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Designing a Budgeting System with Planned Confusion

One of the most perplexing realizations associated with budgeting systems design is that no single budgeting process can simultaneously provide continuity and change, rigidity and flexibility, consistency and adaptability, clarity of purpose and multiple perspectives, stability and innovation, or accountability and experimental behavior. And yet, there is mounting evidence from recent research findings in organization theory and design that both of these two opposed classes of stabilizing and destabilizing attributes are critical to maintaining a proper balance in organizations facing changing environments. In view of recent developments in the environment and emerging thoughts in the accounting literature, there is reason to explore the potential virtues of dual budgeting processes coexisting within a single budgeting information system for organizations experiencing dynamic, hostile environments.

Traditional Budgeting as a Stabilizing Process

The traditional budgeting process has reigned supreme in most organizations for many decades. A product of historical evolution, it has been referred to as one of the prime stabilizing

processes in organizations by authors Bo Hedburg, Sten Jönsson, Paul Nystrom, William Starbuck, and Aaron Wildavsky.¹ The reasons offered are usually a manifestation of the nature of its data base, methodology, output, and behavioral impact.

Traditional budgeting provides for continuity in planning and control by linking the future, present and past across all organizational processes. It thus gives an aura of unity even though it disproportionately affects organizational power groups and the allocation of resources. At the same time, annual repetition promotes consistency and rationalizes organizational conflict. Differentiated line-item data adds to stability and supports easy, incremental calculation, which, in turn, is easy to change, suppresses error, and increases its ability to maintain a consistent course of behavior over time.

Consistency and continuity promote accountability to higher authorities in the organization and external agents and owners. This enhances elements of control via efficiency and effectiveness measures. Furthermore, accountability introduces forces of conservation, limits spending, generates inflexibility and constrains adap-

tiveness. Finally, as R.M. Cyert and J.G. March maintain, unintentionally created slack arising during the budgeting process stabilizes an organization's performance in the presence of environmental fluctuations.²

There are emerging signals in the economy that a stabilizing budgetary process may not be able to adequately deal with changing organizational structures, at least within the dimension of discretionary cost activity.

Cost Control and a Changing Environment

A significant portion of contemporary business literature focuses on the increasing inability of managers to cope with discretionary costs, which are "strangling" budget planning and resource allocation in the public sector and "squeezing" profits in the private sector. Public administrators appear to be very perplexed over the growing number and magnitude of new funding requests combined with higher expenditures necessary to maintain incumbent projects. Daniel Ogden notes that in many instances a significant portion of annual expenditures are discretionary in nature and involve judgments about social values that are not readily assessed using quantitative, rational, "scientific" evaluations.³ Apparently, the traditional budgeting mechanism is jeopardizing outward-looking, innovative decision making. These cost control difficulties have not been confined to the public sector.

In the private sector, the last several decades have produced a technological shift in the direction of increased service support systems within the organization. The service industry itself has experienced rapid growth and a corresponding escalation of discretionary costs. Norman Macintosh reports, for example, that roughly 80 percent of Canada's total payroll represents discretionary costs.⁴

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In the traditional manufacturing sector of the North American economy, and in others, to be sure, there has been and continues to be a shifting emphasis toward service-oriented support systems at the firm level. These areas include more sophisticated and complex maintenance systems, computer systems, ecological and pollution control systems, and a score of other ancillary staff functions. Not only has this trend drastically altered the structure of many organizations, it has also magnified the importance of controlling discretionary costs. Needless to say, inflation has not eased the concern of managers and public administrators over spiralling discretionary costs in the budget.

These events have created an increasingly unpalatable data base, which represents the core of the traditional budgeting process. Currently, many organizations are facing a relatively larger, and more significant, portion of discretionary cost activity compared with total enterprise activity. Theoretically, discretionary cost activity is less objective, more qualitative, and computationally more complex, has a low propensity to closed-system logic, and manifests ambiguous cause and effect knowledge when contrasted with the remaining residual class of activity (variable or "prime" costs). Ironically, the treatment of discretionary cost activity in the traditional budgeting process is essentially simple and mechanistic and incrementally grounded on a sacred historical base. Anthony Hopwood characterizes the budgeting of discretionary cost activity in a beautiful paradigm:

Accountant: "... we couldn't get a meaningful standard against which to judge how much R&D the company should be supporting."

Interviewer: "How did you decide on the R & D budget then?"

Accountant: "That's a good question. At times, I myself wondered how we did it. In general, though, it turned out to be pretty mechanical, really. We might say, 'Let's hold it at last year's budget' or 'at last year's plus a certain percentage of whatever new things the R & D people want' or it could be just a plain 10 per cent increase over last year's. Occasionally you get some bright guy who wants to work it out as a percentage of sales or some such thing, but where does that get you? Does it have any greater logic than the 10 per cent bit?"

Interviewer: "How do you arrive at these 10 per cent figures?"

Accountant: "Oh, to be honest, it's a bit of ad-hocery really. 10 per cent sounds right, doesn't it? And to be fair

to ourselves, you arrive at a figure that fits in with where you want to get to in the overall budget. But then the R & D people may say that this will interfere with the natural growth of some crucial projects, so we give them 12 per cent. It's playing around with numbers, really. And trends as well. We look at the past record and project the 12 per cent out into the future. Pushing it to 1975 you might find a total figure of so many million pounds. Then, someone in the accounts department will say, 'Let's try and reach that by 1978 rather than by 1975.' So we cut the figure by the necessary percentage."

Interviewer: "Then what?"

Accountant: "The recommendation goes to the Budget Review Committee. In this case, I told them that the R & D guys asked for, let us say, a 20 percent increase over last year and that we, the accounts department that is, had allowed 9 per cent. Then you get comments like, 'We have to put a stop to this escalation of R & D' or 'Let's hold it to last year's level.' But in this case, the R & D manager and the Marketing Director are personal friends. So we heard that 9 percent wasn't realistic: 'There has to be some increase.' Someone else chipped in then. 'Can't we give them 13 per cent and get a bit of rationalization in exchange for it?' So we had to go back and figure that one out."⁵

If the traditional budgeting process cannot facilitate the qualitative shift in emphasis that characterizes discretionary cost activity, is there an alternative? The following section considers one recent development.

An Alternative Budgeting Choice

Peter Phyrri developed the concept of zero-base budgeting in the private sector over a decade ago to deal explicitly with an organization's discretionary cost activity.⁶ Since then, zero-base budgeting has been used to support political images in the public sector and to solve isolated instances of budget crises in nonprofit organizations.

During the intervening time period, an impressive list of claims and benefits has been amassed in the literature by zealous supporters of zero-base budgeting. Assertions have been advanced by P. Bergeron, Henry Knight, Harper Roehm and Joseph Castellano that it leads to better decision making, more effective use of resources, and yields many behavioral advantages, such as improved communication, participation, and motivation.⁷ These sources, along with many others, suggest that zero-base budgeting is superior to its historical precedent, traditional budgeting.

Equally obvious in the literature are those antagonistic to zero-base budgeting. R.N. Anthony claims it is fraudulent (due to its apparent inability to deliver a complete review of expenditures), unrealistic (because its methodology cannot work), and unmanageable (because of the large amount of paperwork).⁸ Mark Dirsmith and Stephen Jablonsky call zero-base budgeting a toxin because of its inability to promote decision making at institutional, managerial, and technical levels in an organization facing static and dynamic environments.⁹

Two troublesome issues result from the controversy over the merits and faults of traditional and zero-base budgeting. First, managers implicitly, if not explicitly, have been encouraged to choose between the two alternatives on the premise that only one budgeting process can exist within an organization at a time. It is currently in vogue to use only one budgeting process at a time, but, as Martin Landau cautions, "managements may do this in the interest of economy and control, but the economy will be false and the control a ritual—for we are acting, and organizing, as if we 'know' when we do not."¹⁰

The second problem is really an extension of the first one. Evidently, the literature presumes that a choice is necessary because both zero-base budgeting and traditional budgeting are viewed as stabilizing processes. Such an observation supports the need for making a choice on a cost-benefit basis. But no one has given any serious consideration to the idea that zero-base budgeting may be a very significant destabilizing process. If this is indeed the case (and the thesis in the following analysis is that this *is* the case), is there any validity in limiting the choice to one process or the other?

Before turning to an analysis of the destabilizing characteristics of zero-base budgeting, it is prudent to consider some recent findings in organization theory which lend credibility to the notion of two budgeting processes coexisting within the domain of a single budgeting information system.

Organization Theory's Salient Message

In the early 1960s, T. Burns and G.M. Stalker

characterized entire organizations as mechanistic or organic.¹¹ In the former, activities are well defined, programmable, stable, and geared to efficiency. The propensity for flexibility, adaptability, and innovative behavior is relatively low. However, cost and revenue activity, from a budgeting perspective, is highly predictable, controllable, and subject to simple calculation. Organic organizations, in contrast, manifest more uncertain tasks that are less predictable and more ambiguous. The environment is more visible and it creates changing roles which lack precision and programming. These activities, in terms of budgeting data, are not predictable and thus calculation and evaluation become more complex and qualitative.

Subsequent studies refined the complexity of organizations as envisaged by Burns and Stalker. Paul Lawrence and Jay Lorsch found that diverse and changing environments require increased differentiation of the organization and, concomitantly, demand more complex and elaborate integrative devices.¹² Jay Galbraith suggests that greater environmental uncertainty required the organization to process more information.¹³ The findings of Robert Duncan are extremely interesting in that the structural processes used to make routine and nonroutine decisions differed significantly for the same organizational unit over time.¹⁴ Similarly, R. Hall found that departments with more mechanistic tasks tended to have a higher degree of bureaucracy than departments with more organic tasks.¹⁵

From a budgeting perspective, each of the above findings suggests that most organizations experience activities that have a combination of simple and complex attributes. Moreover, this aggregate of activities must be dealt with on a simultaneous, ongoing basis in terms of planning, resource allocation, and control. Utilizing only a single, stabilizing process, such as the traditional budgeting mechanism, may well inhibit an organization from maintaining equilibrium in a changing environment precisely because its integrating and coordinating capabilities are inherently limited by the nature of an organization's data base.

There are additional implications stemming

from the more recent research of Hedburg and Jönsson.¹⁶ These authors maintain that information systems, like organizations, can stagnate because design imbalances prevent them from processing and responding effectively to changes in their environments. In benevolent, stable environments, stabilizers keep behavior and information processes consistent over time by standardizing procedures and reinforcing success with repeated use. Stabilizing processes tend to build in desired rigidity and inflexibility, clarify roles and procedures, drive out ambiguity of purpose, filter away inconsistencies and duplication, and strive for zero redundancy and no overlap.

Stabilizers thus breed insensitivity to change signals through what Cyert and March described as routinization and bureaucratic rigidity, which tend to introduce serious response delays into an organization's decision system.¹⁷ As a consequence, organization survival is threatened because gradual environmental changes are not recognized, old information processes evolve into sanctioned organization ideologies, communication is displaced by executive planning, and effectiveness is measured in terms of conformity to the past. These stabilizing features strongly parallel and reinforce Hopwood's discretionary spending paradigm.

Hedburg and Jönsson suggest that when the environment is hostile and fluctuating, previously programmed experience and repertoires of behavior prevent new responses from taking place and dampen, if not destroy, initiatives to behave differently. This inhibits organizations' adaptability and leads to organizational inertia. To counteract the inertia induced by stabilizing processes, organizations require information systems that enable them to adapt and tune into changing environments. Specifically, they need destabilizing processes which are the antitheses of stabilizing processes.

Destabilizers act as early warning devices to locate change signals, detect problems and conflicts in time, and to counteract old standardized routines. The critical intent is to design information systems that can dialectically destabilize organizations by using planned confusion. Modern information system designs

(including the traditional budgeting process), which tend to hamper organizational search and which filter away relevant uncertainty, diversity, and change signals, must be challenged intellectually, intelligently, and with organization of purpose in mind. Learning, unlearning, and relearning become major design issues. Design features must foster experimental behavior and innovation, emphasize evaluations, and offer easy arrangement and rearrangement.

The message seems patently obvious: an organization facing a changing, diverse environment requires a duality of processes that simultaneously envelops both stabilizing and destabilizing characteristics. Since budgeting data is a reflection of the nature of an organization's activities, the design of a budgeting system should also encompass both stabilizing and destabilizing processes.

Zero-Base Budgeting as a Destabilizing Process

The task which remains is to demonstrate analytically the destabilizing characteristics of zero-base budgeting. Since there is no precedent in the literature guiding this mission, a formal systems approach seems most suitable for establishing the relevant points. A systems framework would include the conventional input, through-put, output, and evaluative (feedback) elements.

The Data Set. Zero-base budgeting deals exclusively with discretionary cost activity; balance sheet elements, such as assets, liabilities, and equities, as well as revenue activities are outside its domain. A subtle feature of discretionary cost is that it is meaningful only when considered jointly from an economic and behavioral perspective.

Economic analysis assumes that total cost can be decomposed into a variable component, which is functionally related to discrete units of output over a relevant range of activity, and a fixed component, which is related to long-run capacity. Behavioral analysis partitions total cost into the categories of controllable and non-controllable according to the authority structure of an organization. This approach recognizes "people" rather than output as the activity variable.

Phyrr makes it quite clear that only the fixed cost component from the economic dimension is relevant to zero-base budgeting because he eliminated all those costs which are conducive to "standard setting." It is generally accepted in the budgeting literature to associate standard cost with variable cost, and definitely not fixed cost. On the behavioral side, Phyrr specifically uses the referent "activities where the manager has discretion to choose."¹⁸ which is synonymous with controllable cost. In short, the data set of zero-base budgeting consists of discretionary cost activities, which means that they have the joint attributes of fixed cost and controllable cost.

The data base of zero-base budgeting exemplifies several destabilizing attributes, one of which is redundancy. In a brilliant article, Landau argues that redundancy operates through such factors as duplication and overlap.¹⁹ These factors are critically important to an "open system" because they lead to error suppression and enhance the adaptiveness and flexibility of organizations facing changing environments. Simply stated, duplication requires a system composed of independent and separate parts such that the failure of any one part will not induce or directly impair the functioning of other parts.

In addition, the system must have diagnostic capabilities, adjustment mechanisms to minimize the impact of errors (malfunctions), and the ability to correct faulty parts without damaging the whole system. These properties of overlap are typically manifested in parallel networks and not those wired together in a long, linked series. Typical examples of duplication and overlap are to be found in the design of safety features for aircraft and dual breaking systems for automobiles.

How does zero-based budgeting contribute to redundancy? In the first place, it duplicates part of the domain of traditional budgeting—both processes deal explicitly with a data base comprising discretionary cost. More interesting is the manner in which the respective data bases are created in the budgetary process. Although this aspect impinges on the methodology or "through-put" stage, it will be considered presently.

The logic of the traditional budgeting process calls for the extrapolation of past levels of discretionary cost spending by account classification, each classification to articulate with the total master budget to produce a current level of discretionary spending for each account classification. In essence, the data is arranged serially; additions or deletions to any particular account necessarily affect all associated activities across the entire organization. For example, a 10 percent reduction in the travel expense account at the master budget level would affect all other differentiated travel expense accounts, wherever their origin might be in the subunits of the organization.

Zero-base budgeting, on the other hand, overlaps the discretionary cost domain of traditional budgeting and it accomplishes this through a mutually exclusive process. Instead of a serial linkage for each discretionary cost classification in the budget process, zero-based budgeting creates separate and independent units of activity. They not only parallel one another across the organization but in aggregate also parallel the traditional budgeting process in dealing with discretionary cost activity. Hence, there is no interdependence in the process of arriving at current budgeted discretionary costs under the two processes. At the fundamental data level, zero-base budgeting has potential redundancy factors; their destabilizing implications will be more completely examined in conjunction with its methodology.

Still focusing on the data base of zero-base budgeting, it is important to remember that the distribution of controllable cost within the organizational hierarchy is directly related to the dispersion of authority by the top echelon. This leaves considerable latitude for creative and experimental behavior, since the choice of discretionary activities can span various subsegments of the total planned activities of the organization depending on the needs of management. It follows that the choice of data base in this context becomes easy to arrange and contributes to increased flexibility. An organization can thus adapt to a changing organizational-environmental interface without severe pressures of rigidity and constraint.

The potential use of zero-base budgeting at

discontinuous time intervals has also been condoned in the literature. This means that the timing of zero-base and traditional budgeting would not necessarily be synchronized. Zero-base budgeting's data cycle would also be inconsistent if time periods were skipped. This would challenge the key criterion of predictability in planning; emphasis would shift to an uncertain future rather than merely extrapolating on a known past. No doubt this would also strain the conventional mode of planning in the budgeting process, but flexibility would be increased—most likely at the expense of enhanced ambiguity of roles and organizational purpose. Indeed, such destabilizing characteristics are the very cornerstone of designing a budgeting information system with planned confusion.

ZBB Methodology. As a budgeting process, zero-base budgeting is a planning and control mechanism and includes the elements of objective setting, operational decision making, and evaluation. Its method is described by Phyrre as a bottom-to-top communication process involving two basic steps.²⁰ The first step is one of differentiation. Discrete activities (of a discretionary cost nature) for decision units are analyzed and developed in the form of decision packages within the context of a minimum level of effort (usually below the current level of expenditure). Any additional activity for a decision unit can be formulated in an independent series of incremental decision packages, each one having a specified dollar cost. In addition to the requested dollar funding, all of the narrative explaining why the expenditure is necessary, consequences of not performing an activity, alternative procedures for accomplishing the goals, cross-impact analysis with other decision units, and cost-benefit analysis are included in the decision package documentation. There is no theoretical limit to the number of decision units identified or the number of decision packages developed within each decision unit.

The second step is one of integration. All decision packages are ranked, first within each decision unit, then vertically across all decision units in the organizational hierarchy. The ranking procedure can be accomplished

through cost-benefit analysis or subjective evaluation, but, empirically, the former approach has been the most generally accepted.

Redundancy factors also characterize the methodology of zero-base budgeting described above because there is duplication of purpose and planning relative to the traditional budgeting process. Internal to its own boundaries, zero-base budgeting stresses multiple objectives, diversity of perspectives, and incompatibility of measurement. Besides the mere allocation of resources and operational decision processes, Phyrre stresses the objective setting and evaluation capabilities of zero-base budgeting vis à vis organizational states and dynamic environments.²¹ In attempting to fulfill these idealistic purposes, zero-base budgeting must penetrate several different decision levels in an organization.

Dirsmith and Jablonsky challenge the potential ability of zero-base budgeting to commingle the decision strategies required at the technical, managerial, and institutional levels.²² In doing so, they refer to the contention of T. Parsons, that quantitative and qualitative shifts in the decision process are required as one progresses through these three levels.²³ This creates ambiguity and distorts the clarity of roles under the zero-base-budgeting process, and means that it cannot be uniformly applied, interpreted, and used across diverse sectors of an organization.

Planning discretionary expenditures becomes ambiguous because of the economic dimension associated with the data base. Fixed costs are troublesome because management does not know what the proper level of fixed costs should be for any budget period. Paradoxically, the decision on the appropriate level of fixed costs is shifted to lower levels in the organization under zero-base budgeting's framework. The traditional role of top management's objective-setting process is now reversed, but subjective judgment is still required at these lower levels. Leonard Merewitz and Stephen Sosnick nicely summarize the remaining dilemma: regardless of the authority level involved, appropriations cannot be justified, per se; there is no basis for determining whether the allocation of funds could be improved and no way of ascertaining the efficiency associated with any given allocation and expenditure.²⁴

Yet there is the expectation in zero-base budgeting that lower-level management is capable of and motivated toward the identification of legitimate output goals within their respective decision units, searching out alternative courses of action, quantifying them, and ranking them accordingly. No doubt this would stimulate some degree of experimental behavior, coexistent with a transition of the normal planning roles for lower-level management.

The method of calculation in the zero-base-budgeting methodology raises other ambiguities and displays still other destabilizing features. Unlike the incremental calculation of line-item dollar magnitudes inherent in traditional budgeting systems, the method of calculation in zero-base budgeting has been called comprehensive.²⁵ This feature relates to several destabilizing attributes, because the calculation method envelops the process of evaluation in the planning stage and affects error recognition and correction.

Evaluation is certainly complex—each independent decision package is presumed to focus on outputs of the system as they relate to strategic objectives. Operationally, however, cost-benefit analysis can only quantify the costs (inputs). There is ample room for extremes of bias in the evaluation process, which further contribute to ambiguity.

The evaluation process (in a prior sense) is ahistorical: there is no retention by definition because all discretionary expenditures for the current budget period are reviewed "from scratch." From one time period to the next, the consistency and continuity of decision packages are nonexistent. The result is induced amnesia. The presence of such a state in the budgetary process prompted Wildavsky to conclude that "both calculation and conflict increase exponentially, the former worsening selection, and the latter, correction of error."²⁶

In a different, but not contradictory, sense, the overlapping qualities of zero-base budgeting can inhibit errors and lead to a more reliable information system. Not only are decision units viewed as separate entities, but each decision package developed within any decision unit is assumed to be serially independent and allowed to stand on its own merit. Therefore, in

addition to potential diagnostic capabilities manifested in the cost-benefit evaluation, the impact of errors or malfunctions (in an ex post sense) can be handled in isolation. Marginal adjustments to the organization are possible because of the parallel network of mutually exclusive decision packages.

The calculation of cost-benefit decision packages illuminates other destabilizing properties. As Wildavsky observes, "For purposes of resource allocation, which is what budgeting is about, ranking objectives without consideration of resources is irrational."²⁷ Yet this is the core of zero-base budgeting's procedural mechanism: decision packages are prepared without explicit knowledge of the amount of funding or even whether any of the decision packages within a decision unit will be funded. When such "systems" logic is combined with nonquantifiable outputs, it is clear that zero-base budgeting does not avoid filtering away inconsistencies and incompatible information. Susan Streufert found that this type of decision environment increases the complexity of the data base, enhances anxiety and frustration, but renders potential problems more visible.²⁸

The ranking process, distinct from calculation, harbors additional destabilizing design features which arise from two fundamental issues. First, the specific level in the hierarchy at which to consolidate decision packages must be decided. One possibility is to have only a single ranking at the top of the organization, but this would certainly create some severe logistics problems and effectively negate the role of middle management in the budgeting process. Instead, consolidated rankings are generally advocated for each progressively higher authority level in the organization structure. Phyrre suggests that the optimal arrangement would ultimately depend on factors such as the number of decision packages involved, time and effort associated with reviewing these decision packages, the ability and willingness of lower-level managers to rank unfamiliar activities, and the need for an extensive organizational review.²⁹ In a dynamic environment, it is most unlikely that standardized procedures or elements of consistency would ensue.

Phyrre also advocates either a consolidated, multilevel ranking process conforming to the

"formal" authority hierarchy or one based on groupings of similar activities that transcend normal authority boundaries. Either situation yields flexibility and emphasizes evaluation; however, the latter clearly would induce increased role ambiguity and conflict, not to mention the increased complexity of ex post facto performance evaluation. On the other hand, the multilevel approach to ranking would encompass more review, increase the search process, and enhance the sensitivity of the organization to change signals reflected in proposed discretionary expenditures.

The second fundamental issue associated with ranking concerns the basis for determining the ranking of decision packages at any particular level in the organization. The absence of one definitive method contributes to ambiguity in zero-base budgeting in additional ways. Phyrre originally suggested a committee type of voting mechanism. For example, decision unit managers from the same level of authority would form a group chaired by the next higher ranking manager. This scheme would continue to the top of the organization until all decision packages were ranked. More recently, weighted voting schemes, the development of a value matrix, and methods relying on bargaining and negotiation have been advanced as alternative bases by Henry Knight.³⁰

All of these techniques manifest a high degree of arbitrariness and political sensitivity because the output goals represented by each funding request are ambiguous and ill defined. A similar anomaly occurs with ex post facto evaluation. The rationale underlying these assessment problems will be examined more fully in the following section. In the final analysis, it appears to be elements of power, authority, and bargaining prowess by lower-level managers that would dominate any chosen technique.

The Output. The output for zero-base budgeting is a vector of ranked decision packages identified in order of decreasing benefit to the organization. At this point, only one decision remains for top management: resources are simply allocated to decision units by funding all decision packages up to the cut-off point, which exhausts the resources available for the current budgeting period.

It is perhaps expedient at this point to caution that zero-base budgeting is a product of logic, not historical evolution. Its purposes and procedures represent a set of postulated propositions. However, the design of its output format is surely as artistic (versus scientific) as that found in any other discipline. To be sure, the literature is replete with how-to-do-it formats for decision package design. They can be simple or complex, detailed or vague or easily rearranged, and can stimulate as much creativity as management is willing to put forth. Currently available tutorial and seminar material substantiates the immense flexibility and possibilities for experimental behavior induced by zero-base-budgeting format design.

In principle, the output of zero-base budgeting has a built-in contingency mechanism. To the extent that changes occur in the level of available funding during the budget cycle, the final ranking may be easily reviewed and rearranged so that discarded decision packages are reactivated. Of course, changes in the environment may not affect the level of funding which is available per se, but may create a need to order decision packages in a different way at some interim point during the budget cycle. The output vector of ranked decision packages in this case allows for easy review and permits "localized" changes if necessary, without jeopardizing the assumed benefits of all the remaining, previously activated decision packages.

Control and Evaluation. The formalized features of zero-base budgeting abruptly end with the systems features outlined above. Budgeted discretionary cost data would normally be fed into the chart of accounts contained in an organization's accounting system and ex post facto monitoring would ensue.

However, one of the reasons for carefully delineating the joint attributes of discretionary cost (the fixed and controllable) is to facilitate the identification of the type of assessment which is appropriate for measuring the systemic relevance of zero-base budgeting. James Thompson provides a convenient two-dimensional matrix for analyzing this problem.³¹ Along one dimension, beliefs about causes and effects can be classified at the extremes of "complete" and "incomplete," while goal rele-

vance can be partitioned into the categories "crystallized" and "ambiguous" along the other dimension.

For the joint state "complete/crystallized," measures of *efficiency* are appropriate, because input-output relationships can be accurately defined and put into operation on a relative basis. However, the joint state "incomplete/crystallized" calls for the instrumental test of determining whether the desired goal is achieved, and is typically referred to in accounting as a measure of *effectiveness*. Efficiency tests are not appropriate here because there is no way of assessing the causal action. Finally, if goals are ambiguous, then, regardless of the state of knowledge about causes and effects (the complete or incomplete), assessment must be done by social reference groups.

There seems to be a very close association between the evaluative concepts germane to zero-base budgeting and the framework established by Thompson. There are no scientific standards available for discretionary costs because the optimal relationship between results (output) and resource requirements (input) is not known. Results from specific discretionary activities such as research and development nearly defy identification, never mind quantification. Thus, efficiency and effectiveness tests are inappropriate for zero-base budgeting. This leaves social reference tests as constituting an integral part of the evaluation and assessment of zero-base budgeting. Peer group rankings, value matrices, and bargaining all reflect just this kind of test.

For purposes of ex post facto monitoring, established amounts of discretionary cost spending for each decision package or unit can be viewed as crystallized in the absence of no changes. However, knowledge of causes and effects in discretionary cost spending still remains less than scientific. Under such circumstances, accountants traditionally resort to effectiveness measures over the budget cycle. Such assessments are equally appropriate for zero-base budgeting.

In summary, each system element of zero-base budgeting reveals a subset of destabilizing properties. Admittedly, there is not complete uniformity of these properties across each ele-

ment in the system. In aggregate, though, zero-base budgeting has the potential to permeate the organization and change signals reaching not only the organization but also different management levels. It can foster the type of experimental behavior and variety in communication envisaged and endorsed by Burns and Stalker, Hedburg and Jönsson, Landau, and Wildavsky.³² Focusing on individual decision makers, zero-base budgeting envelops a variety of perceptions and evaluation techniques, such as the mixed and integrated cognitive styles noted by Richard Mason and Ian Mitroff, the learning styles studied by David Kolb, and multiple performance criteria acknowledged by V.F. Ridgeway.³³ Finally, zero-base budgeting has the potential to counteract the stabilizing process by which changes in budgeted discretionary expenditures (signals) are normally brought about. The search process of establishing decision packages, adding, deleting, or rearranging rankings as the process transcends the hierarchy en route to the ultimate ranking at the top, is fundamentally different from the incremental stabilizing approach of the traditional budgeting process.

In short, zero-base budgeting manifests a rich set of destabilizing attributes which are rooted in its entire methodology. Inherent in its process are ambiguity, inconsistency, redundancy, multiple perspectives, flexibility, and impermanence. The basic philosophy of zero-base budgeting promotes innovative and experimental behavior, encourages evaluation of strategic, managerial, and operational decision making, and stresses proaction in a changing environment.

The Final Message

There is ample evidence from recent organization research that no one characteristic can suitably describe the complexity of organization structures in changing environments. Similarly, there is no theoretical or practical reason to treat the corresponding heterogeneous kinds of activity that characterize these organizations as homogeneous relative to their budgeting information content. In addition, there is every indication that the environment is changing, changing in such a manner that it has a turbu-

lent, not a smoothing, effect on the nature of discretionary cost, which is a perpetual phenomenon of organizational activity.

It seems imperative that accounting researchers dispel their disparaging remarks about whether zero-base budgeting is or is not better than traditional budgeting. Managers, too, must abandon the idea that a single stabilizing budgetary process will promote organizational equilibrium in a changing, diverse environment. They must reshape their thinking to include the planned coexistence of both destabilizing processes (zero-base budgeting) and stabilizing processes (traditional budgeting) within a single budgeting information system.

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