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THE USE OF RATIONAL SYSTEMS IN BOUNDED RATIONALITY ORGANIZATIONS: A DILEMMA FOR FINANCIAL MANAGERS

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INTRODUCTION

It has been decades since financial managers were trained to believe that employees and organizations could be handled as if everyone was a simple rational cog in a big machine. Cognitive limits to rationality, motivational theories, leadership, and human relations theories are all based on deviations from the simple rational model of man. Yet management technology is still dominated heavily by systems which are fundamentally based on the assumptions of economic rationality.

If people and organizations differ from the implicit assumptions of a management technique, managers should be seriously concerned that the technique is not producing the outcomes promised and may in fact be producing harmful outcomes which are not anticipated by the providers of the technology.

Management techniques such as Planning, Programming, and Budgeting Systems (PPBS), Management by Objectives (MBO), and Zero-Based Budgeting (ZBB) rest upon the rational model. While studies in the management and accounting literature have analyzed the appropriateness of some of these techniques (c.f., Jablonsky and Dirsmith, 1978; Dirsmith and Jablonsky, 1979a; and Dirsmith and Jablonsky, 1979b) and, more generally, the rational model (Staw, 1980) in various environments, rationally-based techniques continue to be adopted regardless of the empirical assessment of their desirability. Years after the US federal government had discarded PPBS, other governments continued to adopt it. Zero-based budgeting swept through the USA just as PPBS did with many organizations adopting it without evidence of its utility in their environment. MBO systems have received mixed evaluations – partially resulting from differences in the techniques and values used in evaluating the systems (Jablonsky and Dirsmith, 1979a). However, MBO systems are still actively being implemented. For instance, in 1979 the US Army implemented what is essentially an MBO system for officer performance appraisal. Since all such systems have implementation and operations costs as well as some potential impact on performance of the organization, their appropriateness is of critical importance to the government manager.

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This article discusses some general weaknesses of rationally-based management techniques. To make the discussion more concrete, examples of the weaknesses in one management technology, MBO, are discussed with a recognition that similar weaknesses are present in other rationally-based systems. This article is intended neither to review all of the literature on the advantages and disadvantages of MBO (let alone *all* rationally-based techniques) nor to present *the* management technique which will resolve the problems of management. Rather this article looks at rationally-based techniques and seeks to address the question, 'How can we deal with them given their sometimes obvious problems?'

We first review MBO in relation to a number of concepts in the organizational literature, and then suggest some possible changes in the implementation of MBO.

MBO - A RATIONAL SYSTEM

The underlying structure of MBO assumes the ability to develop hierarchical chains of objectives from the most overarching goals of the organization down to the lowest level of organizational activity. The identified objectives are to be linked with the job responsibilities and resource use in the various parts of the organization. In many cases, the development of the hierarchical chains and the definition of the job responsibilities and resource use are one and the same activity. Thus there are at least two sides to the MBO structure. The first is a consistent, rational, hierarchical structure of objectives that leads to relations among all organizational activities and the organization's most important objectives. The second is the use of such objectives for managerial functions such as to control, manage, motivate, and reward appropriate behavior and use of resources by individuals in the organization.

The managerial functions of MBO imply the development of objectives that are clearly defined and measurable. The measurable objectives are normally identified with budget allocations to the responsible manager. The financial manager provides the expertise to translate the objectives into budgetary terms and to track the use of the resources to meet specific objectives. Involving the individual manager in developing operational objectives and resource requirements ostensibly generates commitment to those objectives. Managing on the basis of those objectives hopefully sparks individuals to use their creativity to reach organizational goals - resulting in increased effectiveness. Evaluating the individual based on the accomplishment of such objectives rewards those who are most productive and reinforces the importance of the objectives and behaviors which achieve those objectives. MBO emphasizes the accomplishment of objectives which are of direct value to the organization rather than actions performed or use of inputs. To make the system work, the objectives must be clear and operational so that the individual can perform without excessive ambiguity concerning what is required and how it will be measured.

Thus, in the best of all possible worlds MBO is a management system that ensures or at least reinforces a set of highly motivated individuals working toward clearly defined organizational objectives. However, strict applications of MBO can be counter-productive. The following section identifies how a strict application of MBO could reduce organizational effectiveness.

ORGANIZATIONAL IDEAS

Different theories illuminate different perspectives of organizational behavior (c.f., Allison, 1971). That is, different models highlight different aspects of the system. A practical example is in the way different consulting professionals would arrive and make totally different analyses of the same problem. Say you were uncomfortable with the way your payroll system works. A computer systems consultant might provide a new payroll data-processing system. A psychologist might focus on supervisor-subordinate interactions. A time study and organizational systems person might time employees filling out reports. And so on. The consultants' frames of reference provide different and not necessarily consistent perceptions of the organization. This section will take a number of ideas from the organizational literature and discuss how these may be relevant to the interaction of the financial manager with MBO as a management system.

The first idea is that the difference between objectives and constraints is largely arbitrary (Simon, 1964). In an operations research example, one can reach the same maximum by maximizing quality subject to a cost constraint or by minimizing costs subject to the appropriate quality constraint. In the MBO system, while the objectives were intended to free the manager from an overly detailed procedural job definition, the repeated honing of definitions of objectives may have the opposite effect – that of obtaining definitions of objectives so precise that they stifle opportunities for innovation and increased productivity. Such honing could seem innocuous: replacing monthly objectives with weekly objectives. But weekly objectives, if taken seriously, mean that the organization cannot take time for building – for activities which may incur costs in this period but pay off in the long term.¹ Thus, continued honing and tracking of objectives can result in a management structure which rigidly constrains the manager and does so in a manner which is even worse than the undefined or implicit system. By replacing an implicit procedural set of constraints (the manager must operate an employment office) with an explicit set of highly tuned 'objective' constraints (the manager will maintain the same number of placements per period), one can create a situation where the manager is even more constrained than previously, with obvious implications for innovation and managerial clan.

The second and perhaps most important concept is the idea of bounded rationality (Simon, 1976). Bounded rationality refers to the idea that individuals attempt to be rational but face severe limits on their ability to handle informa-

tion. In economics, the totally rational manager knows the total cost of producing another unit of output at all output levels and the quantity of output saleable at all prices. Thus an optimally profitable level of output can be set. In the bounded rationality perspective one recognizes that the manager knows some of the costs of output but has only the roughest conceptions of the total cost including all corporate and staff costs, and at best only knows the effects of price changes on sales near the current price level (and even that is a bit weak since different marketing strategies can change the sales at a given price). Thus a manager with bounded rationality thinks about management in a very different way than 'economic man' – relying on feedback from the market and rules of thumb such as constant mark-up pricing. In the public sector, the totally rational manager also knows the total cost of producing another unit of output or service at all levels, and all possible combinations of outputs which can be produced at any budget level. In reality such is not the case. The economists assume that the rational public manager also knows the contribution to the public good of each marginal dollar and so can allocate funds to maximize the public welfare. The real public manager relies on feedback from voters and politicians in judging which programs should incrementally grow and which should have reduced funding.

In thinking about the problems of bounded rationality in MBO systems, two obvious difficulties arise. First, the cause and effect connections that one needs to link the organizational behaviors with the top level organizational objectives are in many cases unknown. No one has the wisdom and mental abilities to provide an integrated and overarching understanding of all the organization's activities. But without that kind of overarching wisdom, it is quite likely that the objectives enunciated will be contradictory and perhaps even mutually destructive. The objectives and goals of one unit are very often achieved at direct cost to other units. For example, a central purchasing agency's objective of minimizing unit cost through large purchases conflicts with the local managers' objective of maintaining resource flexibility at the local level.

The second direct implication of bounded rationality is that the definition of objectives is going to be faulty. Given the need to use these objectives for short-term evaluation, the tendency is to disregard all objectives that are longer term (Hayes and Abernathy, 1980). For example, a health care agency may have an objective of eradicating tuberculosis in a particular geographic area. However, eradication of the disease is not particularly useful for evaluating the operation of mobile treatment units. Therefore, a more short-term objective is identified for the mobile units, such as perform N number of X-rays per day. In addition, the objectives can only be partially defined even in today's context. The measurement of that objective will be less than perfect (Euske, 1983). Consequently, taking the measured objectives as complete would result in reinforcing only part of the job and a part that may miss some important facets of the organization's needs. For example, Blau (1956) found a system that focused employment service personnel on performing interviews as opposed to placing

the unemployed. In that particular situation the job counselor's performance was measured by the number of individuals who were interviewed for job placement. Actual job placement was not considered in the performance measurement system and was consequently ignored by the job counselors.

Further related to the inability to define objectives is the possibility that it may be useful for parts of the organization to do things which the organization as a whole does not advocate. It may be productive to engage in 'hypocritical' activities (March, 1976); parts of the organization may learn by trying out ideas and behaviors which other parts of the organization find improper. Thus, a portion of the organization might try to decentralize resource allocation decisions in spite of an organizational tradition of centralized decisions. Such decentralization might provide for a more effective and efficient allocation of resources. In order to implement public policy, a portion of the organization may need to adapt to local styles of business in a manner which the organization does not allow. But the formal mechanisms of management by objectives assume that the top objectives are fully consistent with the lower ones and can be written in a manner that such adaptation is unnecessary.

In addition to the limits on understanding the current organization, managers also have to face the fact that they have even less understanding of future organizations. Karl Weick has proposed that 'plans are not a blueprint to future success but are rather an interpretation of the past extended into the future. Plans seem to exist in a context of justification more than in a context of anticipation. They refer more to what has been accomplished than to what is yet to be accomplished' (Weick, 1969, p. 102).

In attempting to plan the future of the organization, realistic planning requires an understanding of the current organization and situation, but the primary problems of the future are rooted in the unforeseeable. Rather than relying on planning for effective behavior patterns, organizations have traditionally relied on feedback and adaptation (Cyert and March, 1963). Rather than a pattern of behavior which requires adequate forecasting of future events, the firm may choose a less risky strategy of taking actions which have high probabilities of providing useful feedback and relying on step by step sequential commitments to limit risk (Lindblom, 1959).

But surely the planned action will be more appropriate than the unplanned action. Surely coordination requires planning. If plans are primarily extrapolations of the present as was found by Hunsicker (1980), they may encourage the organization to believe that the past trends will predominate, and thus increase the tendency to maintain current services and systems to implement policy, excluding the possibility of new and potentially more promising activities.

Planning mechanisms tie into the problems of MBO through the connection between plans and sub-unit objectives. Budgets connect plans to objectives at all levels of the organization. While some organizational problems may require long-range planning, the use of such plans will tend to constrain the potential adaptation of the organization, particularly through centralization.

In short, the rational planning modes inherent in many MBO systems can be dysfunctional. Differing applications could severely constrain mid-level managerial freedom and creativity, force rational and consistent organizational progress toward inappropriate ends, misdirect managerial incentives, and even force an involuntary 'work to rule' as defined through the financial management system. No organization can function strictly on the basis of its formal procedures. Indeed, a little aggressiveness in applying organizational rules can result in a complete stoppage of production as workers wait for all the proper papers and procedures to be executed rather than getting on with the job.

Well intentioned efforts to manage through a carefully detailed MBO system could be dysfunctional for the organization. For instance, the federal government in the USA is actively enforcing its policy of minimizing the potential for fraud, waste, and abuse. This aggressive stance has generated specific operational objectives which have at least three outcomes:

- (1) increased time and money spent documenting and justifying spending,
- (2) increased emphasis on and allocation of resources to auditing the use of federal resources, and
- (3) a possible reduction in fraud, waste, and abuse within the federal government.

However, it is an open question whether the dollar savings accruing from the third outcome are greater than the costs of the first and second outcomes.

IDEAS FOR FIXES

The nicest property of the rationally-based management technique is conceptual clarity – it is superficially unambiguous. The alternatives presented in this section are not as neat but neither is the world. In addition, some measure of caution is warranted in making comments on what should be done by others. Organizations that have MBO (or other rationally-based systems) are probably sufficiently addicted to it that some weakening of the addiction is perhaps far more reasonable than attempting to go 'cold turkey'. Consequently, the authors offer some tentative suggestions on improvements to MBO systems rather than a completely new system.

Suggestion One: Loose Couple the MBO System

Loosely coupled systems refer to systems where the components may be highly integrated but the connections between the components are loose. For example, in production environments inventories are a way to loosen the coupling between production and shipments. Similarly, the planning group should be loosely coupled with most of the parts of the organization – it produces nothing the

other components of the organization will find uncomfortable to be without in the short run.

In their study of MBO in two hospitals, Covaleski and Dirsmith (1981) found that the tightly coupled MBO systems that were originally implemented were rejected by the operating personnel. The ability of the hospital administrative structure to control and direct the operating units of the hospital was limited, probably due to the complexities of the relations between medical staff and the hospital administration. But the units studied had historically operated in a moderately independent manner and had been successful as judged by the hospital management. The imposition of a "pure", technically rational version of MBO [that] represented an understandable response by these two hospitals to the need to reduce costs' (Covaleski and Dirsmith, 1981, p. 415) was rejected by the staffs and eventually replaced with an intra-unit form of MBO which emphasized the development of subunit objectives and their attainment but did not attempt to formalize the system into a hospital-wide rational objective setting process.

The manager should consider whether the management system being used in the organization is in conformity with the current or appropriate degree of organizational integration. If the organization does not need tight coupling between subunits, why should the effort and annoyance of such coupling be forced to comply with the MBO ideology? Perhaps objectives should be used at some levels and not others. Maybe they should not be used at all. For example, a financial reporting system could focus on operating information for the local manager rather than the information needs of top management.

Suggestion Two: Technology of Foolishness

As March (1976) has argued, it may be that some useful activities cannot be justified on the basis of what we know to be a good thing today. That is, if we have not tried it, we may not know that it is a good thing. Yet, we may not be able to try it if we need to defend it on the basis of today's objectives. Fundamentally, the technology of foolishness can be viewed as using intuition (Calder, 1970).

Perhaps managers should allow subordinates a certain amount of flexibility to undertake some activities which are not predefined and which will be evaluated as to their usefulness after the fact. That is, managers could be expected to undertake activities which would be judged after the fact as to whether they were interesting, whether the organization had learned from them, and whether they might lead to something the organization should value. The financial manager faces the problem of tracking resources used while keeping sufficient organizational slack to support such experiments (Dyckman, 1981) or segregating specific funds for such experiments, but if some degree of slack is supported by the top level of the organization, tracking problems are minimized.

The point is to free up resources. Resources to allow managers to do some of the useful things they had planned. Long-term systems improvements may require short-term costs. Resources to allow managers to take chances on new and risky innovations. *If you want an innovative and progressive organization, allow some freedom for managers at all levels.*

Suggestion Three: Keep Objectives General

Identify the directions in which improvements should be made rather than the specific items to be improved. Avoid tying down staff. Recognize that the staff will receive lots of informal feedback on their failings – do not think the MBO, or any rationally-based system, is all of it. Thus the honing should be done by the person on the spot and kept flexible for the future. *It is better to work towards a vague imperfect objective than towards a precise imperfect objective.*

EVALUATING RATIONALLY-BASED MANAGEMENT TECHNIQUES

While the previous section outlined some possible improvements to the rigid application of one rationally-based management technique, the Management by Objectives system, these are really untried ideas, not proven methods. On the other hand, the development of 'demonstrated techniques' requires a substantially different focus than much of the current research. Practically speaking, managers must rely on their own experience and knowledge to answer questions such as, 'How does the manager ensure that a particular management system promotes behaviors that meet organizational objectives?'

As a first step, the financial manager might adopt a cost-benefit framework for the analysis of management systems with the recognition that the relevant costs and benefits are probably more related to the behavioral impacts of the systems than they are to the direct costs of the system itself. Currently a standard analysis of costs would include design, implementation, and operating costs in terms of personnel employed directly by the system; the benefits would be assumed to be due to the provision of important and useful information. As discussed below, both the costs and benefits are broader than these.

One of the most important direct costs of a management system may be the time that is required to adhere to the system by its users. Consider travel control systems for instance. While the normal system analysis would look at the cost of personnel in the travel office, a large number of much higher cost individuals may each devote moderate to substantial amounts of time completing the appropriate forms and dealing with problems. It should be emphasized that the analysis must be based on the time allocation as it actually occurs, not on some fabled system where all managers are optimally supported by clerical staff. Furthermore, if errors in travel forms are a direct personal cost to the manager who does travel, managers will have difficulty delegating such duties.

Or if (as is often the case), managers are not adequately supported, the forms will be completed at great cost to the organization by a highly paid staff. Such costs may be substantial.

On the benefit side, the analyst must begin to address the realized value of information. For instance, accountants have a long history of providing information which managers patently ignore and which consequently does not have realized value. An empirical assessment of the value of the information as actually provided and used is fundamental to addressing the value of a system. In light of the cognitive limits to rationality, the problems of information overload, and attention focusing, it is critical to ascertain what the actual use of information is and whether it is valuable:

What are the beneficiaries of the system supposed to do with the information?
What do they actually do with it?

What are the perceived incentives and problems of the managers who are supposed to use the system?

What are the intended and unintended secondary impacts of the system?

To the extent that changes in management systems impact actual managerial behavior in unintended ways, the major costs or benefits of the system may have little or nothing to do with the intended impacts (Ashton, 1976). For instance, a control system for travel may have an intended impact on fraud but may also have unintended impacts in influencing the amount of legitimate travel. Since no control system is perfectly adapted to all contingencies, it is fair to hypothesize that the tighter the control system the more time will be devoted to getting around it. Given the high cost of managerial time and the leverage inherent in changing decisions, the unintended impacts of a management control system could quite easily outweigh the intended impacts (Ashton, 1976). The point is that the manager needs to address the actual impacts of management systems, both the intended ones and the unintended ones.

SUMMARY

In spite of the common organizational wisdom that the rational conception of organizations is inaccurate, the dominant managerial technologies remain essentially rationalistic systems. Rational systems are attractive – they promote apparent simplicity, they are logically consistent, and they have desirable connotations of reason, logic, and scientific management. But misdirected logic is more dangerous perhaps than incremental learning, and apparently effective ideas have often proven counterproductive when humans get in to mess things up.

In attempting to provide some alternatives to the rigid rationally-based process, the present authors' proposals lack the elegance and simplicity of

rational systems. But real people differ from elegant economic models so it may be productive to develop managerial systems which are based on realistic assumptions, or at least to blend the economically rational and the humanly realistic. Given that rational systems are to be used, the manager must be sure that the system facilitates rather than hinders the accomplishment of public policy goals.

NOTES

- 1 See Hayes and Abernathy (1980) and Rappaport (1981) for discussions of the proposition that this kind of managerial approach has resulted in a general malaise of myopic management in North American industry.

REFERENCES

- Allison, G.T. (1971), *Essence of Decision* (Little Brown and Company, 1971).
- Ashton, R.H. (1976), 'Deviation-Amplifying Feedback and Unintended Consequences of Management Accounting Systems', *Accounting, Organizations, and Society*, Vol. 1, No. 4 (1976), pp. 289-300.
- Blau, P. (1956), *Bureaucracy in Modern Society* (Random House, 1984).
- Calder, N. (1970), *The Mind of Man* (The Viking Press, 1970).
- Covaleski, M.A. and M.W. Dirsmith (1981), 'MBO and Goal Directedness in a Hospital Context', *Academy of Management Review*, Vol. 6, No. 3 (July 1981), pp. 409-418.
- Cyert, R.M. and J.G. March (1963), *A Behavioral Theory of the Firm* (Prentice-Hall Inc., 1963).
- Dirsmith, M.W. and S.F. Jablonsky (1979a), 'MBO, Political Rationality and Information Inductance', *Accounting, Organizations, and Society*, Vol. 4, No. 1-2 (1979), pp. 39-52.
- (1979b), 'Zero-Base Budgeting as a Management Technique and Political Strategy', *Academy of Management Review*, Vol. 4, No. 4 (October 1979), pp. 555-565.
- Dyckman, T.R. (1981), 'The Intelligence of Ambiguity', *Accounting, Organizations and Society*, Vol. 6, No. 4 (1981), pp. 291-300.
- Euske, K.J. (1983), 'Budgeting and Public Management' in *Handbook on Public Budgeting and Financial Management*, by J. Rabin and T.D. Lynch (eds.) (Marcel Dekker Inc., 1983), pp. 401-415.
- Hayes, R.H. and W.J. Abernathy (1980), 'Managing Our Way to Economic Decline', *Harvard Business Review*, Vol. 58, No. 4 (July-August 1980), pp. 67-77.
- Hunsicker, J.Q. (1980), 'The Malaise of Strategic Planning', *Management Review*, Vol. 69, No. 3 (1980), pp. 8-14.
- Jablonsky, S.F. and M.W. Dirsmith (1978), 'The Pattern of PPB Rejection: Something About Organizations, Something About PPB', *Accounting, Organizations, and Society*, Vol. 3, No. 4-5 (1978), pp. 215-225.
- Lindblom, C.E. (1959), 'The Science of "Muddling Through"', *Public Administration Review*, Vol. 19 (Spring 1959), pp. 79-88.
- March, J.G. (1976), 'The Technology of Foolishness' in *Ambiguity and Choice* by J.G. March and J.P. Olsen (eds.) (Universitetsforlaget 1976), pp. 69-81.
- Rappaport, A. (1981), 'A Fatal Fascination With the Short Run', *Business Week* (4 May 1981), pp. 20-21.
- Simon, H.A. (1964), 'On the Concept of Organizational Goal', *Administrative Science Quarterly*, Vol. 9 (1964), pp. 1-22.
- (1976), *Administrative Behavior*, 3rd edition (The Free Press, 1976).
- Staw, B.M. (1980), 'Rationality and Justification in Organizational Life' in *Research in Organizational Behavior*, Vol. 2 (J.A.I. Press Inc., 1980), pp. 45-80.
- Weick, K.E. (1969), *The Social Psychology of Organizing* (Addison-Wesley Publishing Company, 1969).