LIVING SYSTEMS PROCESS ANALYSIS

FOR PROGRAM EVALUATION

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INTRODUCTION

Systems is an orientation and an approach to studying the behavior and development of institutions (Banathy, 1973). Any aggregate of people can be construed as a system, a set of elements interacting with a purpose. When such interactions become sufficiently established, the system often becomes recognized as an institution. Programs are commonly considered to be major functional components of institutions. An institution can be conceptualized as a system, and a program, as subsystem of the institution.

The systems approach involves three basic interdependent aspects: Systems Thinking, Systems Theory, and Systems Methodology (Banathy, 1983). Systems Thinking entails a set of assumptions, concepts, and principles applied in describing the structure, functioning, and development of the institution. Theory is the conceptual framework into which is put our thinking to describe and explain, in order to better understand the behavior of the institution. Methodology is the set of tools used to study the institution, and to improve our thinking and theory.

The purpose of this paper is to show that program evaluation is compatible with the systems approach, and that a particular systems methodology lends itself to the doing of a program evaluation. Particular attention in this paper will also be given to utilization.

LIVING SYSTEMS THEORY

Living Systems Theory (LST) is a set of formulations published by Miller (1978). LST is a general theory. It is comprised of several principles, such as equilibrium, isomorphy, negentropy, feedback, boundary, and holon, which purport to describe the properties and actions of several kinds of systems from the microscopic to the macroscopic levels, specifically from the living cell to the global communication network. Regardless of its kind and complexity, a system inputs, utilizes, and outputs matter, energy, and information. There are 19 critical subsystems or processes making use of these resources to favor the survival of the system (Miller, 1978).

The theory conceptualizes an organization as a living system with inputs, throughputs, and outputs of matter, energy, and information. It is a living system, often termed a human activity system, because the principal elements which comprise the system are human beings. In this case, the focus is the people providing the program as a subsystem and vital part of the larger living system, the institution.

LIVING SYSTEMS PROCESS ANALYSIS

A relatively new methodological tool, termed Living Systems Process Analysis (LSPA), can be used to examine the effectiveness and general functioning of an institution and a program from the viewpoint of 19 critical processes which involve the use of materials and human resources (Banathy and Mills, 1985; Ruscoe et al., 1985).

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LSPA is a systems methodology. It can become evaluation research, assessment, and consultation in regard to curricula, programs, divisions, departments, and branches of an organization. Again, it enables managers and program evaluators to assess program effectivenes as well as monitor program functioning.

LSPA makes use of the theoretical framework of LST as a foundation for its concepts, procedures, and rationale as a systems methodology. LSPA has been applied at the level of organization most often to assess organizational effectiveness of any component, process, or department involving resource utilization. This direction has a propensity toward evaluation.

As a subsystem of an institution, a program can be described in terms of its constituent elements involving program components, functions, and activities. Each element can be evaluated in regard to its effectiveness in relation to the program, and synthetically, the elements as a collective, that is the program can be evaluated in relation to the institution.

Whether it be for evaluation or some other purpose, there are 12 basic steps in conducting a LSPA (Collen, 1987). For program evaluation, they can be stated as follows:

1. Identify the program.
2. Identify the purpose of the program.
3. Identify the general inputs and outputs of the program.
4. Identify the 19 critical processes (subsystems) of the program.
5. Identify the functional areas of the program.
6. Set the purpose, scope, and goals of the LSPA.
7. Identify the inputs and outputs of each critical process and functional area.
8. Operationalize inputs and outputs.
9. Gather the data.
10. Analyze the data.
11. Provide feedback to the program providers.
12. Monitor the program.

Steps 6, 8 and 11 are key for giving the LSPA an evaluative emphasis. These three steps will now be discussed in turn.

SETTING LSPA FOR EVALUATION

Step 6 involves setting the purpose, scope, and goals of the LSPA in terms familiar to evaluators. Specific objectives must be stated and the program components must be clearly defined. In order to comprehend in advance the complexity and interpretability of the LSPA, those critical processes or subsystems must be selected for combination with the programs and specific program components to be evaluated.

Furthermore, if the LSPA is to be supported, members of the organization should participate. This is one step where interactive, collaborative discussion between personnel, stakeholders, and the evaluator can set goals and parameters. Such efforts usually increase potential impact and utilization. This emphasis on provider and user participation is becoming increasingly emphasized in the writings of leading proponents in the field of evaluation (Patton, 1986).

OPERATIONALIZING LSPA FOR EVALUATION

In Step 8, operationalizing the inputs and outputs as the dependent variables of the LSPA, the evaluator defines the flows of materials, energy, and information in terms of variables. An initial examination of consumption of raw materials, supplies, personnel activities, utilities, products, and related matters will generate a large list of potential dependent variables which relate to the flows of materials, energy, and information into, through, and out of the program

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and the institution. Banathy and Mills (1985) suggest six general dependent variables useful at the level of organization. They are as follows:

1. Volume-   The amount or rate of information processed.
2. Cost-   The time and effort involved in obtaining or processing information.
3. Clarity-   The understandability of information.
4. Usefulness- The meaningfulness and lack of redundancy of information.
5. Accuracy-   The lack of errors or omissions in information.
6. Timeliness- The up-to-dateness or currency of information and the lack of delay in obtaining or processing it.

Although these variables bias the LSPA toward information based indeces, which reflect the current application of LSPA to service organizations, there are many variables available to tap resource utilization in industrial and manufacturing organizations.

Common to evaluative research, questionnaires, surveys, interviews, records, ledgers, computerized information banks, and memoranda are sources of data for the LSPA. In addition, the evaluator may develop and pilot such data gathering tools as necessary. Each dependent variable must be operationally defined as an index which yields usable information for the analysis. Just as utilization-focussed evaluation stresses operationalizing such variables in terms meaningful to the members of the organization (Patton, 1986), LSPA shares this emphasis (Banathy and Mills, 1985; Collen, 1987).

Both quantitative and qualitative indeces provide the basis for the data analysis, in which the selected critical processes and program components are crossed to generate foci for the analysis. Typically, many of the reportable findings will stem from the evaluator's careful scrutiny of these foci.

UTILIZING EVALUATIVE DATA FROM A LSPA

Step 11 of a LSPA consists of providing feedback to the organization. Findings must be arranged, reported, and interpreted in a practical, useful manner. Often variable derivatives become meaningful, for example, cost to benefit assessment of a program component in terms of resource consumption relative to productivity, or service delivery relative to quality assurance, or resource consumption relative to personnel quality of performance and client satisfaction.

However the feedback is reported, the evaluator must minimize the use of jargon familiar to theorists and students of LST and LSPA, but highlight feedback in terms understandable and useful in the organizational context. Once again, this emphasis in LSPA coincides with that found in program evaluations (Patton, 1986; Weiss, 1972).

Primary emphasis is given to those indices which concern the organization, particularly points of abundance and waste, excellence and deficiency, inordinate cost and documentable benefit, slack and stress. The more noticeable findings can be profiled. Recommendations can be made for the redistribution of resources to improve organizational functioning. But with such recommendations, it is important to consider the anticipated consequences of redistribution. It will likely impact on the critical processes and program components. From the viewpoint of LSPA, these are the systemic implications of altering the flow of matter, energy, and resources throughout the system.

DISCUSSION

Although the methodology seems inherently more germane to monitoring program development, to date, LSPA is being used to assess organizational effectiveness in terms of outcome and current status. Such usage makes LSPA vulnerable to a criticism frequently directed at other research methodologies that generate a relatively static or snapshot set of

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findings, which are largely antiquated by the time they become available to those who need them. Deliberate emphasis on LSPA for monitoring program development through its formative years would appear more promising and truer to underlying assumptions of the systems approach. This latter usage means a more process-oriented rather than outcome-oriented thrust to the LSPA.

Nomenclature presents an acute problem, because the terms and the labels for concepts upon which LSPA is based are generally foreign and repugnant to potential benefactors and stockholders in the institution. A major commitment from evaluators to translate the concepts and methodology into practical language for others represents a formidable barrier to the execution and utilization of LSPA.

Generating and utilizing evaluative data are two distinct steps of the LSPA procedure. But they are tied together closely, for the quality of the findings depends to a degree on the quality of the planning. Feedback of findings to the program personnel is paramount. It brings to closure a process which involved their cooperation and participation.

LSPA is quite versatile regarding its purposes and the types of information that can be generated. In addition to the evaluative focus primarily geared to program personnel and their services, feedback to the organization can be particularly important for administrators, managers, and policy makers concerned with quality of organizational life, productivity, effectiveness, efficiency, resource utilization, cost, and overall organizational functioning. Typically, meaningful feedback at and above the level of the program in the organization is expected in a LSPA.

Many points emphasized in this paper concur with those recommended by Patton (1986) who stresses utilization focussed evaluation. He makes a compelling case for program evaluation which incorporates five basic aspects: 1) identify uses by users, 2) select methods that are relevant, 3) select variables and operationalize them so that they will yield usuable data, 4) negotiate dissemination between the evaluator and the stakeholders, and 5) obtain user participation in data collection and interpretation. In general, these five basic aspects mesh nicely with the 12 steps of a LSPA, and they enable the evaluator to better plan, execute, and utilize LSPA in program evaluation.

CONCLUSION

Despite the issues and difficulties, evaluators may find it advantageous to be familiar with LSPA. When the level of focus within the organization is the program, and the emphasis is evaluation, LSPA can provide a meaningful and detailed approach for program evaluation. It appears that three steps in the LSPA procedure are especially relevant to an evaluation focus. LSPA can be noticeably more evaluative in 1) setting the goals, scope, and parameters of the LSPA; 2) operationalizing inputs and outputs of the dependent variables; and 3) interpreting and feeding back the results to the benefactors, stakeholders, program personnel, and policy makers of the organization.

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