simulation routine (PABLUM) and the initialization routine (INIPAB) are written in time-sharing BASIC. Nevertheless some of the "file-shuffling" features described are computer system dependent.

### Program Operation

The annual budget approval routine has been previously described in the budgeting process section of this paper. The service provision procedure and performance index calculations have not yet been described.

### Service provision

This routine generates demands for "units" of service by agency by service activity. The theoretical maximum number of "units" of service that could be supplied given an agency's quarterly allotment request and a theoretical internal production function is then calculated along with an ideal cost per unit. These two numbers of "units" of service figures are compared against the agency's planned number of "units" of service. The smallest of these three numbers of "units" of service is then identified

## **Simulations, Games and Experiential Learning Techniques:, Volume 1, 1974**

and this becomes the number of “units” of service actually provided. Service activity performance measures are calculated by comparing actual output and costs to demanded output and theoretically minimum costs. Demand effectiveness is calculated by dividing “units” delivered by “units” demanded. Resource utilization efficiency is calculated by expressing ideal cost per unit as a percentage of actual cost per unit. Both indices clearly vary between zero and one.

Supporting activity performance measures are calculated quite differently. Each supporting activity has an ideal fixed percentage of the total agency quarterly allotment request.<sup>12</sup> At this percentage, administrative efficiency is one and over or under spending on the activity results in an administrative efficiency performance measure of less than one. Also at this fixed percentage activity effectiveness is one but over spending leads to measurements of effectiveness in excess of one while under spending leads to measurements less than one.<sup>13</sup>

### “Idiot-proofing”

Since the game is run from a terminal, the major part of the programming effort was devoted to idiot-proofing the routine in order to allow instructor independence in the use of PABLUM [4]. The program will respond negatively and stop without file damage for virtually any conceivable instructor error. The worst recovery procedure requires backing up one quarter and re-running the routine for that quarter. Most errors simply require the entry of the correct command. Space limitations do not allow further exposition on this point.

### Administrator Discretion

Several features of the program allow administrator discretion. Some features are simply for instructor convenience while others extend the range of usefulness of PABLUM. The administrator must run INIPAB at the beginning of the course in order to create the appropriate history files. At this time he specifies the number of teams which can be any number from two to eight.<sup>14</sup> He can also select a starting quarter number and the length of the history run. Running PABLUM the specified number of quarters produces the required historical AER's, AIR's, and FS's in the number of multiple copies specified by the administrator.<sup>15</sup> Still another feature is the “tax rate” controlled by the administrator.

---

<sup>12</sup> These fixed percentages are program parameters which can be easily modified in the event of discovery.

<sup>13</sup> The combined effect is to illustrate that an agency can be highly effective and inefficient through overkill -- two administrators for every operative employee, etc.

<sup>14</sup> This number could be easily increased by re-dimensioning.

<sup>15</sup> No, Virginia, the instructor does not have to make all the decisions during the history run. More about this later.

## **Simulations, Games and Experiential Learning Techniques:, Volume 1, 1974**

Should agencies become financially embarrassed through mis-management, the administrator can “soup up” approved budgets by raising the tax rate.<sup>16</sup> In the event of a mistake on decision file input, a run can be duplicated with correct decisions and the same random number string. These are most of the more important convenience features some of which, of course, are time-sharing dependent.

### Game flexibility

In order to promote flexibility automatic routines were developed to make budget and quarterly allotment request decisions. As a result the game is effectively four games since it can be operated in four distinct modes at the discretion of the administrator. Mode 1 is a budgeting game. Quarterly decisions are made automatically within budgets resulting from team decisions. Mode 2 is an operations game where team players attempt to optimize agency performance within budgets set automatically. Mode 3 is a decision-oriented policy level game which allows teams to make both sets of decisions. Mode 4 is not a game but represents simulation in its purest sense with automatic decisions of both types.

### GAME EVALUATION

PABLUN was conceived, developed and documented<sup>17</sup> in ninety days in 1973. At this point a tentative evaluation is in order. Preliminary experimentation with INIPAB and PABLUM in Modes 1, 2 and 4 indicate that the game is sensitive to the specified decisions and yet highly stable. This unusual combination apparently results from the particular choice of performance measures.

### Game Learning Assets

PABLUM provides an attractive learning environment within which theoretical concepts can be illustrated, awareness of the importance of certain theoretical constructs can be created, new concepts can be introduced and students can exercise their skills, implement and experiment with new concepts and evaluate their performances at minimal personal cost. This is a rather strong claim but perusal of the operating system tends to validate it.

Certain economic concepts almost force themselves on the team member. Prime examples are the law of diminishing returns and economies and diseconomies of scale (external and internal). At the same time the emphasis on the budgeting process, financial statements, expense categories, etc. certainly reinforce some basic financial and accounting concepts.

Selection of a set of supporting activities that violate one’s intuitive feel for public administration on first blush was quite deliberate. Continued exposure to these areas (internal administration, development and testing, public relations, and fund seeking) through the game experience should tend to build acceptance of them as legitimate public administrative activities.

---

<sup>16</sup> Experience will probably develop ingenious uses for this and other game parameters.

<sup>17</sup> Poorly

## **Simulations, Games and Experiential Learning Techniques:, Volume 1, 1974**

Recurring emphasis on effectiveness and efficiency in these activities and the eventual discovery that they play an important part in determining yearly budgets within the game should lead to appreciation and emphasis of these areas.

The game provides a framework within which some quantitative tools and systems concepts can be introduced. Team members soon learn the advantages to be derived from simple charts and graphs. Basic descriptive statistics, time series, forecasting, systemic interaction and tradeoffs between efficiency and effectiveness are certainly appropriate topics for discussion. Finally, what better environment in which to demonstrate the impact of long and short range planning?

### Using Experience

PABLUM was completed and delivered on August 8, 1972 to an instructor who “volunteered” to use the game in a class in Fall quarter of 1973. Results of this experience are mixed. The “idiot-proofing” appeared to have been a success from a purely mechanical standpoint. Unfortunately, such was not the case for the game concept. The students who were full-time intermediate level bureaucratic entered the usual claims of lack of reality which the instructor was unable to successfully refute.

### Current Status

There are at least two possible interpretations of the sequence of events described above. Perhaps the game is too unrealistic to be useful in the classroom environment. Some gaming authorities claim, however, that reality is not the appropriate criterion. That, instead, verisimilitude is adequate and even superior in terms of achieving generality. Certainly, given the potential academic richness described previously in this Game Evaluation section, discarding the game at this point would be foolhardy. A conservative evaluation of PABLUM at this point is that it is certainly a viable mechanical framework in an area in which no suitable alternatives exist. The concept appears to have rich potential but that potential is as yet unrealized.

## REFERENCES

1. Heard, Edwin L. and Howard K. Schneider, Student's Manual for PABLUM, (Atlanta: Georgia State University Quantitative Methods Dept., 1973, preliminary copy).
2. Niskanen, William A., Jr., Bureaucracy and Representative Government (Chicago: Aldine—Atherton, 1971).
3. Wildavsky, Aaron, The Politics of the Budgetary Process, (Boston: Little, Brown & Co., 1964).
4. Heard, Edwin L., Instructor's Manual for PABLUM, (Atlanta: Georgia State University Quantitative Methods Dept., 1973, preliminary copy).