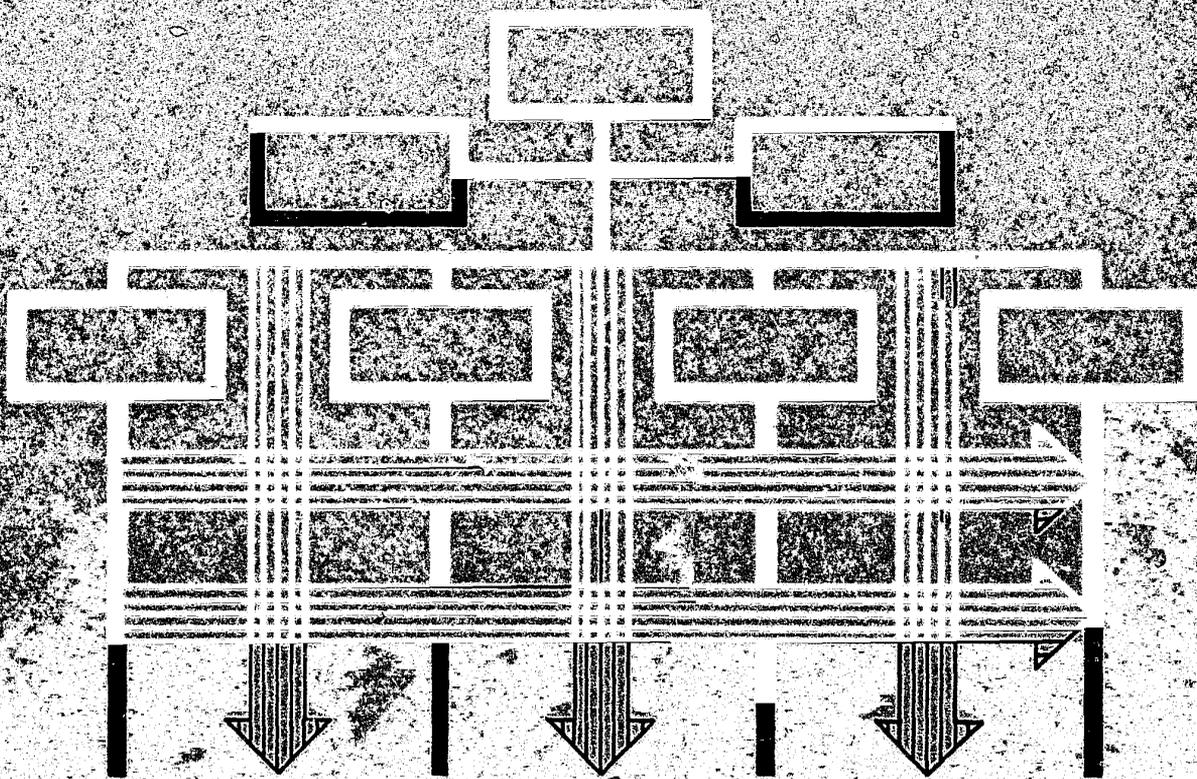


THE USE OF AN ENVIRONMENTAL IMPACT MODEL
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EFFECTIVENESS OF A LAW ENFORCEMENT AGENCY



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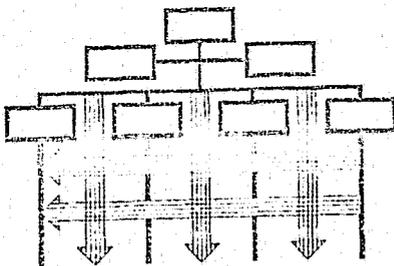
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ABSTRACT

The purpose of this paper is to describe a local effort to evaluate a nationally-funded law enforcement project: The Bay County Organized Crime Control Unit (OCCU). In an effort to gain operational information useful at the local level, community leaders funded an evaluation effort based on a basic systems model of the project organization. The basic strategy of the evaluation was to identify the impacts of project operation on its immediate environment.

The paper discusses the following topics: (1) the development of an impact model of organizational effectiveness based on systems concepts; (2) the application of that model in the evaluation of the Bay County OCCU; and (3) reservations to the use of the model.

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Major experiments with social policy (including law enforcement) have been under way at the national level for several years. These experiments are frequently operationalized through local project organizations designed to bring a particular technology to bear on a specific target population. Critical questions are now, more than ever before, being asked about the value of these programs for social change and for the improvement of the nation's well being. In response to these questions, there has arisen a technology of policy evaluation, largely sponsored and encouraged by agencies operating at the national and regional levels. Evaluation has been focused at the program level: data are collected from the local projects within a program, and program-wide inferences are developed for use in national policy decisions.

The local project organizations composing national programs participate in an evaluation process that is focused beyond the community level. Local projects frequently have access to program evaluation data but have little data for use in making local operational decisions. Governmental leaders at the local level also frequently lack data to evaluate the nationally-funded projects in their own communities. (The data that are available are frequently inappropriate and untimely for decision making.) Many communities have attempted to solve the information deficit problem by conducting their own evaluations of outside-funded projects.

The purpose of this paper is to describe one such local effort to evaluate a nationally-funded project operating in Bay County, Texas: The Bay County Organized Crime Control Unit (OCCU). The evaluation was conducted

by the authors using a basic systems model to draw conclusions about the project organization's effectiveness. The paper will describe (1) the development of an environmental impact model for assessment, (2) the application of that model in the assessment of the OCCU, and (3) the reservations to the use of the assessment model.

I. DEVELOPMENT OF AN ENVIRONMENTAL IMPACT MODEL OF ORGANIZATIONAL EFFECTIVENESS

In preparation for the evaluation of the OCCU, the authors used basic systems ideas to develop a framework for use in the evaluation. This framework can be explained in terms of (1) basic systems concepts, (2) a systems definition of organizational effectiveness, and (3) strategies for measurement.

A. BASIC SYSTEMS CONCEPTS

Of late, the most widely-publicized schema for viewing an organization has been the systems approach: the organization (or "the system") is viewed as a set of interrelated parts composed of energetic inputs, transformation processes, structure, and energetic outputs. Emphasis is placed both on intra-system processes and on interface transactions (exchanges of energetic output between the system and other systems, commonly labeled as the environment). According to the systems view, the organization is constantly involved in multiple exchange relationships with its environment: quantities of energy are imported from the environment, are transformed according to the rules of a core technology, and are exported into the environment.

Three system properties are central to the process of determining organizational effectiveness: system outputs, environments, and impacts. System outputs may be defined as those products and/or services produced by the organization and delivered to customers or clients outside the organization. Environment may be defined as those individuals, groups, or other systems (organizations) that either (1) receive or influence the primary organization's outputs or (2) provide or influence the input of the primary

organization. Environmental impact may be defined as the change or effect that an organizational output causes in an element or part of the organization's environment. According to systems theory, an organization continues to exist by producing outputs which have environmental impacts whose value exceeds (in the long run) the value of the organization's needed inputs.

B. A SYSTEMS DEFINITION OF ORGANIZATIONAL EFFECTIVENESS

Organizational effectiveness can be defined operationally as the degree of influence or the amount of impact that an organization has on its own immediate environment. Environmental impact has been described as the ultimate measure of effectiveness.^{1,2} Impact may be increased by increasing technical efficiency or by using political means (convincing the environment that the organization's outputs are unusually valuable).³

The notion of organizational efficiency, although usually an important part of the concept of effectiveness, will not be considered in this paper largely because of the argument presented by Thompson who suggested that efficiency tests are inappropriate when dealing with organizations in which the knowledge of cause and effect relationships is incomplete.⁴ Although the goals of a social-service organization may be clear, the "one best way" to achieve those goals is rarely evident. When dealing with such organizations, it may be more appropriate to use an instrumental test that asks the following question: Does the organization have the desired impact?

C. THE EVALUATION OF ORGANIZATIONAL EFFECTIVENESS

The evaluation process is built on three important cornerstones: (1) a sound view of the organization, its outputs, and environmental impacts; (2) knowledge of the organization's standards of desirability; and (3) the

ability to compare organizational desires with actual impacts in such a way that meaningful assessment can be made. The most difficult problem in evaluation is usually the measurement of impact.

Impact measurement can be logically approached by defining two dimensions that determine the type of measurement to be used: (1) the measurability of change in the impacted environment; and (2) the number of different influences (organizational outputs) affecting the environment. When the two dimensions are combined as in Figure 1, four different strategies for gauging impact can be identified.

	Influencing Activities Attributable to One Organization	Influencing Activities Attributable to Multiple Organizations
Environmental changes directly measurable	1. Direct impact measured I.	1. Total impact measured 2. Total organizational outputs measured 3. Fractional output determined and impact attributed III.
Environmental changes not directly measurable	1. Organizational output measured 2. Impact inferred II.	1. Total organizational outputs measured 2. Fractional output determined and impact inferred IV.

FIGURE 1: TAXONOMY OF ENVIRONMENTAL IMPACT MEASUREMENT STRATEGIES

In situation I, the impacted environmental element can be identified and its changes measured, producing a direct measurement of impact for comparison with desired impact. In situation II, the impacted environmental element cannot be measured; the organization's output is measured instead and the organization's impact is inferred based on previous research, experience, or logic.

In situation III, the total impact on an environmental element is measured directly. All organizational outputs causing the impact are then measured, and a fraction of impact is attributed to the focal organization based on the organization's contribution to total output.

In situation IV, an estimate of an organization's impact can only be developed through a two-step process. First, all organizational outputs affecting an environmental element are identified and measured. Second, the fraction of total output attributable to the focal organization is determined and the likely impact is inferred based on research, experience, and/or logic (as in situation II).

The approach to the assessment of organizational effectiveness taken by this paper can be summarized as follows:

- (1) Organizations are seen as systems that produce outputs designed to have certain impacts on elements of the environment;
- (2) The effectiveness of the organization is synonymous with its impact on its environment;
- (3) Organizational effectiveness is assessed (or evaluated) by determining environmental impact and comparing that impact with the desired impact.

II. APPLICATION OF THE MODEL TO A LAW ENFORCEMENT AGENCY

The model outlined in Section I was used in a two-year evaluation of a local law enforcement project created in Bay County from funds allocated by the Law Enforcement Assistance Administration (LEAA). The application of the model will be described in terms of (1) the project's history, (2) a simple systems model of the project organization, and (3) several examples of the assessments used in the project evaluation.

A. PROJECT HISTORY

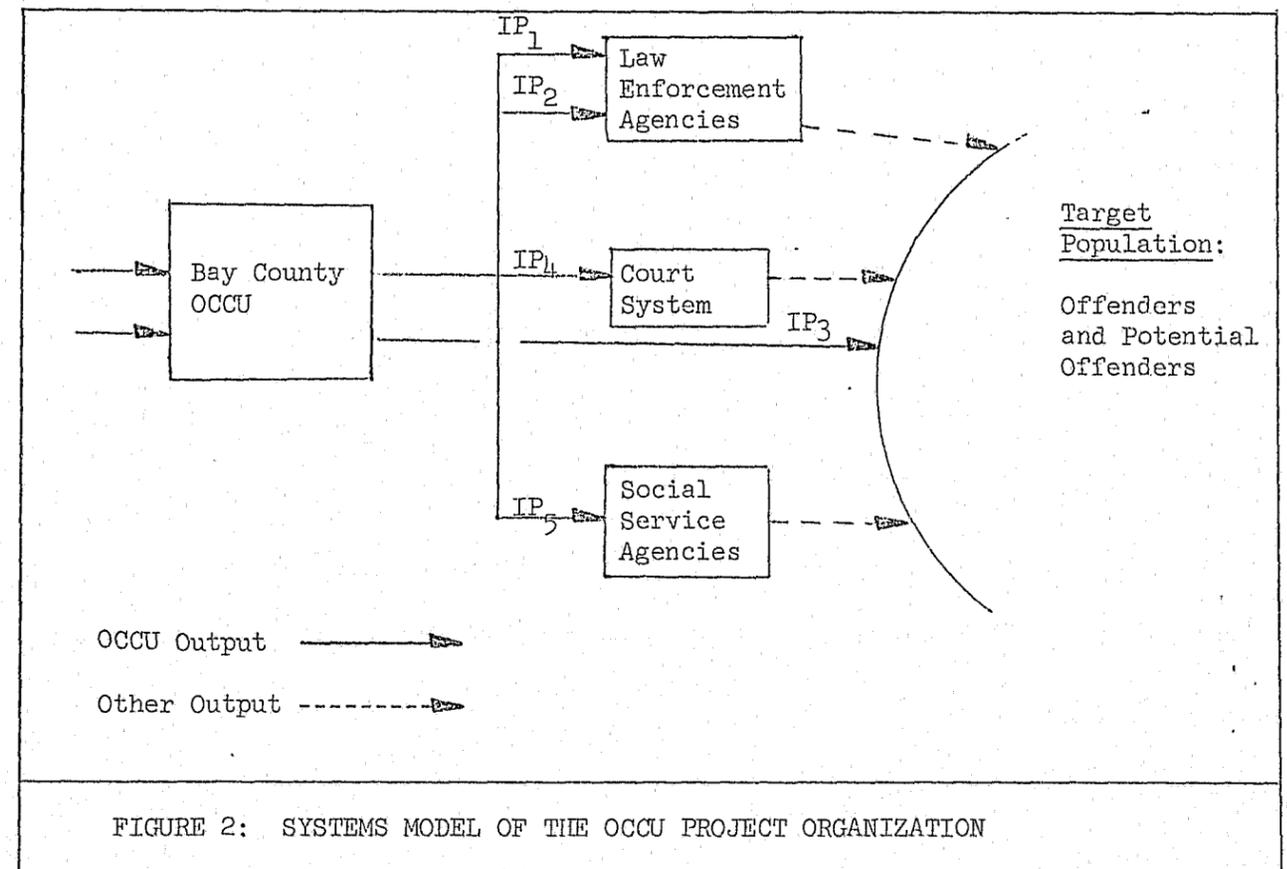
Prior to late 1971, law enforcement in Bay County was provided by eight independent law enforcement agencies, each with its own territorial boundaries, radio systems, and operational policies. Over the previous years several incidents had occurred that made more coordination between agencies seem desirable. In mid-1971, several community citizens and the four largest law enforcement agencies agreed to submit a grant request to secure funds for the creation of a county-wide coordination agency to pull together many of the county's law enforcement efforts. The grant request was accepted by the Texas Criminal Justice Council (operating on LEAA funds), and the Bay County Organized Crime Control Unit was formed from officers from the county's major law enforcement agencies. The stated purpose of the Unit was to serve as a county-wide intelligence unit, a law enforcement coordinative agency, and a specialized investigative unit for narcotics-related and organized criminal activity.

Because matching funds for the grant were being provided by the County and by a private foundation, and because some community leaders were unsure of the degree of agency cooperation that could be obtained, a local

project evaluation was chartered. During the Unit's first two years of operation, eight quarterly evaluation reports covering several aspects of Unit operations were delivered.

B. A SYSTEMS MODEL OF THE PROJECT ORGANIZATION

Figure 2 shows a simplified schematic of the project organization showing the project's outputs and environments impacted by the OCCU. The impact points (IP) on the schematic are associated with OCCU outputs and environments as follows: (IP₁) human resource development services to law enforcement agencies; (IP₂) intelligence/coordinative services to law



enforcement agencies; (IP₃) investigative and law enforcement activities applied to the target population of offenders and potential offenders; (IP₄) completed cases to the county court system; and (5) information and coordinative services to other county social-service agencies dealing with the same target population. Note that only one organizational output dealt directly with the target population of offenders and potential offenders; most of the organization's outputs primarily affected other agencies.

C. SAMPLE ASSESSMENTS USED IN THE PROJECT EVALUATION

Numerous assessments of Unit operation were performed over the two year period. For purposes of illustration, four of the assessments will be briefly described. The assessments were selected to demonstrate the use of different impact measurement strategies (as shown in Figure 1). In the description of each assessment, impact measurement is stressed. The process of comparison of measured impact to desired impact concluded each actual assessment.

1. Assessment of Impact on Human Resources in Law Enforcement Agencies

The first assessment example (a Type I measurement situation-- impact measurable and attributable to a single organization) deals with the OCCU's impact on the human resources in the county's law enforcement system (IP₁). The human resource system was visualized as a collection of law enforcement capabilities (both specific skills as well as knowledge). The OCCU impacted this collection of skills through the following outputs: (1) on-the-job training to agents from county agencies; (2) conducting schools in specialized law enforcement techniques (handling of explosives,

covert surveillance, warrant preparation, etc.), and (3) funding of out-of-county schooling for selected county agents.

The impact of OCCU operations on the human resource system was measured directly by surveying the changes in the aggregate law enforcement capabilities in the county agencies due to the direct intervention of the OCCU. The scope and depth of county-wide capabilities impacted by the OCCU were determined by observing the number and kinds of new skills and knowledges developed in county officers as well as observing the changes in the number of personnel with the selected skills and knowledges.

2. Assessment of Impact on Coordination/Intelligence Information

The impact of OCCU operations on the coordination/intelligence information in the law enforcement agencies was visualized as a Type II assessment problem (impact measurable but influences not attributable to a single organization). The distribution of sources of law enforcement information in the county was determined by longitudinal sociometric surveys of every investigator and law enforcement supervisor in the county. When the survey data were analyzed and plotted, the networks of law enforcement information sources were clearly visible for each of seven types of information (narcotics-related, organized crime, intelligence, major crime, etc.). (In the surveys, respondents were asked to identify their sources of law enforcement information and to estimate the amount of time spent in information transactions with their sources.) While the changes in information patterns were measurable, they were not directly attributable to the OCCU.

However, by comparing the location of information sources and the frequency of interaction of agency personnel (a measure of output), it was possible to attribute some shifts in the information source patterns to

the OCCU. For example, over the two year period, the number of cited information sources among OCCU personnel increased as did the number of transactions with OCCU personnel apparently as a result of OCCU initiated transactions. In addition, agencies that increased their information exchange transactions with the OCCU also tended to increase their transactions with agencies in contiguous communities.

While this Type II measure of impact was more difficult to obtain than the Type I measure, the results of the sociometric analysis were excellent tools in understanding the overall operation of the law enforcement network and in making some assessment of OCCU impact.

3. Assessment of the Impact of OCCU Law Enforcement Activities

The impact of the OCCU on the target population of offenders and potential offenders was inferred from a determination of organizational output and its likely consequences (a Type II situation--influencing activity attributable to one organization but impact not directly measurable). Since the OCCU was a new law enforcement agency operating in a novel way, the appropriate organizational activities were not clearly defined. An activity study was conducted during the first year of the evaluation to document the different types and duration of activities engaged in by the Unit members. Two specific groupings of law enforcement activities were identified: (1) activities generally conducted in law enforcement agencies, and (2) activities specific to the OCCU. The potential impact of each general activity was inferred from previous experience or research. For example, several of the identified general activities concerned intelligence operations. The OCCU-conducted activities were compared with those recommended in a standard intelligence manual published by IFAA and inferences were made about the

likely impact of such activities. For activities specific to the OCCU, logic was used to infer likely impact given the operating conditions of the Unit.

In this assessment, the measurement of output was possible through observation; however, the impact of the activity was not always measurable so experience/logic was used for inferences. The applicability of much of the cause and effect research/experience can be questioned for any specific situation because of unique circumstances. In addition the likely interactive effect of the performance of several activities simultaneously had not been researched in other settings and may have produced erroneous inferences.

4. Assessment of the Impact of OCCU Operations on Social Service Agencies

The final example deals with the impact of OCCU operations on some of the local social service agencies that dealt with members of the same target population of interest to law enforcement agencies. This impact measurement can be loosely described as a Category IV measurement (impact not directly measurable and influencing activities not attributable to a single organization). For the purposes of this evaluation, the OCCU was seen to be in several social service networks. For example, the OCCU was one of several agencies concerned with drug users/abusers and was involved in producing "a community environment" in which treatment of some drug abusers could be implemented. The agency outputs were determined by surveying all agencies in the network to identify their roles and activities with regard to the drug abuser. In addition, each agency was asked how each other network agency interacted with them and how the interaction affected client service. An analysis of the survey data suggested the outputs

(real and perceived) of the OCCU with regard to the drug abuse treatment network. Once OCCU outputs were identified, inferences were made about the likely impact of OCCU operations on other agencies and on client treatment.

III. RESERVATIONS TO THE USE OF THE IMPACT MODEL OF ORGANIZATIONAL EFFECTIVENESS

While the impact model of organizational effectiveness may have some intuitive appeal and theoretical backing, a number of reservations became evident when the impact concept is operationalized. First, the reliability and validity of the various measurements of output and impact are suspect because of the extremely dynamic nature of such an organization and because of the unique nature of each setting in which the model is to be applied.

A second reservation deals with the amount of resources needed to perform such an evaluation. In those measurement situations when many agencies must be surveyed to isolate the impact of one agency, a great deal of time, professional skills, and ingenuity are required to develop and implement measurement methods.

A third and critical reservation to the model deals with the resistance associated with such an approach to evaluation. Some participants in the evaluated agency and some of the evaluation sponsors were resistant to the use of any evaluation for a law enforcement agency other than the total number of arrests. This resistance was frequently expressed passively by failure to read and discuss the evaluation reports, and actively by continuing to ask the evaluators to show the reduction in county crime rates directly attributable to the OCCU.

A fourth reservation to the application of the model is the lack of generalizability associated with it. The impact model treats the organization's core technology as part of a unique system in a unique environment. Therefore, generalizations about the applicability of the core technology to other settings would be tenuous.

A fifth reservation to the model will perhaps apply to any evaluation method: the operational and logistics problems of collecting the data necessary for use in the evaluation. Regardless of the clarity and precision of the evaluation method on paper, the operational evaluation inevitably contains distortions, force-fits, missing data, and unexpected circumstances.

CONCLUSIONS

A basic purpose of this paper has been the description of a local effort to apply a systems model to the evaluation of a law enforcement project. The basic steps involved in the evaluation included the following: (1) generation of a theoretical framework for evaluation using the concept of environmental impact; (2) the description of the project organization in terms compatible with the model; (3) the measurement or estimation of project impacts; and (4) the assessment of the desirability of the impacts.

The authors conclude from their experience with the model that project and evaluation conceptualization is simplified. However, the model calls for very difficult measurements or estimates of impact. The model seems to hold some promise for use in social service settings (where the conveniences of revenue and profit are not available). The model may also be useful in providing evaluative feedback where it is most needed: at the local level.

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