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AN INVESTIGATION OF THE TYPES OF MANAGERIAL

BEHAVIOR ELICITED BY BUSINESS GAMES BY

USE OF THE CRITICAL INCIDENT METHOD

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

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BY

JOE BERNARD KEYS

Norman, Oklahoma

1970

AN INVESTIGATION OF THE TYPES OF MANAGERIAL

BEHAVIOR ELICITED BY BUSINESS GAMES BY

USE OF THE CRITICAL INCIDENT METHOD

APPROVED BY

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

AN INVESTIGATION OF THE TYPES OF MANAGERIAL

BEHAVIOR ELICITED BY BUSINESS GAMES BY

USE OF THE CRITICAL INCIDENT METHOD

CHAPTER I

INTRODUCTION

The purpose of this study is to systematically describe the be-

havior being elicited by business games giving consideration to their

possible use as predictors of managerial success. Such an investigation

is necessary before games can be used to any extent for statistical

studies in organizational research. Although there are many types of

games being used in education and industry today, ones classified as

simulations can be distinguished from others rather well by the follow-

ing definitions and clarification:

> The word game in this discussion means a competitive mental
> activity wherein opponents compete through the development and im-
> plementation of an economic strategy. The three basic components
> of a simulation are an abstraction of an economic environment, or
> a model, a series of rules for manipulation of the model, or simu-
> lation, and a set of rules which govern the activity of participants
> in relation to the simulation, a game. The competitive activity is
> governed by the economic model which is a facsimile environment
> whose basic design the participants cannot control.[1]

The need for a selection instrument based on a simulation arises

out of the inherent weaknesses of selection devices now in use. The

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[1]James L. McKenney, *Simulation Gaming for Management Development*
(Boston: Harvard University, 1967), p. 2.

advantage of a simulation as a performance measurement device lies

largely in its ability to provide the dynamic and complex environment

which is lacking in pencil tests and which is also non-interactive and

often unrealistic in projective assessment devices.[2]

Sociometric methods such as those used by the military in World

War II point to some of the additional attributes desired by an adequate

selection device. In the military case, a platoon of potential officer

candidates trained and lived together for several weeks. This allowed

great opportunity for candidates to observe each other under many and

varied situations. In other words, opportunity to observe performance

and to evaluate potential in an applied environment, with dynamic inter-

active elements, was present. A second unique characteristic interjected

by the military was the use of buddy ratings. This allows more dimen-

sions of behavior to be observed than if a supervisor alone did the rat-

ing and is likely to be more highly correlated with actual success as

defined by organizational goals.

Another attribute of sociometric techniques is the fact that

they do not require the rater to explain the reason for his evaluation.

Persons are simply asked to give their overall impression about an indi-

vidual, perhaps in terms of characteristics, assigning points to

categories such as intelligence and honesty, but with overall points

determining the candidate's aptitude for a certain job. Again, Leavitt's

rationale for this type of rating is perceptive:

The sociometric method thereby short-cuts across an area of great
difficulty, since both our language and our communicable knowledge

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[2]Harold J. Leavitt, Managerial Psychology (Chicago: The Univer-
sity of Chicago Press, 1964), p. 104.

about men are usually inadequate. Moreover, what we know about personality, however inadequate, suggests that personality is not a thing to be torn apart and dealt with as a set of separable elements but is more susceptible to a kind of all-at-once, whole-man evaluation. . . . Personality, if it can be thought of as an entity at all, is an elaborately interactive and dynamic kind of entity. When sociometrically, one simply asks men to make an overall judgment of one another, one is, in a way, automatically taking the wholeness of personality into account.[3]

The advantages of rating the whole personality in this manner must, of course, be weighted against the dangers of bias and distortion so easily engendered by such broadly structured ratings.

More recently the interjection of a dynamic environmental setting has been attempted by an in-basket game.[4] This should not be confused with a business simulation as defined above, since it lacks the well-defined economic model, generally requires only individual decisions without group interaction, and does not include job duties that cannot be simulated by incoming mail. Of course, the in-basket game does simulate written communications required by executives and, in that limited sense, is a logical extension of the business game.

William Dill, a pioneer in the use of games, developed a criterion for the use of business games for assessing man as early as 1962. He said:

It is reasonable to use games to assess men if--but only if--three conditions are met:

1. We must have a criterion so that we know what kind of men we are looking for. (This gets increasingly difficult as we move into the more individualized positions in the upper

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[3]Ibid., p. 114.

[4]Felix M. Lopez, Jr., Evaluating Executive Decision Making: The In-Basket Technique, American Management Association Research Study, No. 75 (New York: American Management Association, Inc., 1966), p. 31.

echelons of management.)

2. We must have a theory, a system of measuring behavior, and some experience that will let us interpret the meaning of the behavior that our candidates display.

3. We must have adequate control over the way the game develops so that we understand the stimuli that the man is responding to and the reasons why he chose to behave as he did.[5]

Statement of the Problem

It is hypothesized that the critical incident technique, to be described later, which has been used in several instances to develop performance evaluation instruments and job requirements, can be used successfully to describe the managerial behavior being elicited by business games.

If Dill is correct in the requirements for assessing men quoted earlier, a system of measuring the diverse behavior elicited in games is necessary for further work in this area. For this reason his requirement number 2, the development of such a system, will be the central empirical focus of this paper.

In addition to the test of the above hypothesis through primary research, the secondary research included in this thesis attempts to answer the following questions:

1. What is the best criterion available in the literature for a measure of managerial success?

2. How well can business game environments and game developments be controlled?

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[5]William R. Dill, "What Management Games Do Best," Carnegie Institute of Technology: Graduate School of Industrial Administration, Reprint No. 90, 1962, p. 62.

3. Can a relationship be observed between behavior empirically sampled from game participants and the criterion of successful managerial performance to be described later?

4. Can a clear, well-defined path be derived for further research in this area relating managerial success on the job to that elicited by games, which will allow the development of the latter as a predictor of success for the former?

Research Design and Scope

The raw data for use in describing behavior evoked by games was obtained by questionnaires completed by several undergraduate business classes and by a nationwide mailed questionnaire to professors in the member schools of the American Association of Collegiate Schools of Business.

The research design and termination point can be depicted by referring to the model shown in Figure 1 on the following page. First, the study summarizes, from the literature, some overall goals typical of those used by businesses (Block 1). Thus recognition was given to the idea that only goal-oriented managerial behavior can be considered effective from the organization's viewpoint. Next, types of executive performance that contribute to the goals of an organization were reviewed and summarized as suggested in Block 2.

The primary research reported in this study centered around Block 3 of Figure 1. It consisted of a collection of behavioral incidents (performance specimens) from several surveys of business game observers. The study was terminated with a systematic presentation of the kinds of

A SYSTEMATIC MODEL FOR THE DEVELOPMENT OF BUSINESS GAMES PARTICIPATION
AS A PREDICTOR OF MANAGERIAL EFFECTIVENESS IN INDUSTRY

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┌──────────┐   ┌──────────────────┐   ┌──────────────────┐   ┌──────────────────┐   ┌──────────────┐
│    1     │   │        2         │   │        3         │   │        5         │   │      6       │
│  Define  │───│ Define Executive │───│ Collect Incidents│───│Compare Incidents │───│   Perform    │
│  Goals*  │   │Factors Contributing│ │ that Contribute  │   │in Blocks 3 and 4 │   │  Validation  │
│          │   │  to Goals**      │   │ to Block 2 from  │   │ and Adjust Game  │   │   Studies    │
└──────────┘   └──────────────────┘   │ Game Observers   │   │ for Conformity   │   └──────────────┘
                                       └──────────────────┘   └──────────────────┘
                                       ┌──────────────────┐
                                       │        4         │
                                       │ Collect Incidents│
                                       │ that Contribute  │
                                       │ to Block 2 from  │
                                       │   Businessmen    │
                                       └──────────────────┘
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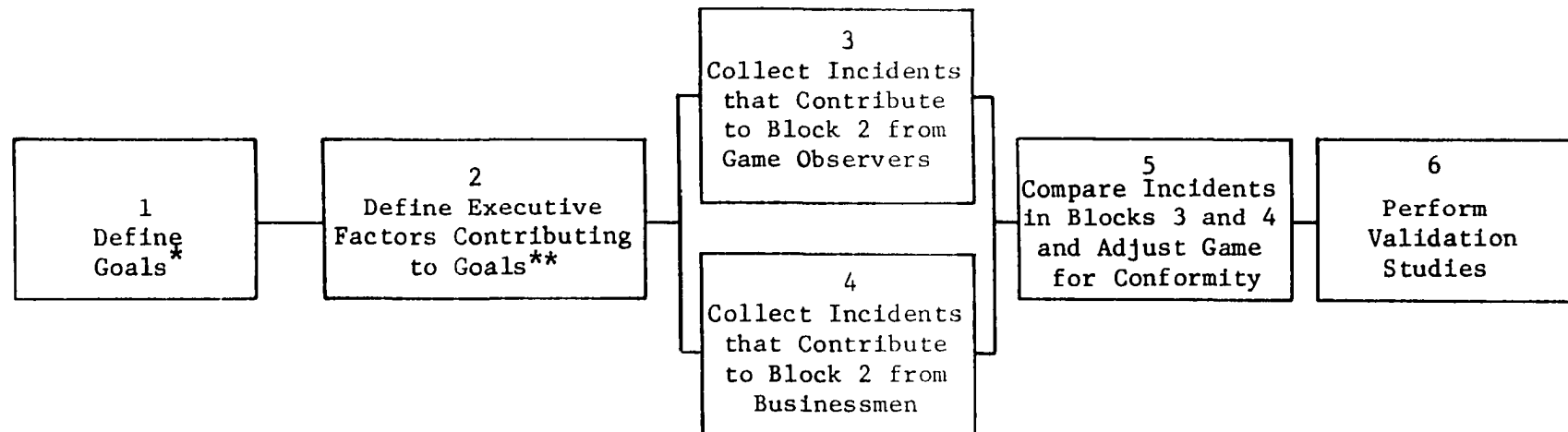
*Includes items such as:
Profits
ROI
Market Share
Company Image
Value of Stock

**Includes items such as:
Profits (if can be isolated in
  totality)
Efficiency
Maintenance of good relations
Development of realistic plans
Development of high morale
Development of competent subordinates
Fostering of good public relations

Figure 1

managerial behavior discovered to be frequently occurring in business games. Blocks 4, 5, and 6 of Figure 1 represent suggestions for future research in developing business games for predictive purposes.

Block 4, of Figure 1, suggests that incidents representing managerial behavior be collected from businesses. Block 5 proposes that game behavior be brought into closer similarity to on-the-job behavior by an adjustment of game rules and models. Block 6 suggests that validation studies should be undertaken to determine whether or not game success accurately predicts on-the-job success once the earlier stages of Figure 1 are completed.

Definition of Terms

Game. As used in this thesis this concept includes three components: an abstraction of an economic environment, or model, rules for manipulation of the model, or simulation, and a set of rules which gives the activity of the participants in relation to the simulation.

Dynamic Game. A game whose variables, such as the index of economic activity, are constantly changing.

Interactive Game. A game in which the competitive environment is determined largely by the game participants. Decisions of one team affect the outcome of decisions of competitors.

Aggregative Decision. A quantitative input that controls the activity of a total functional area, such as the dollar amount spent on advertising. A "non-aggregate" decision would include advertising schedules and media styles.

Manager. This term will be used interchangeably with the terms "executive" and "supervisor" to mean a person who has responsibility for

the work of others. Generally the term "executive" will be used to mean persons at the divisional level of a corporation, or higher, and the term "supervisor" will be used to refer to persons below the plant level. However, the sources cited are not consistent in the usage of these terms and the context of each discussion will be relied upon to make the meaning clear in each case.

Performance Specimen. An isolated behavioral incident judged to be critical to successful managerial performance by a respondent and observed by that respondent.

Critical Incident. A more general statement representing a combination of very similar performance specimens.

Factor. A major functional area of activity made up of a number of similar critical incidents.

Organization of the Study

This study is organized into six chapters:

Chapter I gives the rationale for the study, the statement of the hypothesis, a conceptual model that explains the development of the paper and defines the special terms used.

Chapter II contains a review of the literature concerning the activities of management at various hierarchical levels and of the measures of success typically used for managers.

Chapter III contains a review of literature about business games with a special emphasis on the managerial environment created by them.

Chapter IV extends the review of business game literature to information about the use of games as evaluation or selection devices.

It also explores the attempts of industry to measure managerial effectiveness with a special interest in methods that might be transferable to business game evaluation. The critical incident method was discovered to be the most promising technique for describing managerial behavior elicited by games.

Chapter V describes an empirical research study using the critical incident method to describe managerial behavior being elicited by business games throughout the nation. The results of the study are analyzed.

Chapter VI presents a summary and conclusions.

CHAPTER II

A CRITERION OF SUCCESSFUL MANAGERIAL PERFORMANCE

IN BUSINESS GAMES

One of the most extensive studies attempting to measure manage-
rial behavior is that of Felix Lopez's AMA Research Study using an
in-basket game. In his description of the process for designing in-
basket games for evaluation, he enumerates three key phases in the
process: (1) job analysis, (2) selection of emphasis, and (3) delinea-
tion of purpose.[1] By suggesting the analysis, Lopez is essentially
saying, as did Dill, that we need to know "what kind of men we are look-
ing for." After the position or the group of positions for which we are
trying to predict a successful incumbent are defined, these can be used
as a criterion of managerial success.

This chapter will provide an account of a review of literature
in an attempt to define the essential characteristics of the manager's
job.

A Review of Managerial Success Criteria

A major problem in developing an evaluation standard for manage-
ment is the task of obtaining agreement among and within business as to
what constitutes the most important goals of the organization.

[1]Felix M. Lopez, Jr., Evaluating Executive Decision Making: The
In-Basket Technique, American Management Association Research Study, No.
75 (New York: American Management Association, Inc., 1966), pp. 27-43.

Furthermore, some priority ranking must be assigned to organizational goals so that proper emphasis will be applied. Finally, a balance between long- and short-term goals must be obtained. For example, profits are usually agreed upon as a prime goal of an organization, but, "It is usually not the purpose of an organization to increase immediate profits at any cost, e.g., by wiping out its research program or by failing to maintain its capital equipment."[2]

General Electric has developed a list of departmental operating effectiveness criteria which has been circulated to all its managers. Their eight key results are:

1. Profitability (financial returns).

2. Market position.

3. Productivity (effective and balanced utilization of men, capital, and raw materials).

4. Technological leadership in products and services to fill the customers' needs.

5. Personnel development (managerial and functional).

6. Employee attitudes (including managers and specialists).

7. Public responsibility.

8. Balance between short-range and long-range goals.[3]

Another study in the literature which represents an empirical attempt to describe the executive's job by means of a questionnaire was

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[2]Stanley M. Nealey and Fred E. Fiedler, "Leadership Functions of Middle Managers," <u>Psychological Bulletin</u>, LXX, No. 5 (1968), pp. 319-322.

[3]Foundation for Research on Human Behavior, <u>Assessing Managerial Potential</u>, Report of a Seminar (Ann Arbor, Michigan and Gould House, Ardsley-on-Hudson, New York: Foundation for Research on Human Behavior, 1957), pp. 6-9.

developed by asking 93 executives of 5 large corporations belonging to the

"Executive Study" to complete a 575-item questionnaire. According to

Lopez:

> The completed instrument, when scored, yields a profile of the
> position on ten common dimensions:
>
> 1. Providing a staff service in nonoperational areas. (Gathering information, selecting employees, briefing superiors, checking statements, verifying facts, and making recommendations.)
>
> 2. Supervision of work. (Planning, organization, and controlling the work of others.)
>
> 3. Business control. (Cost reduction, maintenance of inventories, preparation of budgets, justification of capital expenditures.)
>
> 4. Technical aspects of products and markets. (Development of new business, marketing, anticipating changes in demand for products.)
>
> 5. Human, community, and social affairs. (Concerned with goodwill of company goals, evaluation of new ideas.)
>
> 6. Long-range planning. (Oriented toward future of company, company goals, evaluation of new ideas.)
>
> 7. Exercise of broad power or authority. (Makes recommendations on very important matters, interprets policy.)
>
> 8. Business reputation. (Product design, quality, and improvements, delivery schedules, complaints about products or services.)
>
> 9. Personal demands. (Concerned about the propriety of the manager's behavior.)
>
> 10. Preservation of assets. (Capital expenditures, large expenditures such as taxes, operations.)[4]

Hemphill found some combination of these ten factors in every

management position explored. The degree to which any factor

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[4]Lopez, Evaluating Executive Decision Making, p. 30.

predominated depended on (1) the business function managed (personnel, marketing, finance), (2) the type of enterprise engaged in (manufacturing, banking, government), and (3) the level of the hierarchy at which the executive was employed. He found that, "Higher level executive positions, . . . emphasize such factors as long-range planning, exercise of broad power or authority, and the preservation of assets, while lower staff positions are more inclined to be involved in supervision of work, provision of staff service, and technical aspects of products and markets."[5]

In one of the most extensive studies that has been performed in this area, the Educational Testing Service (ETS) at Princeton University performed a survey ". . . of a wide variety of organizations to learn what criteria (reflecting organizational goals) are most often used in evaluating the effectiveness of managerial personnel." These were in turn synthesized into a list of "Seven Expressions of Executive Effectiveness." They are listed with their clarifications summarized below:

1. His organization produces profits. ETS emphasizes that profits can rarely stand alone as an indicator of success because of the lack of complete control of the organization by one man and because of the possibility of sacrificing long-run profits for short-run profits through the inadequate maintenance of physical and human resources.

2. He operates efficiently. This measure would include the use of input-output analysis, cost-accounting procedures, budgets, and realistic goal-setting, in such a way as to reduce costs to a minimum and maximize results.

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[5]Ibid.

3. <u>He maintains "good" relations with others in the organiza-
tion</u>. This is a difficult area to appraise, but ETS is sure that it
includes such things as " . . . avoiding personal conflicts, observing
customs and traditions, displaying loyalty to the organization, etc. . . ."

4. <u>He makes realistic plans for the future</u>. The emphasis here
is on the results achieved by each plan instituted by an executive. ETS
makes the approach clear by stating that, "Even though success or fail-
ure may well have resulted from factors over which we had no control,
his reputation depends on his batting average, and perhaps more on the
strikeouts and home runs than on the number of base hits."

5. <u>He develops high morale</u>. ETS says that this factor is
" . . . frequently studied through morale surveys and indicators such
as employee turnover, absenteeism, labor grievances, extent of voluntary
participation in benefit plans, etc."

6. <u>He develops the competence of his subordinates</u>. ETS notes
that this is measured largely by the use of subjective ratings.

7. <u>He fosters good public relations</u>. One chief way in which
this can be accomplished is through active participation in civic
affairs.[6]

It should be noted that the term "executive" above is used in a
general way to denote most levels of management.

<u>Hierarchical Distinctions in the Definition of Success</u>

An extensive study was performed by Nealey and Fiedler in which
they explored job demands at various hierarchical levels and from which

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[6]Foundation for Research on Human Behavior, <u>Assessing Managerial
Potential</u>, pp. 6-7.

the following generalizations could be made.

First-level supervisors work under considerable time pressure and have frequent and direct contact with the workers. Their orientation is more often downward, whereas second-level managers spend more time with their superiors and usually have an upward orientation. Second-level managers usually require less technical expertise and more general knowledge of several departments. Since they are more removed by technological, geographical, and time barriers from the work situation, they must rely on the formal power of their position more than their personal and technical ability. This also required them to communicate more often by means of formal communication, such as memoranda, letters, and the telephone. The primary function of middle management is interpolation, that is, of knowing how to get what from whom and to maintain the pipelines of his suborganization to other components of his organization.[7]

One study revealed four major classes of functions required of the middle manager: " . . .(1) planning, (2) decision functions, (3) supervisory and human relations functions, and (4) communications functions."[8]

A review of management styles over the past forty years indicates that a definition of satisfactory middle-management behavior depends largely on how one defines the goals of the organization. When jobs were scarce in the 1920's and 1930's and industry was tuned largely to

[7]Nealey and Fiedler, Leadership Functions, pp. 319-322.

[8]Foundation for Research on Human Behavior, Assessing Managerial Potential, pp. 6-9.

"getting out the product," the typical manager " . . . was characterized as the tough, hard-nosed, bull-of-the-woods, tobacco-chewing type guy . . ." who was probably as good at dealing with a hammer and pliers as with men.[9] With the coming of the World War II years, immigration, and a labor shortage, "human relations" styled management began to flourish. When the overproduction and spiraling costs of the late 1940's and early 1950's hit business, a third style of middle management developed defined by one writer as "management by pressure." He continued to explain that management goals became focused on short-term results. "Management development emphasized such things as budget controls, improving mechanized methods and redesigning of products with the idea of engineering costs out of the product."[10]

Since middle management was being evaluated almost entirely on immediate results, their decisions began to reflect short-run expediency at the expense of long-run goals. The result, of course, was that problem-solving decisions tended to create more problems than they solved. Consequently top management again communicated a different set of goals and objectives, stressing that middle management would be evaluated on a balanced criterion of long- and short-run goals. One writer has captioned this new approach "management of situations."[11]

The author's comment about the appraisal system being used for this type of manager is particularly relevant to this discussion:

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[9]Jerry T. Emrick, "Training and Development of Middle Managers," Advanced Management Journal, XXX, No. 4 (October, 1965), p. 52.

[10]Ibid., p. 54

[11]Ibid.

Evaluating a man by use of a checklist of personality factors, in terms of how well he fits somebody's preconceived idea of what a manager's character ought to be is now passe. We are becoming more and more concerned with questions like, "Does he or does he not accomplish the goals and objectives expected to be achieved by a person in his position, and to what degree?" A related question is, "How does he accomplish these goals?"[12]

The next major division in the management hierarchy can probably be drawn at the distinction between a middle manager and a top manager or executive. Although the lines are shaded, it seems that the chief characteristic of an executive position is the responsibility for policy making in the organization. It should be emphasized that various studies have found a high degree of overlap between the functions of managers at all levels of the hierarchy.[13]

David W. Ewing divides executive work into three distinct areas distinguished by the type of knowledge needed for each:

1. Knowledge of methods and techniques, useful in devising answers to specific problems.

2. Knowledge of important realities, conditions, and trends affecting the nature of a business situation, which helps in understanding the needs for action.

3. Knowledge of what goals, policies, and procedures are desirable for the organization.[14]

He cautions that, "The layers sometimes run into each other and are not neatly distinguishable, but they differ in emphasis."[15] Although the writer is not explicit on this point, he does imply that the

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[12]Ibid., p. 55.

[13]Nealey and Fiedler, Leadership Functions," p. 320.

[14]David W. Ewing, "The Knowledge of an Executive," Guideposts to Executive Growth (Cambridge, Massachusetts: Harvard University Press, 1956-1965), p. 73.

[15]Ibid.

knowledge required progresses in an orderly fashion (moving from one to three) as one moves up the managerial hierarchy. Ewing fails to distinguish clearly between the executive level and other levels of management.

Chester Barnard in a classic book introduced what he considers to be "the essential executive functions":

> They are, first, to provide the system of communication; second, to promote the securing of essential efforts; and third, to formulate and define purpose.[16]

In a much later intensive study of managerial potential this point of emphasis came to the forefront again. First, the upper level of management was depicted as the role of a navigator, requiring a great amount of judgmental and conceptual abilities. Secondly, the top man was depicted as one needing integrating abilities " . . . to fit together bits of information from different sources. He must sense, or even impose, a pattern where none appears to be."[17] Finally, this research group found that top people must have many of the lower level skills, if for no other reason but to reach upper-level management.

Any attempt to compare the functions of management as described by the various studies above may suffer from the foible of trying to add apples and oranges. However, there does seem to be a current of thought running through the studies which is descriptive of the various levels of management.

The higher one moves toward the top of an organization the easier it is to evaluate his effectiveness on the basis of the achievement of

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[16]Chester I. Barnard, The Functions of an Executive (Cambridge, Massachusetts: Harvard University Press, 1938), p. 217.

[17]Foundation for Research on Human Behavior, Assessing Managerial Potential, p. 4.

organizational goals. Another way of viewing this would be to say that at the lower levels of an organization the goals and objectives become so splintered and so diverse that it is often difficult to trace the effects of an activity back to the key objectives of the overall organization. Not only is the performance of the top manager expected to be aligned closely with goal achievement, but the major knowledge requirement for him is that of goals, policies, and procedures, many of which he must establish himself. He is expected to be well endowed with judgmental and conceptual abilities and to be able to integrate the diverse activities of the organization. The day-to-day activities that he could be observed performing would be largely those of planning and directing; however, he might engage in a goodly amount of supervision. His orientation is probably outward toward the customer, the public, and the stockholders.

The middle manager's chief responsibility is to maintain an interpolation and communication system for the goals and policies formulated by top management. He must be acutely aware of the realities, conditions and trends of his firm and position, and must have enough knowledge of methods and techniques to convert goals and policies into methods for their accomplishment. Since the knowledge of methods and techniques were probably acquired on the way up the managerial hierarchy, his chief concern is in establishing the proper communication networks through organizational design that will allow either the adjustment of these goals and policies to fit his people, or the adjustment of the people so that they will accept the goals. Since his previous experiences

have given him an adequate knowledge of the work situation and of human relations, he spends a large portion of his time with his superiors trying to interpret and clarify the firm's objectives. He is typically upward oriented in contrast to the downward orientation of the first-level supervisor.

The first-level supervisor is a man whose successful achievement depends upon human relations skills and technical knowledge of the work that his subordinates perform. He shows much concern for his employees and their welfare and most of his time is spent with them. However, in order to be able to maintain their respect and allegiance, he must have upward influence which comes largely through proper attention to company goals.

A Systematically Developed Criterion

of Managerial Success

One study was discovered in the literature which very systematically and objectively evaluated the requirements of managerial position as well as delineating the difference between upper- and lower-level management. The technique used is the same one which is being explored as a device for defining business game behavior in the empirical portion of this paper. John Flanagan performed an extensive study of Army officers' activities, asking the men interviewed to report incidents that they had observed in which what was done was especially effective or ineffective. The following incident will help clarify Flanagan's method:

> This officer was an adjutant in my squadron. My former adjutant
> was very energetic and handled most of the administrative functions
> with little or no supervision. This new officer started out and was

givɛn the same authority as my former one. The administration began to slow down, reports were going in late, so I began to check. I found that this officer was very thorough, so thorough that even the most ordinary function was slowed down waiting for his signature. One afternoon I heard the enlisted men talking. The conversation was to the effect that they were through work at noon and here it was 3 p.m. and the passes were not signed yet. I checked with the adjutant and found that he was too busy at noon but would get to it as soon as he finished a roster he was making up. I picked up the passes, signed them, and got the men started on their way. I checked with some of the men in the unit and found that this delay had become a common occurrence. I then decided that this man was too slow for my unit and got rid of him on the next shipment.[18]

This incident demonstrating ineffective behavior is typical of the 3,000 descriptions of outstanding and unsatisfactory job performance used by the researcher to develop a Check List of Critical Requirements for Officer Evaluation. From these incidents, Flanagan derived fifty-four critical requirements, in turn organized into six major skills categories. Flanagan's categories are shown below in digested form, with only the critical requirements for category IV shown for purposes of illustration:[19]

Relative frequency in per cents of incidents reported for each item on the Check List of Critical Requirements for Officer Evaluation, comparing incidents reported concerning Colonels and Generals with those reported for all officers.

Item	Per Cent for All Officers (N = 2,907)	Per Cent for Col. and Gen. (N = 412)
I. Proficiency in Handling Administrative Details	6.9	3.6
II. Proficiency in Supervising Personnel	13.6	29.6
III. Proficiency in Planning and Directing Action	16.8	39.8
IV. Acceptance of Organizational Responsibility	13.0	9.2

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[18]John C. Flanagan, "Defining the Requirements of the Executive's Job," Personnel, XXVIII (July, 1951), p. 29.

[19]Ibid., p. 34.

Item	Per Cent for All Officers (N = 2,907)	Per Cent for Col. and Gen. (N = 412)
34. Complying with Orders and Directives	1.8	0.0
35. Accepting Organizational Procedure	2.7	0.7
36. Subordinating Personal Interests	4.2	3.4
37. Cooperating with Associates	1.6	1.7
38. Showing Loyalty	1.9	1.2
39. Taking Responsibility	0.9	2.2
V. Acceptance of Personal Responsibility	35.3	11.7
VI. Proficiency in Military Occupational Specialty	14.4	6.1

Note that the Colonel and General column (right column) shows the proportions of certain incident categories concerning Colonels and Generals only, while the left column contains the percent of all incidents classified under a certain category. The Colonel and General classification is probably a well-defined military counterpart to the civilian definition of top management. In like manner, other officers would be considered parallel to middle management while noncommissioned officers would, in most cases, be the equivalent of first-level supervision.

If these analogies hold true, some interesting distinctions can be made between middle and upper management on the basis of Flanagan's study. As was pointed out in the quotations from Barnard and the Foundation for Research in Human Behavior study, the critical requirements for upper-level management are found chiefly in the decision-making area, "Proficiency in Planning and Directing Action." The specific requirements that showed the most frequent occurrence of incidents in this category were "Solving Problems," "Making Use of Experience," "Long-Range Planning," and "Making Correct Decisions." The only finding that is surprising for the Colonels and Officers is the heavy emphasis on the

Supervisory category. This is probably a military bias elicited by the vast numbers of men in an organization such as the United States Army and by the special purpose that such an organization performs.

In the left column, which is heavily weighted with middle management counterparts, there is much less of a pattern of emphasis--incidents being scattered throughout critical requirements on a rather even distribution, probably due to the vast number of positions and activities surveyed (2,907 officers). However, it is not surprising that the heaviest category weighting is in "Acceptance of Personal Responsibility." This category seems to contain incidents related to the interpolative function of middle management including such requirements as "Being Fair and Scrupulous" and "Adapting to the Job." Again, this category probably includes a military bias on the part of the senior officers for conformity and obedience on the part of lower-level officers.

A Single Criterion of Success in Management

For the purposes of this thesis one complete and comprehensive set of criteria of managerial success is needed. In reviewing the material in this chapter, it would appear that the best defined standards--both from the standpoint of empirical research and from an intuitive view--would be the Seven Expressions of Executive Effectiveness defined by the Educational Testing Service listed and clarified earlier. These expressions define "what kind of men we are looking for" in observable behavioral terms that are goal directed.

In Table 1, page 24, these seven expressions are listed in Column (3). To the right, in Column (4) a graphical position profile is drawn

TABLE 1

A COMPARISON OF GOALS, POSITION RESPONSIBILITIES, AND EXPRESSIONS
OF EFFECTIVENESS OF THREE STUDIES WITH A SUGGESTED
POSITION PROFILE FOR A TOP EXECUTIVE

General Electric's Departmental Goals (1)	The Executive Study Position Profile (2)	Educational Testing Service Expressions of Executive Effectiveness (3)	Graphic Position Profile (4)		
			Little	Average	High
Profitability Market Position Technological Leadership	Business Reputation Technical Aspects of Products and Markets	1. His organization produces profits.			
Productivity	Business Control	2. He operates efficiently.			
Employee Attitudes	Personal demands Supervision of work	3. He develops high morale.			
Personnel Development	Supervision of work	4. He develops the competence of subordinates.			
Balance between short-run and long-run planning	Exercise of broad power or authority Preservation of assets	5. He makes realistic plans for the future.			
Employee Attitudes	Providing a staff service in non-operational areas	6. He maintains a good relationship with others in the organization.			
Public responsibility	Human community and social affairs	7. He fosters good public relations.			
			1 2 3 4 5 6 7 8 9		

24

representing a hypothetical position very near the top rungs of an organization. Many activities of this executive are immediately translated into the goals achievement of the organization. He has little production responsibility other than choosing men to fill prominent roles in this function. A moderate amount of his time is spent in supervision. His major activities are those of planning and fostering good public relations.

In Column (2) are listed the various position responsibilities that correspond to the performance statements in Column (3). For purposes of illustration the position responsibilities developed by the Executive Study are used. Finally, in Column (1), the departmental goals defined by General Electric are listed. These are aligned with the position descriptions that are likely necessary to fulfill them in Column (2) and the effective performance statements that demonstrate what their fulfillment looks like in action in Column (3).

In actual practice, as a means of establishing the criteria to be used in developing a business game to measure managerial performance, the following procedure might be followed:

1. The goals of the organization for which a man was being evaluated would be defined as shown in Column (1) of Table 1.

2. The responsibilities necessary for achieving these goals would be translated into a position profile as shown in Column (2) of Table 1.

3. These responsibilities statements would be categorized into more specific statements such as the Seven Expressions of Executive

Effectiveness as shown in Column (3) of Table 1. A graphic profile

could be developed as shown in Column (4) of Table 1.

4. Behavioral statements of job activities would be developed

that could be related to the fulfillment of the responsibilities and

goals.

5. A game would be designed that elicited behavior identical or

similar to that described in Step 4 above.

Since an empirical study such as the one suggested above is beyond

the scope of this thesis, the Seven Expressions of Executive Effectiveness

will serve as criteria against which game behavior, to be discussed later

in this paper, will be evaluated.

Summary

The following conclusions seem applicable to the development of

criteria of managerial effectiveness useful for designing business games

to predict success:

Managerial behavior must be capable of being observed and eval-

uated as oriented toward company goals in order to be judged effective.

These goals in turn depend upon industrial characteristics, conditions in

the economy and other influences that are likely to change over time. The

determination of what is effective behavior depends not only on the spe-

cific goals and function of the organization, but also on the position of

the manager in terms of his level of the hierarchy, and the functions of

business performed.

The most promising study discovered in the literature for object-

ively and systematically determining a criterion of success for management

is Flanagan's critical requirements study. In this study no intuitive standards are predetermined. All requirements and categories are <u>de-rived</u> objectively from <u>observed</u> behavior by interviews with peers and supervisors.

A broad set of criteria have been empirically determined for effective managerial performance by the Educational Testing Service entitled "Seven Expressions of Executive Effectiveness." These have been selected as the best <u>existing</u> criteria of typical effective managerial performance for the study at hand. A job profile chart could be developed utilizing these Seven Expressions of Effectiveness with a variation in degree for each area as the beginning step in the design of a simulation exercise to predict managerial success. Such a chart would be similar to the one in Column (4) of Table 1, drawn for a hypothetical job near the top levels of a business organization.

In Chapter III the literature on business gaming will be reviewed to determine what kind of managerial activities have been elicited by games and how game environments might be controlled for predictive purposes.

CHAPTER III

CONTROL OVER GAME DEVELOPMENT

In Chapter II the question of "what kind of men are we looking for" was explored. In this chapter the literature on business gaming will be explored to determine whether or not realistic managerial behavior has been observed in business game operations. The primary focal point of this review will be on games to determine what kind of managerial activities have been elicited and how these activities might be controlled in games used for predictive purposes.

The behavior elicited in games, as well as the learning that is expected to be derived from game experiences, depends to a great extent on the kind of game played. In a classic work on gaming, Greenlaw, et al. developed two subgroupings for distinguishing game orientation: (1) generalized versus specific industry games, and (2) total enterprise versus functional games.[1] The generalized industry game is the one most frequently considered in the literature and is descriptive of such games and the AMA Top Management Decision Simulation, the IBM Top Management Game, and the UCLA Series of Executive Games. Other games simulated specific management activities such as the operation of service stations, supermarkets, or firms in the detergent industry.[2] These latter types of games

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[1]Paul S. Greenlaw, Lowell W. Herron, and Richard H. Rawdon, Business Simulation (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1962, p. 16.

[2]Ibid., pp. 21-22.

were designed primarily for special training jobs and it would seem that
their ability to predict managerial success might be greater for manage-
rial candidates within their own industries. The AMA, IBM, and UCLA
games are all of the generalized industry type. Decisions are broadly
defined (one decision covering all of the research and development area)
and are generally required in most of the policy-level areas of business
operation.

The functional games require a more concentrated attention to one
area of business, such as marketing or production, and can be telescoped
down to concentrate on a specific problem such as production scheduling or
machine loading. Most of the problem-type functional games have optimum
solutions, a feature which is not typical of the top-management games.[3]

The Industry Simulated

It is a generally accepted principle that the goals of an organiza-
tion affect the requirements for effective managerial behavior. One of
the chief determinants of these goals and objectives is the industry char-
acteristics within which a firm competes. A rather extensive study of the
effects of industry characteristics on behavior of businessmen was performed
by Symonds, utilizing a business simulation. He varied such parameters
as credit, labor loyalty, supply elasticity, technological factors, methods
of evaluation of physical assets, and tax and monopoly regulations. Game
play with easy credit and an absence of labor loyalty produced alternating
periods of raging inflation and depression. When hypothetical businessmen

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[3]Ibid., pp. 17-19.

were given a chance to regulate themselves they did so readily--stabilizing the market.[4]

One way in which industry characteristics might be incorporated into games would be through the use of what Cohen and Rhenman call the "business game case." Although most business games have provided that all the rules of the game be specified at the beginning and that most decisions be programmed for computer scoring, neither of these requirements is made in the business game case. For example, instead of financing in a game being limited to two or three rigid alternatives, all of the lines of credit normally open to firms in a particular industry would be made available. Representatives of banks or brokerage firms would judge the teams' skills at presenting a proposal. Cohen and Rhenman suggest the addition of other dynamic case material such as bad press releases necessitating a well-planned public relations function.[4a]

Functional Simulation

One of the skills necessary for effective managerial performance at lower levels of the management hierarchy is the ability to operate with special methods and techniques in a functional area. In 1964 a survey of the American Association of Collegiate Schools of Business disclosed the use of eighteen functional games, including the simulation of such diverse functions as collective bargaining, inventory control, stock market investment, insurance underwriting management, purchasing, and retailing.

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[4]Gifford H. Symonds, "A Study of Management Behavior by Use of Competitive Business Games," Management Science, II, No. 1 (September, 1964), p. 146.

[4a]Kalman J. Cohen and Eric Rhenman, "The Role of Management Games in Education and Research," in Executive Readings in Management Science, ed., Kenneth Starr Martin (New York: The MacMillan Company, 1965), pp. 353-356.

Obviously, functionalization of games tends to lower the simulation in the management hierarchy. In the description of a production exercise, Bellas, et al. provides the rationale for this type of simulation:

> It appears that in an attempt to stimulate employee interest or train managers, the games are subjecting the participants to decisions that they may never make, and which in fact the officers of the company may never get the opportunity to make. . . . Realistically, these lower-level managers rarely are in a position to know of or even be concerned with the problems and decisions associated with overall company operations, sales, and profits.[5]

In the production exercise being examined, " . . . quasi-realistic exogenous events such as machine breakdowns and workers' absenteeism . . . (are) . . . randomly introduced into the system to evaluate the player's response to each event as he attempts to manage the operation of his specific functional area."[6] The participant becomes a hypothetical production supervisor, responsible for producing and assembling a sub-assembly for an end product, supervising ten to fifteen workers.[7]

One functional game for retailing offers concentrated attention to consumer behavior and the demand elasticity variable.[8] In a game for an introductory course in accounting, students are required to develop their own forms for cash budgets, statements of cost of goods sold, income

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[5]Carl J. Bellas, et al., "A New Approach to Production Management Training," MSU Business Topics, XVII, No. 2 (Spring, 1969), p. 58.

[6]Ibid.

[7]Ibid.

[8]Robert E. Schellenberger, "A Computerized, Multipurpose Management Game Applied to Retailing," Journal of Retailing, XLI (Winter, 1965-1966), pp. 10-20.

statements and statements of financial position.[9] It appears that by

use of imagination and some effort many functions of business can be sim-

ulated in some depth.

Total Enterprise Simulation

Dill bemoans the use of the ten-or-twelve decision top-management

games that require fast moves and lack complexity by suggesting that they

"stimulate" but do not "simulate." He suggests that:

> A game that aims to give a man the experience of being a manager
> is one that is designed to develop the following:
>
> The ability to recognize new situations. . . .
> The ability to set goals. . . .
> . . . A willingness to define what he really needs and to go out
> and find it.
> An understanding of the relationships among specialized activities
> within a firm. . . .
> A willingness to assume effective responsibility--whether as
> "chief" or as "Indian". . . .
> An ability to assess and classify experience, to delegate work
> to subordinates, or pass it on to a successor in ways that will keep
> the organization headed toward its goals.[10]

Dill suggests that these qualifications call for a rather complex

game, which provides a great deal of feedback information, that requires

specialization of team members and coordinated teamwork, and that re-

quires teams to pay for information and make their own discoveries of what

information is available to them. Furthermore, teams need to have the

flexibility of determining what decisions need to be made and for

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[9]Jack Gray, John Willingham, and Kenneth Johnston, "A Business
Game for an Introductory Course in Accounting," Accounting Review, XXXVIII,
No. 2 (April, 1963), pp. 336-346.

[10]William R. Dill, "What Management Games Do Best," Business
Horizons, IV, No. 3 (Fall, 1961), p. 57.

establishing policies and rules that will guide many routine decisions.

He captions the above considerations the Decision-Making aspects of games.

Another dimension of games which this same author explores is one which he entitled the Environment created by games. The greatest weakness cited for the relatively "simple" game is the lack of live interaction among persons at different levels within teams. Administrators of the Carnegie game have attempted to overcome this shortcoming by requiring that their team managers formulate policy guidelines which lower level students (subordinates) in turn use to make decisions. If the policies are poorly defined or if the subordinates fail to carry them out successfully the managers must live with the results. Other interactive variables that have been added include the negotiation of a loan with actual bankers and confrontation of the managers with labor union demands.[11]

In summary Dill says that in order to create an interactive environment and realistic game dimensions in decision-making areas, one must combine a simple total enterprise game with several different functional games (using the definitions of Greenlaw, et al.).

Drawing largely from the managerial experiences defined by Dill, an attempt will be made at this time to discover accounts in the literature of business simulations which have met his requirements as well as other game characteristics that seem worth exploring.

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[11]Ibid., pp. 58-59.

Problem-Recognition and Problem-Solving

Amstutz believes that "the implicit objective of all business is to teach problem-solving, . . ." but that games had been quite unsuccessful in doing this at the time of his writings in 1963.[12] Furthermore, he says that if learning occurs at all in a game it must " . . . occur during input preparation when the players analyze the problems facing them by developing and testing models of the game environment, thereby determining which of many courses of action are appropriate, which decision variables are relevant, and what information is needed. Learning may also occur when reports are received from the game environment; at this point players may learn to selectively analyze information, apply basic tools of quantitative analysis, and verify or reject previously developed models of the game environment."[13] For the purposes of this discussion it seems likely that these statements about learning, if correct, could also be applied in part to managerial problem-recognition and problem-solving since these activities include forms of learning.

The major weaknesses of games upon which Amstutz builds his criticisms are the aggregation of variables such as advertising, research, and capital investment decisions and the very short turn-around time so popular in the early years of game play.

Following the thoughts of Amstutz, the unrealistic aggregating problem mentioned above can be alleviated by replacing purely quantitative decisions with qualitative inputs. For example, the aggregate

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[12]Arnold E. Amstutz, "Management Games--A Potential Perverted," Industrial Management Review, V, No. 1 (Fall, 1963), p. 31.

[13]Ibid., p. 30.

advertising expenditure could be replaced with a requirement for specific

media schedules. But since advertising schedules and campaigns can sel-

dom be evaluated by the computer a human interface should be inserted

between the players and the computer. This interface would consist of

persons who would " . . . endeavor to simulate the responses of consumers,

salesmen, retailers, distributors, and other appropriate individuals to

qualitative inputs from the players." It is obvious that these human

interfaces enrich the environment created for problem-recognition and

problem-solving in a quantitative manner. They allow students " . . . to

interrogate the game population in an effort to estimate their responses

to . . ." various inputs.[15]

Both writers, Dill and Amstutz, caution that we may have to sac-

rifice some of the stimulation of aggregate variable games for the "sim-

ulation" that can be provided by complex games requiring not only many

more decisions (the Carnegie Tech Game can generate up to two hundred

individual decisions per move) but more qualitative enrichment as well.

In a systematic study of learning in the Carnegie Tech Game, Dill

and Doppelt found that two-thirds of the learning in their game consisted

of " . . . new recognition that certain problems exist for managers."[16]

Of the learning that took place, 31 per cent consisted of the development

of specific solutions or strategies.[17] These authors suggest that the

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[15]Ibid.

[16]William R. Dill and Neil Doppelt, "The Acquisition of Experience in a Complex Management Game," Management Science, X, No. 1 (October, 1963), p. 35.

[17]Ibid.

preoccupation with problem-recognition can be alleviated by adding reflec-

tive off-line case study and problem type assignments, extending game

experience.

Goal Setting

Another unrealistic aspect of the aggregate variable game is the

inability to allow for the establishment of policy decisions or broad

objectives, without altering them drastically each time short-run adjust-

ments need to be made. King, et al. believe that they have found the

answer to this problem in the MIT Marketing Game:

> The M.I.T. game is designed to operate both strategically and
> tactically. . . . We have asked the students to develop strategic
> plans on an annual basis, including a detailed statement of relation-
> ships with resellers, a choice of product characteristics and image,
> and a specification of advertising themes and media to support this
> image. . . . We require that these broad categories be held constant
> for a year of game play, but allow tactical variation involving
> changes in the amount of advertising expenditure and in price on a
> quarterly basis.[18]

As mentioned before, the Carnegie Tech Game allows managers to

turn in broad decision rules for three months at a time. Subordinates

then make month-to-month decisions guided by these rules. There is no

intervening contact with subordinates during the three moves and poorly

defined policies usually elicit poor results.[19]

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[18]Peter S. King, et al., "The M.I.T. Marketing Game," in Market-
ing: A Maturing Discipline: Proceedings of the Eighth Conference, ed.,
Martin L. Bell (New York: American Marketing Association, December,
1960), p. 90.

[19]Dill, "Management Games," p. 58.

Understanding Integrated Relationships

The need for this managerial attribute is emphasized in a dramatic way by the experience of one professor who visited with a company executive who had recently allowed his people to play the Purdue Farm Supply Management Game. While unaware of the professor's co-authorship of the game, the executive expressed surprised satisfaction that the people in his sales management and production management departments had developed an understanding of each other's problems while playing the game.[20]

Business game teams apparently find the simultaneous consideration of several major variables a difficult process as, indeed, it tends to be in actual business operation. Babb and Eisgruber found that teams without prior preparation tended to jump around from one aspect of the business to another on a random basis. When specific delegation of assignments were made, their performance improved considerably.[21]

Assumption of Responsibility

Babb and Eisgruber analyzed numerous game plays incorporating participants from a number of similar operating firms. They discovered that teams which did not have their president or general manager present often ranked at the bottom of the thirteen participating teams and never ranked in the top three positions. "This suggests that these men really are key to the decision process and considerable reliance is put in their

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[20]E. M. Babb and L. M. Eisgruber, Management Games for Teaching and Research (Chicago: Educational Methods, Inc., 1966), p. 26.

[21]Ibid., p. 137.

manager or president for direction and control."[22] These researchers found from tape recordings that teams without these predetermined leaders had more trouble getting organized, setting goals, and resolving conflicts. The conflict resolution problem was especially typical of teams with well-trained and aggressive individuals because of their reluctance to yield to others of equal rank.[23] This points to a possible problem in using games to predict managerial behavior. Some system may need to be devised to insure a reasonable balance in terms of the temperament and abilities of participants on any one team. Clearly, the success of a man in terms of any standard criteria will depend to some degree on the personality of the persons with whom he is matched. Perhaps a man needs to be rotated from team to team in order to insure a good representation of his total behavior reaction pattern.

There are certain types of responsibilities that, while onerous and tiresome, are very necessary in the business world. Creative and ambitious students often assume that an idea, once evolved, will automatically work without the attention to detail and "follow-through" required in industry.[24] But business simulations can have more or less of a requirement for the assumption of this responsibility on the part of game managers. Many of the less complex, general management games incorporated what Cohen, et al. calls " . . . the 'Mikado' approach, which assumes that somehow, someone, in some unspecified way, always orders

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[22]Ibid., p. 138.

[23]Ibid.

[24]Kalman J. Cohen, et al., The Carnegie Tech Management Game (Homewood, Illinois: Richard D. Irwin, Inc., 1964), p. 104.

exactly what is necessary, so that the players only have to specify the amount of total output they want without bothering or even knowing about raw materials." These authors caution that, "The real world, alas, is not like the Japan of Gilbert and Sullivan, where, when the Mikado says, 'Let a thing be done,' it's as good as done."[25] A realistic simulation of management calls for responsible implementation of procedures correctly and on time.

Cohen, et al. suggest two alternative solutions for the proper simulation of this function. One is to assume nothing, but to require players to request materials or other implementation by inserting figures and amount. Another " . . . built-in organization approach is to assume that there is a raw materials manager in the plant and that he follows certain specified policies and decision rules in ordering materials."[26] A game programmed in this manner would also allow for enrichment of the "delegation" and "assessment and clarification" functions discussed in this chapter. Game managers could vary their behavior from that of taking " . . . no specific action at all in respect to raw materials . . ." concentrating on other more important aspects of the business, to that of completely suspending the built-in rules during unexpected events.[27]

Assessment and Clarification of Experience

Most game environments are complex enough to provide enough data and feedback so that participants who do not classify it and treat it in

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[25]Kalman J. Cohen and Merton H. Miller, "Management Games, Information Processing, and Control," Management International, III/IV, No. 3 (April, 1964), pp. 159-161.

[26]Ibid., p. 166.   [27]Ibid., pp. 166-167.

some systematic fashion become confused and bewildered. In on-going

business firms standard operating procedures and standard reports and

charts have become so commonplace to the employees that they are usually

called by some short, informal nickname rather than the formal title

assigned to them. In game operations these procedures are seldom as-

signed, and game play is chaotic until they are designed and mastered.

In almost any investigation of peer evaluations of teammates, the man who

performs well in classifying numerical data or charting information is

considered very valuable to the rest of the team.

There are, however, a number of reasons why the total game expe-

rience provided for assessing and clarifying data might not be of the

level of the gamester's counterpart in business. First, as was mentioned

earlier, the game itself may not be complex enough. One author gives the

following account by "an intelligent management-oriented individual . . .

making decisions in a simple game environment":

> We had lost volume. We had lost share of market. We had reduced
> inventory. Our profits were cut in half. There was only one possible
> conclusion. Our price had been the same. Our R and D three quarters
> before had been high. Only our advertising had been cut. This, we
> figured, was the reason for our shellacking.[28]

The author acknowledges that this participant's reasoning might

be correct but he concludes that " . . . a game which induces this type

of behavior is doing nothing to teach managers problem-solving in an

orderly and research-based, analytical way. Problem-solving in the real

world seldom reduces to the simple case of varying one aggregate parameter

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[28]Amstutz, "Management Games," p. 32.

and viewing the implications of this variation in a second directly observable factor."[29]

At Carnegie Tech the environment for a challenging assessment and clarification experience is provided by a complex game and by the arrangement that each team work with a board of directors. The board of directors is comprised of faculty members and off-campus businessmen who require their teams to defend their goals, forecasting procedures, and plans on a periodic basis. This insures that teams will devote some time to thinking through their activities as they attempt to present their viewpoints in a systematic fashion. The board requires periodic reports and presentations and occasionally prods team members who are procrastinating on important decisions.[30]

Many games on the market today have built-in market research information which can be purchased by participants. If the range of possible purchases is great enough and the prices of research are varied, this provides team managers with a more scientific outlet for the assessment and clarification of data. Presumably the research descriptions are so written that one must gain a basic knowledge of research techniques and systemize his thinking in order to choose the proper combination of research purchases. A more realistic simulation would allow teams to purchase a special study by the computer of almost any type of data which they could define and which they could afford.[31]

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[29]Ibid.

[30]Cohen, et al., Carnegie Management Game, pp. 79-85.

[31]Cohen and Miller, "Management Games," p. 166.

Delegation of Work to Subordinates

Since delegation is part of the leadership function, this discus-
sion will cover the two functions jointly. Games have not simulated this
skill in a very structured way, although the environment for it obviously
exists in any game played by more than one participant. The chief defi-
ciency has been the absence of a structured hierarchy, with most teams
choosing to be rather democratic in their decision-making. Furthermore,
the few participants per team has precluded the use of more than one man-
agerial level in most instances.

A few games, notably the Carnegie Tech game, require the use of
subordinates who report formally to an upper-level manager. Reaction
toward unsatisfactory management styles in games tends to be frank and
open.[32] In the AMA General Management Simulation a multilevel hierarchy
is maintained in several functional areas. Different types of data are
fed back in accordance with a man's position on the team. Interpersonal
and intergroup action is measured during these decision periods and a rat-
ing is quantified for the computer by the use of rating scales.[33]

The Organizational Climate Simulated

Since the major purpose of most business simulations is to dupli-
cate hypothetical business operations, it seems obvious that the
organizational environment created should be an important consideration.
Perhaps the acid test of authentic organizational simulation could be

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[32]Cohen, et al., Carnegie Management Game, p. 105.

[33]Greenlaw, Herron, and Rawdon, Business Simulation, p. 56.

found in the attempts to use business games for laboratories in organization research. Again, the major criticism leveled against this approach is that the games lack realism and complexity.

Paradoxically, Bernard Bass thinks that business games may be too complex for many types of research. He substantiates his thoughts in a perceptive fashion:

> The typical game is not the tool to test specific cognitive processes, one-by-one, any more than a pilot plant is usually necessary to test a specific chemical reaction, or a windtunnel is necessary to test the tensile strength of a particular alloy. It is when we no longer trust the test tube findings of several interrelated processes or the simple stress tests of the alloy, that we build the pilot plant or we put the alloy into a specific wing structure to try a "property-rich" simulation. Thus, we argue that the game becomes the recommended experimental procedure when we want to examine questions about the organizational mix, particularly of real men, processes and materials as they interact. When no simple experiment with all but one variable held constant will provide the answers we seek, it will be profitable to simulate the organization.[34]

Bass proceeded to develop an organizational simulation that he felt possessed research potential. First, he added a labor force of subordinates, which required internal attention so that cooperation would be elicited and tested. Next, in order to simulate the environment of a large organization, he arbitrarily increased communication difficulties. This he did by prohibiting face-to-face communications at any one time by more than one-third of the members of the operating organization. Companies were required to organize themselves to produce and market tangible products (IBM cards cut into specific lengths, assembled and fastened with staplers and tape). To continue realism in interpersonal relations a

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[34]Bernard M. Bass, "Business Gaming for Organizational Research," Management Science, X, No. 3 (April, 1964), pp. 546-547.

"diagonal slice" of representatives of management personnel were recruited from a single company and assigned jobs similar to their own in real life. Managers were assigned salaries based on operating costs.[35]

Some of the resulting activities are descriptive of the kinds of organization realism which can be developed. Companies with more formal hierarchies and in which most scheduling and creative thinking was done by management tended to leave plant employees rather idle. They used this free time in a number of cases to form unions. In some cases management was able to foil union organization by promoting union agitators.[36]

Another unique dimension of the Bass game is the ability of workers to quit one firm and accept employment with another. Pirating of managers or workers can lead to a firm cornering the labor market.

Bass thinks that the lack of perfect reproduction of the real world may be advantageous in simulation. For example, in his game experiment, management was at one time considering laying off several workers, but they hesitated thinking that all workers might go on a strike in spite of the illogic of their actions. He explained why management was probably correct. "What we have here in miniature is a collapsing of time coupled with potential over excitation of behavior illustrative of what might occur in much less dramatic form or actually only be felt, but not acted out in real life industry."[37]

One other way to examine the importance of an organizational environment in simulating realistic business or in eliciting managerial

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[35]Ibid., p. 548.   [36]Ibid., p. 553.

[37]Ibid., p. 554.

behavior is to examine the things that student game participants consid-

ered most important and which stood out in their memory. A study by Dill

and Doppelt showed that far more learning occurs from interpersonal exper-

iences than from analytic tasks. Students tended to comment about

organizational learning in terms of coordination of activities, the pres-

sures of decision deadlines, justification of activities to the Board,

establishment of routines, and the importance of influence patterns. In

fact, 76 per cent of the learning that took place was team-derived, as

compared to external or model-derived learning.[38]

These organizational characteristics of games are very important

if we plan to use them as an environment for measuring or predicting suc-

cessful performance. As early as 1958, Harold Leavitt explained why this

is so:

> It is not usually true that people simply succeed or fail. They
> succeed or fail "if," or they would have succeeded or failed "but."
> They might have succeeded if they had worked for another kind of
> superior; or if management had given them a little looser
> or a little tighter rein, or if they had been provided with a high-
> powered assistant; or if the job description had been rewritten so
> that the new man was given more responsibility in Area A and less
> in Area B. For success on a job, especially a decision-making manage-
> rial job, is not a function of personality alone but of a personality
> in an environment. Any testing procedure that tends to describe the
> complications of a personality, rather than to simplify it, provides
> extra data for relating the person to the environment. If the person
> is relatively unmodifiable, perhaps the environment is not.[39]

This is a rather bold statement on Leavitt's part, since few "or-

ganizational men" would accept the fact that a subordinate's failure

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[38]Dill and Doppelt, "Acquisition of Experience," p. 37.

[39]Harold J. Leavitt, Managerial Psychology (Chicago: The Univer-
sity of Chicago Press, 1958), p. 111.

might be due to anything other than his own weaknesses. A few years after

the above statement, however, Leavitt supports his thesis with a number of

important research disclosures of himself and his colleagues. In one of

these involving the Carnegie Tech Game play, it was " . . . found that

those teams had the highest morale and also performed best in which there

was the greatest differentiation of influence among team members. That is,

teams whose players saw themselves as all about equally influential were

less satisfied and made smaller profits than teams whose players agreed

that some particular individuals were a good deal more influential than

others."[40]

In the process of his investigation, Leavitt challenges some

rather cherished beliefs of management of the last thirty years. His chal-

lenges are very relevant to the assumption that we can develop a realistic

simulation of the managerial environment. It should be noted that one of

the most stimulating things about games has been the complete unfamiliar-

ity of participants with the game environment. But as Leavitt so well

illustrates, the first thing that any human being does when given a prob-

lem to solve is develop a general system or a "program" for solving that

class of problems. Once a general program is established that works rea-

sonably well the excitement subsides. Or, as Leavitt points out, "Once

they have developed it, the players can very easily instruct other people,

or machines, to play the game according to the system they have developed."[41]

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[40]Harold J. Leavitt, "Unhuman Organizations," Harvard Business Re-
view, XL, No. 4 (July-August, 1962), p. 96.

[41]Ibid., p. 93.

(One group of students has actually programmed a computer to play a complex game.)[42]

Next, Leavitt asks a perceptive question related to values of participative management which holds important implications for gaming. He asks: "Is it reasonable to think that we can in the real world maintain a continuously challenging 'unprogrammed' state for all members of an organization? . . . especially when members themselves are always searching for complete programs? . . . and while the demands made upon the organizations call for routine tasks like making the same part tomorrow, tomorrow, and tomorrow that was made today?"[43]

Applying these thoughts to games, one might conclude that we are creating one type of environment in games when the rules and problems are fresh and unfamiliar and quite a different one once game play has stabilized and general solutions have been developed. Perhaps the kind of managerial behavior that games evoke, challenge, or predict success in, depends upon the stage of the game play. Indeed, this conclusion seems to be implied by a report of game play by Dill and Doppelt in which they found teams focusing successively on three areas of activity. The initial focus was on problems of organization, the second on maintaining the firm as an operating entity, and the third in challenges of experimentation and innovation. However, the author's qualification to this last stage is the important point. "Once a team has organized and stabilized its

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[42]G. Haines, F. Heider, and D. Remington, "The Computer as a Small Group Number," _Administrative Science Quarterly_, VI, No. 3 (December, 1961), p. 362.

[43]Leavitt, "Unhuman Organizations," p. 93.

competitive position, if it does not lose interest in the game, its major

challenges lie in seeking ways to enliven play for themselves and compet-

itors and in exploring alternative strategies that it could not afford to

try when it was trying first to understand and control its environment."[44]

It may very well be that this last and often least exciting phase

of gaming is the one most typical of going organizations. Furthermore, it

seems likely that what is considered to be a true simulation of business

operation, and hence a true test, or learning situation for managers, may

depend as much on the goals established as on the type or complexity of

activities.

Next the question might be asked, "Should different simulations be

used to predict success for different types of firms and levels of manage-

ment?" Turning over again the question of participation versus structured

planning, Leavitt says:

> Or shall we (and I favor this conclusion) pragmatically conclude
> that if we want to achieve one kind of goal, then one kind of struc-
> ture seems feasible? If we want other criteria to govern, then
> another structure may make sense. Certainly it is reasonable to
> guess that in the real (as distinct from the laboratory) world, there
> will be locations and times which might make one set of criteria more
> important than the other even within the same large organization.[45]

From the above discussion it appears that the following tentative

conclusions might be tendered. First, it appears that a realistic simula-

tion of the managerial environment may not only vary according to the goals

of the organization (or suborganization) but also according to the level

of the hierarchy being simulated. Furthermore, for predictive purposes,

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[44]Dill and Doppelt, "Acquisitions of Experience," p. 39.

[45]Leavitt, "Unhuman Organizations," p. 95.

it appears that the success of any individual in a managerial game may depend not only upon his abilities and personality, but also upon the abilities and personalities of his teammates, upon the stated goals and criteria for effectiveness, and upon the level of the hierarchy being simulated. These suspicions (and perhaps they are nothing more than that at this time) point toward the need for a very clear delineation of the purpose and attributes of any particular game--not in terms of the simulation intended but in terms of the simulation that occurs. Simply describing a game as a total enterprise game or as a functional game does not make the behavior that occurs top management or functional behavior. The activities and behaviors that each game elicits must be captured, defined, and classified in some systematic fashion if they are to be used satisfactorily for prediction and evaluation of managerial candidates in industry.

A Synthesis of Control Measures for Game Environments

From this review of literature and the previous chapter on managerial behavior, it appears that any attempt to choose a simulation at random and to use it to predict on-the-job success for a participant would be questionable. The following characteristics should be carefully weighed and adjusted to a job profile similar to the one developed in Chapter II.

1. The Industry Simulated. There are advantages in providing a generalized industrial environment if one is evaluating experienced businessmen and wishes to look at their potential apart from past knowledge and experience in a particular industry. However, often times, industry

characteristics so color the style of management necessary for success that it seems desirable to duplicate to a reasonable degree the industry for which an incumbent's success is being predicted.

One of the best innovations discovered for adding industry realism to games is the addition of the dynamic business game case discussed in this chapter.

2. The Hierarchical Level Simulated. The important consideration here is not so much the quantitative model used as it is the actual mental and behavioral processes that take place as decisions are being made. Managerial behavior elicited by the game must duplicate behavior for which one is predicting success. The important consideration is not what the game is designed to simulate—but what it actually simulates. Game behavior needs to be systematically captured and evaluated to determine what functions of management are being elicited by a game. These functions should then be adjusted to bracket in a parallel fashion the position profile for which success is being predicted. A rather precise way of defining the level and character of work would be through in-basket inputs to the game.

3. The Business Function Simulated. The degree to which emphasis is placed on one function of business should be determined by the managerial hierarchical level being considered. It is possible that one would want to predict success in a functional area, but would desire to base the success on managerial ability separate and apart from functional knowledge. This might be especially true if all contenders for a position had proven themselves capable of performing well in the functional specialty at lower levels. On the other hand, realism and face validity

of a predictor are likely to be increased by a functional enrichment and thus the acceptance of a candidate who performs well by other candidates will more likely be assured.

At the lower levels of the organization technical ability and functional knowledge are intricately interwoven with managerial ability. One way in which the function of business simulated could be controlled would be through the careful evaluation of inputs for a particular position. Again, an in-basket interface might help in defining a functional position within a simulation model.

4. The Organizational Climate Simulated. There is a great danger that realism in games will be lost at this point due to the heavy emphasis on providing a stimulating and interesting exercise. Since most managerial jobs must develop into partial routines, and since participative management is limited in the actual business world, it is likely that a simulation for predictive purposes must be played until it represents a partially "programmed" state.

Organizational climate or philosophy is likely to be a most difficult variable to control. The establishment of a predetermined policy framework within which hypothetical managers must operate could offer some control here. For certain levels of management an organizational chart and job descriptions could be prescribed.

The design of a relevant game model for predictive or evaluative purposes is only useful if the behavior in such a game can be systematically described. In Chapter IV a theory is developed for describing the performance that occurs in business games.

CHAPTER IV

A THEORY FOR DESCRIBING MANAGERIAL PERFORMANCE

IN A BUSINESS GAME

Attempts to Elicit and Describe Managerial

Behavior in Simulations

Most attempts to utilize games as controlled business environments have assumed that they elicit behavior that is a duplication, or very similar to that, of an actual business organization, but there are no accounts in the literature of attempts to test this hypothesis.

One of the primary thrusts of research in gaming has been in the area of testing and prediction of managerial performance. Here most efforts could either be defined as the "shotgun approach" or as the "iceberg approach." The "shotgun approach" is typified by the Sears Roebuck and the Port of New York Authority experiments, where a variety of tests are administered in a variety of situations, including business games in the case of Sears Roebuck.[1] The assumption seems to be that if enough test situations are created in which to observe a participant's behavior, and if the situations are varied enough, all of the managerial behavior critical to success in business will be elicited.

The "iceberg approach" could be depicted by such studies as those

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[1]Robert C. Albrook, "How to Spot Executives Early," Fortune, July, 1968, pp. 106-111.

Felix M. Lopez, Jr., Evaluating Executive Decision Making: The In-Basket Technique, American Management Association Research Study, No. 75 (New York: American Management Association, Inc., 1966).

of Teisch and VanSlyke.[2] In these studies the environment of a dynamic

interactive business game alone is considered rich enough to evoke all

behavior critical to successful business performance. Therefore, success

in the game is checked for validity by use of other tests and measures

previously found to correlate significantly with success in management.

In other words, there is assumed to be an "iceberg " of behavior lurking

beneath the surface of game activity, which although undescribable, engen-

ders similar behavior to that found in managerial jobs in industry.

This review of literature will first cover several research ac-

tivities that have attempted to measure the predictive power of business

games. The purpose of each review will be (1) to show how this behavior

has been described and evaluated in the individual study in question, and

(2) to evaluate the strengths and weaknesses of each approach. Next, at-

tempts to develop evaluative and predictive instruments for managerial

behavior in industry will be surveyed and the approach to be used in this

paper, the critical incident method, will be described.

The "Shotgun Approach"

In an article in Fortune in 1968, the attempts of several firms

to develop more sophisticated ways to predict future success of young po-

tential executives was described. The three U. S. enterprises being

examined were Bell Telephone, Sears Roebuck and Company, and Humble Oil

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[2]Howard Phillip Teisch, "The Validity of a Business Game," (un-
published Master's thesis, University of Oregon, 1964).

M. D. VanSlyke, "Psychological Correlates of Business Game Per-
formance and Managerial Success," (unpublished Master's thesis, Purdue
University, 1964).

and Refining Company. According to the article these firms were looking

for an effective answer to the question of "how to find the talented man

or woman" so that they could be started on the managerial path early.

While Humble utilizes a sophisticated biographical study, Bell and Sears

prefer to base their forecasts on performance in management games. The

author's comment on these techniques provides the rationale:

> These techniques are powerful because they measure actual behavior
> in a standardized fashion. They do not depend upon a candidate's
> self-assessment as to whether, for example, he "likes people"--the
> approach often taken in ordinary interviewing or psychological test-
> ing. Nor do they depend upon the sometimes suspect "reference from a
> friend, teacher, or former employer." Instead the biographical quiz
> reveals whether the candidate has, indeed, had a pattern of good per-
> sonal relationships in his formative years. The games provide a live
> demonstration of such factors in a realistic setting.[3]

According to the writer the usefulness of these techniques is en-

hanced by the fact that only behavioral traits that have indicated success

in the organizations described are utilized, " . . . not some theoretical

or idealized set of management virtues."[4] It seems admirable that these

companies are attempting to duplicate actual behavior patterns on the job;

however, there seem to be a number of weaknesses inherent in this approach.

First, there does not appear to be any systematic development of categories

of performance (called "traits" by the above writer). Secondly, Hughes has

pointed out that for the purposes of selection and evaluation, we may not

be searching for all managerial behavior, but only behavior that is goal-

oriented in terms of organizational objectives.[5] It does appear that some

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[3]Albrook, "Spot Executives Early," p. 106.

[4]Ibid.

[5]Charles L. Hughes, "Assessing the Performance of Key Managers,"
Personnel, XLV (January-February, 1968), pp. 38-43.

of the participating companies are eliciting realistic (and perhaps goal-oriented) behavior in their business simulations. In the management of a fictitious toy company pressures are put on participants by changes in prices or costs every twenty minutes:

> Some candidates panic and disrupt the group with frequent and unhelpful reminders of the deadline, some others lose their tempers, becoming hopelessly confused, or refuse to abandon absolute plans. The visible contrasts sharpen between the steadier, more flexible, and even-tempered men and those who can't operate when pressured.[6]

While one might quarrel with the unrealistic practice in this game of beginning the teams without a leader and presuming that the man who "takes over" is a strong management contender—it seems that this might be a useful way to accelerate striving for hierarchical achievement.

After the candidates have gone home, Bell has assessors, who have not been assigned to each team, rate them on some twenty personal and behavioral characteristics, e.g., ability to plan, to use information effectively, and to exercise leadership.[7] Again, the rationale of the study undertaken in this thesis becomes relevant. In the "shotgun approach" being used at Bell, it is assumed that assessors have had enough opportunity to observe performance so that a reasonable coverage of all critical behavioral patterns could be sampled. But apparently no systematic attempt has been made by any of these companies to develop a profile of behavioral patterns, either on the job or in gaming. Without a knowledge of how well the universe of possible managerial behavior is being sampled, it seems impossible for one to determine whether or not assessors

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[6]Albrook, "Spot Executives Early," p. 108.

[7]Ibid.

have an adequate basis on which to formulate judgments. In a more in-

volved discussion of the in-basket portion of A. T. and T.'s assessment

program, Bray partially attacks this problem: "In my opinion, it is very

hazardous to make judgments about people without an opportunity to see

them actually engaged in either real work situations or simulations, . . .

simulation should be as essential part of the selection process."[8]

Perhaps one more attempt at describing what is meant by the

"shotgun approach" would be helpful at this stage of the discussion. The

remarks below are taken from Bray's description of the A. T. and T. Assess-

ment Program:

> . . . we have a standard procedure in which we always interview
> the man about his in-basket performance very soon after he takes
> it. . . . In the miniature business games, the only particular wrinkle
> we have is that we generally plunge the participants into the game
> without giving any opportunity to plan, and thereafter, the first pe-
> riod of activity we give them a specific planning period. In the
> leaderless group discussion a group of six is involved. Each man is
> given a description of a fictitious subordinate that he is recommend-
> ing for promotion. . . . The participant is told that he is to read
> up on his man for about five minutes and each one makes a five-minute
> pitch for his candidate.[9]

Bray continues to explain that an overall judgment is finally ar-

rived at based on such characteristics as: oral communication skills,

leadership skills, social objectivity, behavior flexibility, primacy of

work, tolerance of uncertainty, and decision-making. According to the

author:

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[8]Douglas W. Bray, "Situational Tests in Assessment of Managers,
Part I, The Assessment Program," Management Games in Selection and Devel-
opment, Proceedings of the Executive Study Conference (Onchiota Conference
Center, Tuxedo, New York: Executive Study Conference, May, 1964), p. 121.

[9]Ibid., pp. 122-123.

There is no mechanical process for combining the ratings on the individual characteristics. It is obvious that they cannot be added up, divided by N, and an average rating reached because it is quite clear that some of these characteristics may be more important than others.[10]

While it seems true that these characteristics could not be added up, it does seem possible that the observed incidents of behavior through which these characteristics incur their weightings could be accumulated in some numerical fashion. Indeed, this has been done in a number of relevant and reliable studies on performance evaluation using the critical incident method upon which the research in this thesis is based.[11]

The following report of a participant's assessment illustrates a number of points pertinent to this thesis:

"This man entered into the assessment exercises in an agreeable and energetic way. . . . In the investment problem (our stock market problem) he was rated as one of the two best contributors by the staff observers and by his peers. . . . His performance in the discussion problem was also rated as one of the better ones by the staff observers and his peers, although he did not contribute as strongly here as he did in the investment problem. The projective tests of personality suggest that he prefers team projects over working alone. Part of this man's success in group situations is due to his good ability to express himself." (And then we cite evidence from the discussion problem and from the investment problem. Then we go on to talk about his human relations abilities.) "He spent a good deal of time in deliberate efforts to get others to feel positively about him. He smiled at them, cajoled them, used forms of address such as "old buddy, and so forth."
(What you see here is that we attempt to pull together evidence from the various techniques around certain traits and characteristics. . . . Then we talk about his decisiveness, which was gotten from the in-basket and the projective tests, and about his motivation, which was gotten from the projective tests and the Edwards. Then we go on to mental ability. . . . Now we go on to weaknesses.)
Although, as noted above, this man made substantial contributions in group situations, he displayed no definite leadership

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[10]Ibid., p. 123.

[11]Gerald H. Whitlock, "Application of the Psychological Law to Performance Evaluation," Journal of Applied Psychology, XLVII (February, 1963), pp. 15-23.

characteristics. In the group discussion problem, he simply jumped into the various discussions which arose, and the issues which were discussed. He did not push any proposal of his own and he agreed with most of the proposals made by others. . . ."[12]

It is obvious that the behavioral incidents above are stated in a nonrandom and unsystematic fashion, inviting bias, and making it difficult to compare the man's performance with other candidates. Secondly, value judgments are interwoven with factual reporting, causing further possibility of confusion.

The "Iceberg Approach"

One of the most difficult problems that has arisen in the use of games for performance evaluation is that of defining the success of participants. Since game complexity is approaching that of business operations, the difficulty of measuring success in the two environments is not too dissimilar. A second problem that arises when games are used for evaluation purposes is that of relating individual success to team performance (since games are frequently played by a group of persons).

Vance developed a novel approach to both of those problems in a study described in the Academy of Management Journal. First, he developed a model for measuring success in a game based on what he considered to be sound business goals.

The evaluation model is expressed in equation form below:

$$T = M + I + C + P + E + D$$

where the variables of the equation are defined as:

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[12]Bray, "Situational Tests," p. 121.

    T = Total Game Performance
    M = Share of the Market Performance
    I = Inventory Performance
    C = Cash Performance
    P = Profit Performance
    E = Owner's Equity Performance
    D = Dividend Performance[13]

Each of these factors is assigned a numerically weighted scale of points, the total of which becomes the game performance score which measures the success of participants. The second problem mentioned above, that of determining the extent of an individual contribution toward game performance is solved by using "teams" comprised of only one person. While this isolates contributions, it also places serious limitations on the type of behavior that can be elicited. In terms of the Seven Expressions of Executive Performance described in Chapter II, "Development of Morale" and "Development of Competent Subordinates," would be excluded almost entirely.

In spite of these qualifications, Vance and Gray's findings are significant to the developing field of gaming for evaluation purposes and shed some light on the study being undertaken here. They discovered a marked difference between the performance of the first- and third-ranked players on at least five of the performance appraisal factors when 63 retailing manager game participants' scores were compared with their ratings on their jobs. The five factors indicate a significant correlation between their game score and their on-the-job performance in terms of such factors as overall job knowledge, judgment, initiative, and health.[14]

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[13]Stanley C. Vance and Clifford F. Gray, "Use of a Performance Evaluation Model for Research in Business Gaming," Academy of Management Journal, X, No. 1 (March, 1967), pp. 31-32.

[14]Ibid., pp. 32-33.

Considering the relevance of the Vance and Gray study to the research study described in this dissertation, the question comes to mind, "What are the incidents of behavior or performance specimens supporting aggregate ratings in each of these categories?" If the relevant incidents or activities by game participants could be isolated, perhaps incidents of behavior could be isolated when evaluating performance for predictive purposes.

The most sensitive distinguishing traits discovered in the study described by Vance and Gray were "judgment" and "health." Judgment was defined as "the ability to make sound, logical decisions on the basis of available data," which is precisely the behavior expected to be important to success in a game dependent on individual strategy, without interaction from other team members. The researcher thinks that the correlation of the health rating with success criteria may be accounted for by the relative high average age of employees and the fact that most game decisions were made after a working day.

A similar study to the Teisch research was undertaken in 1964 by VanSlyke. However, in this case the research design was drawn somewhat tighter by the selection of participants in an equivalent level of management in relation to the parent organization, and by the use of a simulation game especially designed to match the occupation of the participants, the Purdue Farm Supply Business Management Game. The study was designed so that a three-way evaluation could be made. The three-way relationships are depicted in the diagram which follows:[15]

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[15]VanSlyke, "Psychological Correlates," pp. 19-35.
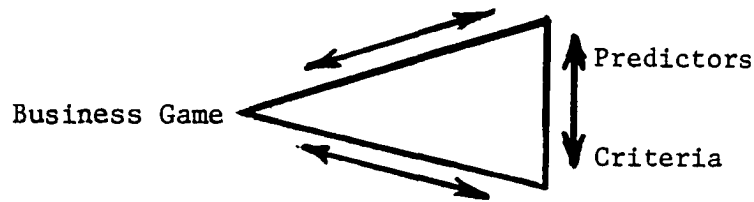
Figure 2

The participants in the study were twenty-three county managers of farm bureau cooperative associations who were participating in an experimental workshop held at Purdue University. As in the case of the Vance, et al. and the Teisch studies, managers acted independently in playing the game; therefore, the possible environment of behavior elicited was somewhat limited, especially in terms of interpersonal relations and the leadership function. This limitation becomes critical as will be seen in the review of the results of the game. Furthermore, the competitive environment in the game was established by the game administrator rather than allowing for competitive interaction between contestants. This could be an added advantage in evaluation of results if realism and competitive spirit were not sacrificed too much. The author does not indicate the purpose of this innovation, nor whether an attempt was made to equalize competition for all participants.

Game success was defined as the maximization of net worth. Both objective and subjective measures of on-the-job success (the criteria in Figure 2 above) were utilized. The two objective measures of managerial success were ratios of net profit as a per cent of sales and operating expenses as a per cent of gross margin, both determined by a financial audit. The two subjective measures were a peer-ranking by the participants in a pre-game survey and the ranking of participants by a field representative

from the headquarters of the cooperative association. The third side of

the triangle, predictors, consisted of a battery of psychological tests.

The results of the Pearson Product-Moment Correlations of these

triangular relationships are difficult to interpret for a number of rea-

sons. However, verbal aptitude, reasoning ability, numerical aptitude,

responsibility, and emotional stability were all positively related to

game success at the $p = .05$ significance level. Ascendancy, cautiousness,

and original thinking scales were not related to performance in the busi-

ness game. Most important to this dissertation was the finding that the

four performance criteria of on-the-job performance achieved no signifi-

cant relationship with game performance.[16]

From partial coefficients the researcher determined that socia-

bility and years in present position explained 58 per cent of the

variation among rankings of managerial ability by the expert, indicating

a ranking largely on popularity, rather than managerial ability or busi-

ness success.

The author's final conclusions are perceptive and establish a

well-defined rationale for the research being undertaken in this disser-

tation (although not discovered until after its conception):

> The results show significant correlations for the game with both
> cognitive and personality factors. However, no correlations were
> extremely high, and no obvious patterns emerged for which the game
> seems to be an especially good predictor. The question arises of
> just what trait, or group of traits, is to be predicted. . . . None
> of the predictor variables used in the study is known to really pre-
> dict well that elusive trait we refer to as managerial ability. In
> fact, somewhat of a void of psychological techniques exists in terms
> of predicting overall managerial success. . . .

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[16]Ibid.

This author's experience with study of the business game has left one of those abstract after-images—a hunch, if you will—that some traits required for managerial success lie cloaked in the business game.[17]

The author tends to discount the findings of his study because of

the raters used—and because of the type of businesses surveyed.

Consultants are available to these managers as needed to assist them when in trouble. . . . This "backstopping" by the field force makes knowledge of business management techniques less crucial. . . . In addition, frequent periodic training sessions are held for these managers by the parent organization, so all may have some minimum necessary level of management knowledge. With these factors at work, the compression effect would serve to weaken considerably the relations with other variables. . . .[18]

VanSlyke cites individual game operation as being the one greatest

inherent weakness of the study. This also seems to be true of the Vance

and Teisch studies. Unless we are investigating managers for jobs in

small business management, requiring solely their own services, a critical

attribute for success is going to be their ability to lead and motivate

others; to elicit and evaluate decisions rather than to make them alone

and to recognize, evaluate, and reward effective performance of others.

None of these activities are evoked by the studies cited thus far in the

literature, in spite of the fact that this is precisely where the game's

advantage as a predictor is likely to exist—namely, its ability to pro-

vide a complex and rich environment by creating problems which necessitate

decision-making in an interpersonal setting.

Dill addressed himself to this problem in 1961:

The best measures to try to derive from observing the players in a game are probably not the "traits" for which we search with

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[17]Ibid., pp. 36-37.

[18]Ibid., p. 38.

objective personality tests and about which we talk so vaguely in management. Instead we can often see the players duplicating the specific behaviors we would expect of a good or a poor manager.[19]

Dill believes that Carnegie Tech has been able to use games to distinguish among complex attributes of men such as their ability to discuss critical relationships, accept or reject routine work, express ideas clearly, and complete jobs on schedule.[20]

Dill has been unable to find any correlation between success in playing the game and raw intelligence, nor with any other personality variables. In view of these findings and the fact that raw intelligence is not a good predictor of managerial success, he concludes, "The qualities of a good game player may be as elusive as the qualities of a manager."[21]

In view of the lack of success of studies thus far to measure managerial performance by use of simulations, the focus of this paper will now turn to an investigation of the attempts to measure managerial performance in industry. Perhaps the answer to the successful measurement of performance in game play lies in the methods discovered as most suitable for this well-researched domain.

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[19]William R. Dill, "What Management Games Do Best," Business Horizons, IV, No. 3 (Fall, 1961), p. 62.

[20]Ibid.

[21]Ibid., p. 63.

Attempts to Describe and Measure Effective

Managerial Behavior in Industry

Common Weaknesses in Behavioral Observation

Dunnette provides a very succinct discussion of the sources of

error in behavioral observation for evaluating performance. These are

summarized from his discussion below:

1. Inadequate sampling of job behavior. The observations are

considered deficient if the total set of performance specimens is sketch-

ily or incompletely defined. If irrelevant behaviors are included the

observations are said to be contaminated.

2. Lack of knowledge, understanding, or rapport of observer.

According to Dunnette, " . . . If a supervisor-observer fails to under-

stand the statements or items of a rating form, if he regards them as

irrelevant or as unimportant, if he does not feel like cooperating with

those who ask him to complete the form, or if he has had little or only

limited opportunity to observe either the employee or his job behavior,

he may adopt . . ."[22] patterns such as a central or leniency tendency, a

halo effect (rating everyone high or low) or other well-known biases in

rating.

3. Changes in the job environment. Different behaviors may be

required at different times on a job, especially if a great amount of

learning is taking place.

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[22]Marvin D. Dunnette, Personnel Selection and Placement (Belmont,
California: Wadsworth Publishing Company, Inc., 1966), pp. 89-90.

4. Changes in employee behavior. Dunnette warns against basing descriptions of job behavior on a sample of one day's observations, although he considers this a common occurrence.[23]

Dunnette provides at least partial answers to these problems by suggesting that observers should actually develop the rating form to be used so that they will understand and have faith in its operation. A compromise to this is to check for their agreement on behavioral statements as the form is developed. Furthermore, observations should be made over a reasonably long time period and preferably should be kept in a Job Anecdote File to serve as a "memory jogger" in rating.[24]

Most important to this thesis is the suggestion by Dunnette that the critical incident technique be used for involving supervisors in rating form design.[25] This approach is defined later in this chapter.

The Validity of Predictive Instruments

In 1968 Korman made an extensive investigation of instruments designed to predict managerial performance, reviewing more than fifty attempts to capture this elusive quality. In discussing cognitive ability tests, he explains that tests such as verbal ability have been unable to discriminate among potential managerial candidates except at the lowest levels, the reason being " . . . that the typical managerial applicant population is already highly preselected on abilities and is relatively homogeneous on these variables. Thus the differentiators will not be

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[23]Ibid., p. 91.   [24]Ibid., pp. 89-90.

[25]Ibid., p. 90.

abilities in the traditional sense."[26] Similarly, Korman found very low

correlations between question-and-answer type tests purported to measure

leadership ability and success criteria, including the rather well-known

"How Supervise" test. Personal history type tests seem to offer a slight-

ly better predictive ability, but with this instrument also, predictive

ability diminishes rapidly as one moves into the higher echelons of man-

agement.

Korman found that predictive abilities of "judgmental" type tests,

where actual managers observed candidates on projective exams, showed

great improvement over "actuarial" methods. This predictive ability was

further improved when peer ratings were used, not because of superior

judgment, but as Korman explains, because of the superior opportunity to

observe performance. "The difference between this situation and the exec-

utive assessment paradigm is that the information available here is not

usually test-and-interview data but rather impressions gained from subor-

dinate nature."[27]

Interestingly enough, although critical incidents were often used

as a criterion of success in the more valid judgmental ratings reviewed

by Korman, in no case were they listed as a predictor of success. Most of

the judgmental studies used as predictors overall ratings by peers or su-

periors based on academic observations or on training camp observations

(in the case of the military ratings).

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[26]Abraham K. Korman, "The Prediction of Managerial Performance:
A Review," Personnel Psychology, XXI, No. 3 (1968), p. 302.

[27]Ibid., p. 313.

What Korman does not mention, however, is that these overall rating predictors suffer from one of the weaknesses for which he condemned the personal history predictors. He says " . . . personal history items tend to lend themselves to a brute empirical approach, where items are utilized according to the specific level of correlations involved in the specific situation, rather than to the meaningfulness of the variables and the possible psychological constructs which could lead to an effective theory of leadership behavior."[28]

But Korman's discussion proceeds to strengthen the rationale for the critical incident method introduced later in this chapter:

> It should not be construed that the generally low correlation about which we have made slighting remarks here are never of practical usefulness. Any "r" is of practical significance providing one can slice off an extreme enough group, a situation not completely unknown in industrial circles. However, procedures of such institutional usefulness contribute little to our knowledge of managerial behavior, a theoretical matter which we believe will lead to greater practical significance in the end. Neither are they of assistance when the managerial talent grows slim, a situation which will become increasingly common in our exploding society.[29]

In other words the predictors used should not only predict success, but should also tell us something about the cause of the success being predicted, i.e., managerial behavior. From the above studies the following conclusions are drawn concerning a system for predicting effective managerial performance in business simulations.

1. Any method used to describe managerial type behavior and to record it for predictive purposes must avoid deficiencies and contamination. It must systematically sample in a random fashion all relevant behavior over a reasonable period of time.

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[28]Ibid., p. 308.   [29]Ibid., p. 319.

2. It must possess face validity to the rater; therefore, his own observations and thoughts, or those of persons similar to him, need to be incorporated into it.

3. It must be judgmental in nature rather than actuarial and should probably include the judgment of peers as well as supervisors.

4. In order to distinguish among a number of highly capable people (such as managerial candidates at the top levels, or graduate students) a relatively high correlation is required between the predictor and the criterion of success.

The Critical Incident Method

Although this thesis is more concerned with instruments having predictive ability than those used for evaluative purposes, the potential use of a business game may possibly allow both the prediction and evaluation functions to be performed with the same instrument. This is true because the game provides a rich and varied environment for the observation of performance over long periods of "compressed" time. For this reason the rationale for the critical incident method will be discussed below.

The critical incident method of performance appraisal is an outgrowth of studies performed during World War II by the personnel of the American Institute of Research. The method consists of three main procedures: (1) obtaining critical incidents of the job, (2) combining these incidents to form the critical requirements of the job, and (3) listing these critical requirements in the form of a checklist.[30]

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[30]American Institute for Research, A Report of Three Years of Experience (Pittsburgh: American Institute for Research, September, 1950), p. 3.

The following definitions are provided by the American Institute

for Research:

> The critical requirements for an activity are those that are crucial in the sense that they have been frequently observed to make the difference between success and failure in that activity. . . . Critical incidents are descriptions of things people did which were especially effective or ineffective in accomplishing specific tasks.[31]

The procedure for collecting observational data is called the

critical incident technique. Following this procedure immediate super-

visors or other competent observers are asked to report from memory

previous observations of workers' behavior on the job. Complex jobs per-

formed under various conditions usually require two or three thousand

critical incidents, while simpler or more homogeneous jobs require only a

few hundred incidents. A device suggested to insure a random sample of

unbiased incidents is to request the most recent occurrence of some well-

pronounced incident, e.g., a reprimand, a transfer, an accident, or a

grievance.[32]

Flanagan lists five specific conditions that must be satisfied in

regard to observations of job behavior. They are as follows:

> a. It is essential that actual observations be made of on-the-job activity and the product of such activity.
> b. The aims and objectives of the activity must be known to the observer. Unless this condition is fulfilled it will be impossible for the observer or judge to identify success or failure. . . .
> c. The basis for the specific judgments to be made by the observer must be clearly defined. The data can be objective only if all observers are following the same rules. All observers must have the same criteria for making judgments. . . .

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[31]Ibid.

[32]John C. Flanagan, "Job Requirements," Current Trends in Industrial Psychology (Pittsburgh: University of Pittsburgh Press, 1949), pp. 45-46.

    d. The observer must be qualified to make judgments regarding the activity observed. . . .
    e. The last necessary condition, is that reporting be accurate. . . .[33]

After the critical incidents are obtained, a preliminary examination is made and six to ten major area headings are set up to aid in classification. These will probably be modified during the process. As the critical behaviors are separated into main areas, they are also grouped into sub-areas and similar behavioral incidents are bound together to form a single unit in the sorting process. Definitions for areas and sub-areas are formulated and the units are then sorted once again. After this, a category statement is written to cover each group of similar critical behaviors. Isolated incidents are placed in a reject file for further examination. The category statements thus derived constitute the critical requirements for the job studied.[34]

In 1956, the critical incident technique had been used to determine the critical requirements for Air Force officers, airline pilots, air traffic controllers, B-29 combat crews, scientists, factory workers, life insurance agents, teachers, and dentists.[35] Since that time the critical requirements for nurses and college professors have been formulated.

The critical incident method has developed critical incidents

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[33]John C. Flanagan, "Defining the Requirements of the Executive's Job." <u>Personnel</u>, XXVIII, No. 35 (July, 1951), pp. 28-35.

[34]<u>Ibid</u>.

[35]June Teig Bailey, "The Critical Incident Technique in Identifying Behavioral Criteria of Professional Nursing Effectiveness," <u>Nursing Research</u>, V (October, 1956), p. 55.

proven to be valid and reliable <u>criteria</u> of success in various performance evaluation studies in industry. For this reason it is chosen as the most likely method for developing a predictor of success, given the rich and complex environment of a business simulation.

The predictive model developed can be summarized at this point by the illustration in Figure 1, page 6.

Step 1: First, definitions should be written of the goals of the organization for which the managers are employed and evaluated. Next, a game model should be designed which could elicit activities oriented toward each of these goals. (See Block 1.)

Step 2: Next, the goals defined in Step 1 should be defined in terms of the appearance they would take on when performed effectively by the top managers. (See Block 2.)

Step 3: Actual performance specimens of managerial behavior on the job should be collected for each position for which success is to be predicted. These should be obtained and classified by use of the critical incident method. Similar observations should be made of parallel positions in business game play and critical incidents should be developed as on the job. (See Blocks 3 and 4.)

The critical incidents developed in each channel of Figure 1 should continually be related back to organizational goals by way of top executive performance. Furthermore, any basic disagreement between critical incidents discovered on the job and in the game for the same position should be resolved by adjusting the game environment and rechecking the results by a collection of more performance specimens. (See Block 5.)

Summary

In Chapter IV the major attempts to use business games and other simulations for predictive purposes were reviewed. The weaknesses of attempts to evaluate managerial behavior and predict success on the job were then discussed.

In order to develop business games as predictors of success in industry, a criterion channel development and a predictive channel development were suggested. The major device found to offer promise in the development of both of these channels was the critical incident technique which was described and discussed.

Chapter V will give an account of some exploratory research designed to test the major hypothesis of this thesis. This hypothesis is that the critical incident technique can be used successfully to describe the managerial behavior being elicited by business games.

CHAPTER V

RESEARCH METHODOLOGY AND FINDINGS

The critical incident studies described in this chapter were designed to determine the kinds of managerial behavior elicited by business games.

Collection of Data

The raw data for use in describing game behavior was obtained from the following studies:

Study A. A questionnaire handout to an Introduction to Business class of freshmen students participating in a general management game (N = 51).

Study B. A questionnaire handout to a group of junior Marketing Management students participating in a marketing game (N = 41).

Study C. A questionnaire handout to a group of senior students participating in a general management game (N = 14).

Study D. Consisted of three questionnaires to similar groups (1) a nationwide mailout to businessmen and professors known to be interested in business gaming (N = 190), (2) a mailout to the American Association of Collegiate Schools of Business by way of the Marketing and Management departments (N = 278), and, (3) a mailout to participants in a faculty development seminar held at Oklahoma Christian College, including professors from twenty-one colleges and universities from a six-state area (N = 33).

Construction of Critical Incident Checklists

The checklists in Tables 2, 3, 4, and 5 to be found in the follow-

ing pages were independently designed using a process developed by

Flanagan[1] and described more fully in Chapters II and IV of this thesis.

However, Flanagan combined performance specimens into rather general cate-

gories called "critical requirements," whereas in this study they have

been left in a more specific state called "critical incidents" so that

they could be readily observed for consideration in predictive and eval-

uative studies.

Using Flanagan's methodology, the incidents in each study were

sorted into several categories of performance called "factors." At first

categories were general in nature and only served to facilitate the sort-

ing process. As performance specimens were separated into main areas,

they were grouped into subareas of performance and similar specimens were

bound together to form one unit in the sorting process. Definitions for

the factors were then formulated more precisely and the units were re-

sorted. An important aspect of this procedure was the fact that no area

of performance was chosen arbitrarily as being important to game perfor-

mance. Rather, critical incidents and factors were all <u>derived</u> from the

manner in which the performance specimens could be logically grouped.

In Tables 2, 3, 4, and 5 on the following pages, it will be noted

that the factors derived from the studies are numbered with Roman numer-

als. Under each category some critical incidents are representative of

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[1]John C. Flanagan, "Defining the Requirements of the Executive's
Job," <u>Personnel</u>, XXVIII (July, 1951), pp. 30-31.

"effective performance" and some are representative of "ineffective per-

formance." No attempt was made to reverse effective or ineffective

performance since the criticality of an incident to overall performance

depends on the manner in which it is observed and the attitude formed by

the observer. Past studies have indicated that some items are only con-

sidered critical to success when they appear in negative form, since most

persons perform them satisfactorily. In like manner, some types of be-

havior are so often observed in negative form that they are considered

commonplace or "the usual." Only when someone performs effectively in

these areas does his performance become critical to success.

In the column to the right of each checklist (Tables 2, 3, 4, and

5) the percentage of individual performance specimens reported for each

critical incident category is shown.

Behavior Reported in Study A

Many of the characteristics of the six studies described above

are similar and will be discussed as Study A is described in more detail.

At the time these data were collected, students in the Introduc-

tion to Business class had played eight moves in the UCLA game No. 2, a

top-management, dynamic, interactive business simulation. The game re-

quires aggregative decisions on price, advertising, research and

development, production volume, and dividends to be paid. In addition,

students were required to design a physical product on paper and to devise

a brand name for it. Teams were rated on this product.

The questionnaire used in this study is included in Appendix A.

In all of the studies itemized above, including Study A, persons were

asked to respond to a request similar to the following:

Please describe briefly an incident concerning the action of a participant in a business game, that you observed or learned about first-hand, which in your opinion was an example of unusually effective game performance (or unusually ineffective, as the case may be). Please describe exactly what occurred, giving only enough detail to explain why the act was unusually effective or unusually ineffective. (See Appendixes A, B, C and D.)

In Study A no examples were given and no categories of behavior were suggested. In each case respondents were allowed to submit as many performance specimens as they wished, but at least one effective and one ineffective specimen was requested. Table 2, on the following page, summarizes the critical incidents of behavior derived from the performance specimens submitted in Study A, categorized into similar areas of behavior defined as "factors."

In order to explain what is meant by a performance specimen and how these are sorted into a critical incident category, the two specimens that made up critical incident 1 under PLANNING in Table 2 are given below:

One student suggested that we sell all inventories at a reasonable price, build up the firm, and increase dividends of the stockholders. Our price was reasonable, the inventories sold, and the firm increased in size with increasing dividends for the stockholders.

Our team accepted the strategy of one student who suggested that we correspondingly raise advertising and the price of goods. This was to be done very slowly while channeling money away from R & D and plant into an increase in dividends. This kept our team among the top three teams during the whole game.

Under ANALYSIS AND CLARIFICATION OF INTEGRATED RELATIONSHIPS it can be observed that some critical incidents are reversible. They were considered critical to successful performance whether observed occurring in a positive manner or a negative manner. Critical incidents 6 and 8 in Table 2 are examples of this phenomenon. The following two specimens are examples of ones used in support of incidents 6 and 8, respectively:

TABLE 2

RELATIVE FREQUENCY IN PER CENT OF TOTAL PERFORMANCE SPECIMENS
REPORTED FROM STUDY A FOR EACH CRITICAL INCIDENT
AND FACTOR OF MANAGERIAL BEHAVIOR

	Per Cent (N = 117)
I. PLANNING	5.8
1. Took time to engage in long-run planning	.8
2. Developed a successful strategy for the team	1.7
3. Persuaded team to take reasonable risks	1.7
4. Failed to provide enough time for proper planning	.8
5. Failed to spend enough time planning	.8
II. ANALYSIS AND CLARIFICATION OF INTEGRATED RELATIONSHIPS	6.9
6. Showed a good understanding of game variables	2.6
7. Used special functional knowledge for team benefits	1.7
8. Failed to develop an understanding of game relationships	2.6
III. DECISION-MAKING	17.0
9. Predicted results of decisions accurately	1.7
10. Was innovative in providing new ideas	5.1
11. Made a decision that proved to be successful	2.6
12. Favored close adherence to goals and objectives	1.7
13. Made decisions without considering integrated relationships	.8
14. Suggested irrelevant thoughts and ideas often	5.1
IV. PERSONAL AND ORGANIZATIONAL RESPONSIBILITY	48.7
15. Boosted morale by interest and preparation	3.4
16. Carried more than his share of work	7.7
17. Carried out work assignments effectively	4.3
18. Performed an unloyal act in the game	.8
19. Failed to take care of assigned responsibilities	4.3
20. Failed to show up for team meetings	12.8
21. Showed little or no interest in team's activities	15.4
V. LEADERSHIP	21.3
22. Divided team responsibilities equitably	2.6
23. Prompted teammates to acquire understanding of game	1.7
24. Listened to ideas of others	.8
25. Showed leadership in planning and analyzing strategy	11.1
26. Acted as integrating force in group decision-making	.8
27. Dominated excessively in leadership capacity	4.3
Total*	100.0

*Total does not add to 100 due to rounding.

One person many times noticed an "insignificant" fact which later proved important in determining our action and greatly changing our income.

One person blindly reacted to the results of each decision. When the return was good, he advised additional, heavy investment and when the return was not so good he would advise completely reversing our strategy and not following our original goals. He didn't realize that certain effects of our strategy were cumulative and were not apparent immediately.

It is interesting to note under DECISION-MAKING that the effective incident supported with the greatest number of specimens, number 10, also appeared as an ineffective incident supported by the largest number of specimens, when these ideas were irrelevant. One representative effective specimen and one representative ineffective specimen is included below:

> When we had to name our popcorn popper only one person (a girl) other than myself showed up. We sat down and began to think of some necessary qualities for our product. It turned into a sort of brain-storming session. She was intelligent and innovative and I enjoyed working with her very much.

> One of our team members was a hindrance in reaching decisions because he continually talked about irrelevant ideas.

Incidents occurring under PERSONAL AND ORGANIZATIONAL RESPONSI-BILITY of Table 2 appeared most often in the ineffective category. This is probably because participants are expected to accept their delegated responsibilities; therefore, teammates do not consider this acceptance unusually effective performance. The more unique incidents to be found under PERSONAL AND ORGANIZATIONAL RESPONSIBILITY in Table 2 are numbers 15 and 18. A supporting performance specimen for each of them is given below:

> One person in our group was very interested and very involved in the game. He was always reading up on some things that might help us.

> One member had a sketch of a popcorn popper. We didn't like the popcorn popper's design but we were going to use the brand name and

trademark with the design of another member. The first member, how-
ever, became disgruntled and gave his drawing to another team. It
might have cost us first place in the drawing evaluation.

Leadership activities in business games seem to be largely those
that develop because of an emerging informal leader. Teams are usually
too jealous of the democratic atmosphere to endow a teammate with very
much formal authority. Furthermore, they usually do not know each other
very well and age differences between managerial levels are not as great
as is often the case in industry. From an observation of incidents 22-27
in Table 2, it can be seen that a number of characteristics seem to cause
these emerging leaders to be considered effective. If they can divide
responsibilities effectively or help others understand what to them is
considered a complicated environment--the game--they are considered effec-
tive. Being willing to listen well and to integrate group decision-making
activities also gives them increased stature.

On the basis of frequency of specimens reported, the ability to
plan and analyze strategy seemed to be a most important attribute for team
leaders. Overdomination of fellow teammates was a frequently cited weak-
ness.

Every student surveyed in Study A responded with at least one
specimen. The total number of performance specimens collected was 117 for
an average of 2.3 per student. Of these 117 specimens, 61 were examples
of effective behavior and 56 were examples of ineffective behavior.

Behavior Reported in Study B

The game used in this study was Ralph Day's <u>Marketing in Action</u>.[2]

It, too, requires aggregative decisions, but it deemphasizes production

and finance in favor of a richer marketing function. Students are allowed

to sell more than one product. A wide range of products can be chosen on

the basis of their appeal to three submarkets and various types of market-

ing research can be purchased. The game was further enriched by requiring

a product package design and brand name project and by requiring formal

presentations of team strategy at the end of game play. Table 3 on the

following page summarizes the incidents and factors derived from the per-

formance specimens submitted in Study B.

Since students in the junior-level course from which these data

were reported were requested to write formal statements of objectives and

policies, more emphasis on these items could be expected than in the

freshman game designated as Study A. The following performance specimens

supported critical incidents 1 and 3 in Table 3:

> One person started out right at the first to make us a large out-
> put, low price firm. Basing the output on capturing 40% of the
> market. In the first month we sold more than expected and thereafter
> had the opportunity to raise price. Since then, we have lowered price
> slightly, used a moderate advertising and sales force policy and have
> held our share of the market and of profits.

> The lifesaving effort of one member probably kept us from going
> broke. We had allowed ourselves to be led away from our company pol-
> icies. We started losing and the main leader forced us back to the
> guidelines. The team members, responding to his strong leadership,
> started working and reaped high profits.

The game used in Study B also included opportunities for buying

research information which was not true of the freshman game described in

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[2]Ralph Day, <u>Marketing in Action</u> (Homewood, Illinois: Richard D.
Irwin, Inc., 1968).

TABLE 3

RELATIVE FREQUENCY IN PER CENT OF TOTAL PERFORMANCE SPECIMENS
REPORTED FROM STUDY B FOR EACH CRITICAL INCIDENT AND
FACTOR OF MANAGERIAL BEHAVIOR

		Per Cent (N = 77)
I.	PLANNING	7.8
	1. Established well defined objectives and policies	1.3
	2. Followed objectives and policies consistently	1.3
	3. Was profit-minded and goal-oriented	3.9
	4. Failed to provide balanced planning	1.3
II.	ANALYSIS AND CLARIFICATION OF INTEGRATED RELATIONSHIPS	6.5
	5. Developed an effective standard operating procedure	6.5
III.	DECISION-MAKING	37.7
	6. Performed useful formal or informal research	3.9
	7. Developed or supported the use of graphs or charts	9.1
	8. Showed skill in assessing and using numerical data	3.9
	9. Interjected inconsistent strategy without just cause	3.9
	10. Helped team recognize critical relationships	3.9
	11. Showed creativity by suggesting many game solutions	5.2
	12. Showed proper caution and common sense in making decisions	1.3
	13. Made or favored decisions unsupported by facts	1.3
	14. Made ineffective decisions frequently	1.3
	15. Failed to project outcome of decisions	3.9
IV.	PERSONAL AND ORGANIZATIONAL RESPONSIBILITY	16.9
	16. Was unusually dependable in attending meetings	1.3
	17. Carried more than his share of workload	1.3
	18. Remained knowledgeable through continual preparation	2.6
	19. Often failed to fulfill work commitments	5.2
	20. Often late or irregular in attendance of meetings	3.9
	21. Refused to accept delegated responsibility	2.6
V.	LEADERSHIP	31.2
	22. Often brought about agreement in group meetings	5.2
	23. Took command of unstructured groups in agreeable fashion	2.6
	24. Admitted mistakes willingly	1.3
	25. Never stated an opinion without valid support	1.3
	26. Motivated others to strive toward organizational goals	1.3
	27. Was articulate in communicating ideas	2.6

TABLE 3--Continued

	Per Cent (N = 77)

V. LEADERSHIP (Continued)

28. Was persuasive in communicating ideas 1.3
29. Used humor effectively 2.6
30. Showed optimism and courage during period of failure .   3.9
31. Failed to establish an effective communication system .   1.3
32. Failed to present thoughts in organized fashion 1.3
33. Presented ideas with a domineering attitude 3.9
34. Blamed lack of contribution to team on personal
problems 1.3
35. Was argumentative and contentious in discussions . . .   1.3

Total* 100.0

*Total does not add to 100 due to rounding.

Study A. This accounts for the appearance of critical incident 6 in

Table 3 which is supported by the following performance specimens:

One member suggested that we begin buying the GNP forecast. This led to a significant decrease in our per cent of error in our forecast.

One person analyzes and uses market research to such an extent that through him we are coming very close to our forecast and at times have missed by less than one per cent of error for the month.

The LEADERSHIP incidents reported seemed to be better defined and

represented more sophisticated behavior in Study B than in the case of

the freshmen in Study A. Some of the performance specimens from which

critical incident 22 in Table 3 was written illustrate this depth of un-

derstanding and of reporting:

One effective student leader would take the best of the opinions and discuss the various alternatives with other team members. The whole process was very democratic with a leader open to opinions. The way in which he handled the meetings gave everyone an opportunity to express his opinion and prevented the "railroading" of any ideas of the minority or majority over the ideas of any other person.

When making decisions for our forecasts and price we almost always disagree. "Mr. A" is good about bringing about a compromise among us as a group. He is also good at communication. For example, when someone doesn't understand how the decision was made or brought about, he is good about showing and explaining. Other teammates sometimes have a "don't care" attitude.

One team member is unusually effective in his relationships with other members of the team. He is the pivot point for all discussions. Whenever a far-out decision is presented this person vetoes the decision. His strength comes from his understanding of the interaction of the variables. He uses past results in formulating a decision.

It is interesting to note that the first two specimens above applied to the same game participant and show how two teammates viewed his qualities somewhat differently.

Of the 77 performance specimens obtained in Study B, 52 were examples of effective behavior and 25 were examples of ineffective behavior. Again, all students responded with at least one performance specimen.

The questionnaire used in Study B is contained in Appendix B.

Behavior Reported in Study C

The game played in this study was a top-management, aggregative decision type game, played by upper-level undergraduates at the University of South Carolina. It was much more complicated than the ones used in the previous studies, incorporating a richer production variable, calling for machine scheduling, bid decisions on contracts, and offering various sources for purchasing materials. The incidents and factors derived from this study are shown in Table 4 on the following page.

The unique bid decision variable arose in the following performance specimen generalized in incident 4 of Table 4:

In deciding what our bid price on a government contract should be, we found we could supply the units for $9.75 and just break even.

TABLE 4

RELATIVE FREQUENCY IN PER CENT OF TOTAL PERFORMANCE SPECIMENS
REPORTED FROM STUDY C FOR EACH CRITICAL INCIDENT AND
FACTOR OF MANAGERIAL BEHAVIOR

		Per Cent (N = 23)
I.	PLANNING	47.6
	1. Extended planning over reasonable period of time	8.7
	2. Took reasonable risks	13.0
	3. Failed to make realistic plans for the future	4.3
	4. Failed to consider diverse factors for balanced planning	4.3
	5. Procrastinated too long before planning	4.3
	6. Made an error that cost company money	13.0
II.	DECISION-MAKING	21.7
	7. Based decisions on long-run plans	4.3
	8. Made a decision that proved to be effective	4.3
	9. Made a decision that proved to be ineffective	8.7
	10. Violated established policies in decision-making	4.3
III.	LEADERSHIP	30.4
	11. Developed procedures for group decision-making	4.3
	12. Took command of unstructured groups	4.3
	13. Divided responsibilities equitably among group members	8.7
	14. Persuaded others to accept his viewpoint by superior planning	4.3
	15. Failed to provide proper delegation needed to develop subordinates	4.3
	16. Was unable to bring about effective compromises	4.3
	Total*	100.0

*Total does not add to 100 due to rounding.

This was our minimum price. However, in determining the lowest price
we could bid and obtain the contract, we noted that many other compan-
ies who were not aware of costs, bid as high as $17.78 and still
obtained contracts, which proved to be very successful. This proves
there is more to success than just using figures.

Incident 1 of Table 4, dealing with extended planning, was derived
from the following incidents:

The first quarter we went on four-quarter materials contract.
This reduced our cost of goods sold and increased our net income for
the first few quarters.

My fellow teammates predicted our cash flow during the first quar-
ter which enabled us to be one of the two teams which did not have an
overdraft.

The reverse situation is seen in a specimen submitted by a com-

petitor which supports incident 5 of Table 4.

We were very undecided about what goals we should set for our
company when we made our first decision. As a result we took the
wait-and-see-what-happens attitude, which our professor warned us
against. Our company had a sizeable overdraft for the first quarter.
Realizing the need for a change in our thinking we sat down and
planned our moves and tried to measure their effects. We planned a
cash flow every quarter as we should have done at first. Since then
we have done pretty well.

Critical incident 8 represents a managerial ability so hard to de-

fine but so important to success —the ability to make the "right"

decisions most of the time. A specimen supporting incident 8 follows:

One of my teammates encouraged us to buy finished products from
another team on a bid basis. We received the bid and were able to
double our profits in a quarter which was seasonally lower than the
previous quarter. Our profit soared from $5,200 to $11,300.

Incident 15 of Table 4 is supported by a performance specimen il-

lustrating a weakness rather common in games (and perhaps in industry):

One individual assumed the leadership of filling out the forms of
our game. This was fine until he dropped the course and remaining
members had to complete the forms. Due to their lack of experience
several mistakes were made in setting up strategy.

Another critical incident under LEADERSHIP, number 11 of Table 4,

shows a more formal adherence to this function than in previous studies

of less advanced students:

One member of our team took over and developed a set of proce-
dures to follow for making decisions. Each quarter a member of the
team would be assigned a different task to perform. This person's

interest helped to get everyone actively involved and enthusiastic about the game. We were also able to make more realistic and meaningful decisions.

Of the 23 performance specimens obtained in Study C, 13 described ineffective behavior and 10 described effective behavior. The questionnaire package for this study is included in Appendix C.

Behavior Reported in Study D

Of the 190 questionnaires mailed out to individual professors who were interested in gaming, 44 either returned the letter indicating they were not a part of the gaming population or else could not be reached at the address known. A response of 21 per cent was received from the 146 remaining questionnaires.

The 278 questionnaire mailouts to Chairmen of Departments of Marketing and Management produced 57 returns for a return of 21 per cent. This included 48 different schools for a return by American Association of Collegiate Schools of Business of 34 per cent. Since many of the professors reached by the individual mailout described were employed in the AACSB schools, it seemed reasonable to include them as representative of the respondents from the AACSB mailout. Indeed, several of these professors probably received the individual mailout first and then received the referred one from their Chairmen, causing them to discard the referred questionnaire. If the individual responses are added to the AACSB responses, the latter percentage return increases to a professional return of 27 per cent. By selecting only responses from schools not responding in the Chairman referral and adding them to the number of schools responding, a total of 61 different schools responding is obtained. Some

responded from both departments. This means that someone from 44 per cent of the AACSB schools responded with a completed questionnaire.

Judging from information disclosed in a survey of these schools performed in 1964, it seems unlikely that over 75 or 80 per cent of the AACSB schools now have a professor utilizing business gaming techniques. The mailout failed to include a request for a qualifying response on this question; therefore, many of the schools to which questionnaires were submitted may not be a part of the population for which the questions were intended.

A 40 per cent return was received from the 33 participants in the business game seminar at Oklahoma Christian College.

Since all of the three latter studies described above were mailed to professors with similar opportunities to observe game participants' behavior, and since the research was defined as exploratory rather than an attempt to statistically validate some point, all three mailout responses were combined into Study D and were used to derive Table 5 on the following pages.

Since Study D is a much more extensive one than Studies A, B, and C, and since the performance specimens received in many categories show great similarity to the ones previously reported, only the more unique factors, incidents, and specimens from it will be explored. In addition to the five groupings reported from Studies A and B (Tables 2 and 3) the additional ones of ORGANIZATION, ETHICAL CONDUCT, AND PUBLIC RELATIONS were derived from the 232 performance specimens reported in Study D.

TABLE 5

RELATIVE FREQUENCY IN PER CENT OF TOTAL PERFORMANCE
SPECIMENS REPORTED FROM STUDY D FOR EACH CRITICAL
INCIDENT AND FACTOR OF MANAGERIAL BEHAVIOR

		Per Cent (N = 232)
I.	PLANNING	18.10
	1. Included provisions for various contingencies	.43
	2. Developed a plan that was simple to administer	.43
	3. Showed unusually good understanding of standard business relationships in planning	.86
	4. Persuaded team to follow long-run goals consistently	2.59
	5. Developed unique record-keeping procedures for game	.86
	6. Planned recklessly for short-run only	3.02
	7. Influenced team to develop unrealistic objectives	3.88
	8. Failed to persuade group to keep standard records	.86
	9. Showed lack of understanding of basic business relationships in planning	.86
	10. Focused on sub-goals at expense of company goals	1.29
	11. Made an error in analyzing data	1.29
	12. Failed to follow objectives consistently	.86
	13. Failed to establish specific objectives	.86
II.	ANALYSIS AND CLARIFICATION OF INTEGRATED RELATIONSHIPS	16.81
	14. Developed unique method of analyzing variables	.43
	15. Developed accurate systems of predicting decisions of competitors	1.29
	16. Encouraged team to plot graphs or charts	2.16
	17. Used computerized operations research methods of analysis	3.88
	18. Projected long-run analysis of forecasts	1.29
	19. Recognized a valuable game interrelationship	3.45
	20. Analyzed failures to make improvements	.86
	21. Failed to recognize interrelationships	1.29
	22. Overlooked significance or insignificance of a variable	1.29
	23. Ignored factual data available for decision-making	.86
III.	ORGANIZATION	12.50
	24. Increased effectiveness by changing organizational structure	.86
	25. Organized team into functional areas with one coordinator or leader	3.88
	26. Organized on a democratic basis causing ineffective time utilization and lack of coordination	3.45
	27. Failed to delegate duties properly	2.16

TABLE 5--Continued

	Per Cent (N = 232)
III. ORGANIZATION (Continued)	
28. Decentralized greatly without control provisions . . .	.86
29. Caused discontinuity by rotating leadership	.43
30. Organized decision structure that easily elicited quarrels between functional areas	.43
31. Organized with overdependence on functional specialist	.43
IV. DECISION-MAKING	19.82
32. Sacrificed short-run for long-run results	.43
33. Included provisions for contingencies in decisions . .	.43
34. Anticipated competitors' reactions successfully . . .	.43
35. Applied operations research or computer programs successfully in making and implementation of decisions .	2.59
36. Made or implemented a successful decision	4.31
37. Balanced "subjective and objective factors" in decisions	2.43
38. Failed to anticipate competitors' reactions accurately	.43
39. Failed to successfully implement a decision	2.16
40. Overemphasized "objective" or "subjective" factors in decisions	2.16
41. Allowed personal bias toward functional area or industrial setting to unduly influence strategy	1.72
42. Made a significant error in decision-making	1.29
43. Unsuccessfully made or implemented a decision	3.45
V. PERSONAL AND ORGANIZATIONAL RESPONSIBILITY	7.32
44. Volunteered to perform special staff services	.86
45. Overcame a personality conflict	.86
46. Refused to accept formally appointed leader	.43
47. Contributed no independent thoughts to team	1.72
48. Was unable to integrate self well into activities . .	.43
49. Failed to carry his share of responsibilities	2.59
50. Showed lack of concern over company goals	.43
VI. LEADERSHIP	22.81
51. Developed capabilities of others by perceptive training, coaching, or job placement	2.16
52. Minimized the problem of an overdominant team member .	.43
53. Inspired or stimulated team to put forth extra effort	.86
54. Delegated responsibilities to others properly	.86
55. Showed faith in the functional abilities of others . .	.86
56. Elicited great effort from other team members	1.72

TABLE 5--Continued

	Per Cent (N = 232)

VI. LEADERSHIP (Continued)

57.	Insisted on defining and following specific goals . .	3.02
58.	Gained acceptance of strategy by others	1.29
59.	Showed skill at negotiating with outside interests .	.43
60.	Encouraged group to work their way out of difficul-ties	1.29
61.	Assumed dominance causing team to violate goals . . .	.86
62.	Dominated decision-making and team activities causing low morale and poor results	5.16
63.	Was unable to delegate responsibilities to others . .	.43
64.	Formally appointed leader lost control of his firm .	.43
65.	Allowed personal interests to interfere with perfor-mance	.43
66.	Reduced efforts in the face of poor results	.86
67.	Was argumentative, reducing team effectiveness . . .	.43
68.	Dominated decision-making and team activities causing low morale, but good results	1.29

VII. ETHICAL CONDUCT 1.29

69.	Became involved in a conflict of interests	.43
70.	Became preoccupied with extra-legal methods to win .	.43
71.	Tried to obtain information in an unethical way . . .	.43

VIII. PUBLIC RELATIONS 2.15

72.	Showed good judgment in assisting a community project	.43
73.	Lost control and became angry	.86
74.	Performed an act that caused bad publicity for firm .	.86

Total* 100.00

*Total does not add to 100.00 due to rounding.

Since Study D included specimens from complicated games such as the Carnegie Tech game, more sophisticated gaming practices were reported for it. Critical incident 17 (Table 5) dealing with operations research methods illustrates this sophistication. The following three items are performance specimens representative of the nine items making up this critical incident:

A student asked for assistance in obtaining time on the computer to complete a detailed analysis of the sales function using OR techniques; he had been tracking the sales function week by week, testing and revising a model that appeared to be useful in making price and marketing decisions and predicting their impact on sales.

One student who became particularly interested in the game decided to attempt to run a multiple regression analysis on the simulation game. This action prompted other teams playing the game to also run a regression analysis. Interest became so great in the use of regression analysis as a decision-making tool, that special classes were set up by the school faculty to cover the use of the computer terminals and the interpretation of data gathered from the regression analysis.

The president of one of the teams worked out a complicated mathematical formula which predicted the demand for the product. As a result of his effort, the profits of the firm were higher than competing teams. Advertising expenditures were decreased, thus resulting in lower costs.

The factor ORGANIZATION from Table 5 will be explored in some detail due to its unique appearance in Study D. One generalization that could be made is that all of the critical incident categories 26-31 represent ineffective types of organizational arrangements. This leaves only the traditional functional organization described in incident 25 as being effective for game play. It cannot be determined whether this was an academic bias on the part of the persons submitting specimens or whether it has in fact proven to be superior, but the latter seems more likely. The following performance specimen is the most descriptive one supporting incident 24 of Table 5:

IBM invited professors from three colleges to compete against one another in an intensive all-day session. I was elected president and proceeded to organize our efforts. Inasmuch as three of our six members were marketing professors, I placed each of them in charge of a "territory." Unfortunately they began to compete against one another rather than against other teams, and we lost money rapidly. Finally a reorganization which centralized marketing corrected the problem.

A number of teams reported trying to use committee management or
a perfectly democratic procedure in Studies A, B, and C. However, for
some reason they did not recognize ORGANIZATION as being a problem--al-
though weak leadership and a lack of responsibility was cited often in
those studies. Game administrators in Study D often observed and reported
this problem. It is summarized as critical incident 26 and supported by
several performance specimens similar to the following:

> One student organized the teams along the lines of democratic
> committee action with no strong leadership apparent. The result was
> a loss of responsibility for intelligent analysis and research. De-
> cisions were based on random and "off-the-top-of-the-head" logic.
> Funds were used unwisely.

Failure to delegate and communicate caused a number of problems
represented by incident 27 of Table 5. The following two specimens were
among the ones reported in this area:

> Corporate Personnel (graduate students) had little communication
> with plant personnel (undergraduates) built into the organizational
> structure. One of the corporate decisions was to ship finished prod-
> ucts from one plant to another. Time after time corporate people
> would tranship and the undergraduates wouldn't know where "X" number
> of tons of steel disappeared to. This happened only because corpo-
> rate headquarters didn't inform the plants what was going on.

> The game allowed for teams to acquire other teams. After acqui-
> sition a team was unable to assimilate five new team members, thus
> these five students spent the last four weeks of the course twiddling
> thumbs.

Other teams decentralized greatly without providing proper con-
trols (incident 28). In one case a professor had programmed "computerized
managers" who could take over operations of several functional areas if
teams were willing to entrust such to them. The following specimen was
reported to have occurred:

One firm simply let the managers run the company. Since there was no manager for new product development this firm lagged seriously behind others in this area.

A single performance specimen supported critical incident 29 in Table 5:

A four-man team had two men handle each quarter and make all decisions. The two who did the work each time were blamed for poor results when actually it was the lack of communication and unwillingness of either two to buy information for the other two.

In several instances in decision-making, a person's past experience in a functional area or industrial setting played an important role in game play. In one case a group of undergraduate students tried unsuccessfully to research an industry in order to build their decision strategy on a knowledge of it. In another, several businessmen who were game participants showed a heavy interest in this area. A performance specimen substantiating critical incident 41, Table 5, illustrates this point:

Two senior businessmen (over 50) allowed their normal professional prejudices to strongly influence them (they were also enjoying some alcoholic beverages). The banker resisted spending company funds for advertising, while the sales manager wanted to concentrate on it.

The LEADERSHIP factor of Study D covered more unique situations, perhaps because of the more extensive reporting or the inclusion of graduate students and businessmen. The following specimen was reported by a fellow participant about a businessman playing a game. (See critical incident 52, Table 5.)

In order to develop and maintain "esprit de corps" we thoroughly talked out goals, strategy, etc. in the early stages of the game. One aggressive person kept insisting on establishing certain fixed relationships and insisting that we use them. He tended to harass the weaker team members. We enthusiastically encouraged him to plot his curves and as he picked up the past data and we pushed him for relationships, he became so involved that we virtually ignored him as we supplied the figures for the games for each run.

Critical incident 59 and its supporting performance specimen are only elicited in games with enriched "off-line" assignments. It is reported about a graduate student by a game administrator:

During labor negotiations, in which nine graduate students representing corporate management and a faculty member who is a national arbitrator representing the president of the union, were discussing why the union should get a raise and why the company couldn't afford one. Management was arguing that sales and profits were down, while the union argued that production was up and that they obviously must be selling the product to warrant this. Finally the union president said, "If your production is up, as I know it is, and your sales are down, as you claim they are, you must be stockpiling for a strike. Let's have a look at your inventories." The chief corporate negotiator responded with, "What our inventories look like is none of your damned business." At which point, the union stormed out of the session. They settled at the next session. The faculty member later said that if management had given in to releasing their inventory figures, he would have run them into the ground.

The point is that this student played his role so well that the man across the table from him no longer was a teacher--he was a union, who was trying to bleed corporate profits as much as he could.

The performance specimens cited under PUBLIC RELATIONS of Table 5 described realistic situations which could be cited from industry. Critical incident 72 included the following specimen:

(Group of Businessmen)--"VP Finance" persuaded his associates that the company should contribute a substantial subsidy to a local golf course where employees could play, in order to keep the course out of bankruptcy.

Incident 73 was supported by an example of a lawsuit:

One team entered into a protracted agreement with the game newspaper editor. They sued for libel. They lost and their team was demoralized.

Incident 74 included the following two ineffective performance specimens concerning groups of businessmen game participants:

A bill was filed in the State Legislature to take a tract of land by eminent domain and set it aside as a Bird Sanctuary. The VP Finance persuaded his team to appropriate a fund to lobby against the bill since the tract included an area adjacent to the company plant

which might be needed for expansion. Other teams found ingenious (better) ways to work on a compromise; i.e., changing tract slightly, using money from sale of land to buy land on other side of plant, etc.

When more than one-third of the labor force is placed on lay-off, the computer publishes a letter of concern from the mayor. One businessman wrote a scathing reply.

Since Studies A, B, and C surveyed what might be termed relatively "unsophisticated" games, it is not surprising that factors such as ETHICAL CONDUCT and PUBLIC RELATIONS did not arise. Perhaps it is more surprising to find that these functions have been evoked at all by business game play. In Study D it was found that one undergraduate game participant continued to work in the computer center while participating on a team causing his teammates to suspect him of unauthorized knowledge about the game scoring methods. Another businessman participant became preoccupied with extra-legal methods to win, such as price-fixing and collusion with other groups. A third student constantly called the professor, questioned him, and tried to elicit unauthorized information. All of these activities seem indicative of a weak character which might serve poorly in ethical confi tations in the business world.

A Compari n of Behavior Reported in

Studies A, B, C, and D

Table 6 on the following page depicts the different factors discovered in each study previously discussed and the percentage of performance specimens falling in each factor grouping. Eight different factor groups were derived from the various studies. It can be seen that PLANNING was represented by a significant number of performance specimens in every study. The low representation in Study A (Table 2) might be

TABLE 6

PERCENTAGE OF PERFORMANCE SPECIMENS REPORTED FOR EACH
FACTOR GROUPING FROM VARIOUS RESEARCH STUDIES

Factor	Study A (N=117)[*]	Study B (N=77)[*]	Study C (N=23)[*]	Study D (N=232)[*]
Planning	5.80	7.80	47.60	18.10
Analysis and Clarification of Integrated Relationships	6.90	6.50	0.00	16.81
Organization	0.00	0.00	0.00	12.50
Decision-Making	17.00	37.70	21.70	19.82
Personal and Organizational Responsibility	48.70	16.90	0.00	7.32
Leadership	21.30	31.20	30.40	22.81
Ethical Conduct	0.00	0.00	0.00	1.29
Public Relations	0.00	0.00	0.00	2.15
TOTAL[**]	100.00	100.00	100.00	100.00

[*]N = Number of total usable performance specimens received in each study.

[**]Totals do not add to 100 due to rounding.

expected since game participants were freshmen in their first business course. Most of them had no experience in business organizations and none had made a study of the need for formal planning in organizations. Furthermore, their organizations were very unstructured and little attention was given to the variable ORGANIZATION, which usually must precede any appreciable planning.

Considerably more emphasis was shown the PLANNING factor in Study C than in the other studies, which can probably be accounted for in two ways. This was a management policy course and students in the course were probably admonished to utilize planning- especially long-range planning in their game. Furthermore, the observations in Studies A, B, and C were made exclusively by peers. They may have had more opportunity to observe the lack of planning on the part of their teammates than could the professors who contributed most of the observations in Study D. Of the performance specimens in this category, 54 per cent were observations of the ineffective performance. (See critical incidents 3, 4, 5, and 6 in Table 4.)

From Table 6 it can be seen that there are patterns of managerial behavior generated by games that are typical enough to be observed in several somewhat dissimilar game sessions. But, although the behavior is similar, the way in which it is interpreted may vary somewhat with the level of the participant and the kind of observer. For example, in Study A, a peer (freshman student) considered planning ahead for only two decisions to be an unusually effective performance specimen. In Study D, where participants were on the average at a much higher level in their experience and college training, long-range planning seemed to be expected

by virtue of the fact that, of the performance specimens submitted in this category, not a single one appeared as effective performance.

In Table 6 it can be seen that the number of performance specimens submitted which could be classified as ANALYSIS AND CLARIFICATION OF INTEGRATED RELATIONSHIPS is similar to the number submitted for the PLANNING factor for every study except Study C. Study C elicited no performance specimens in this category. Perhaps this was because the sample taken (N = 23) was too small to adequately cover typical managerial behaviors.

From a perusal of Table 6 it seems obvious that the important managerial function which is either absent or mildly evoked by most business games is that of ORGANIZATION. No performance specimens were discovered for this area in Studies A, B, and C. In Study D very little formal organizational design activity appeared. A few of the more sophisticated games picked up in the Study D survey included several levels of hierarchy and in them the factor ORGANIZATION seemed more prominent. A more sophisticated organizational design was hardly possible in Studies A, B, and C because of the small number of participants per team (four to six) and the lack of a hierarchical structure.

DECISION-MAKING proved to be one of the more significant activities of the game in terms of frequency of occurrences reported (see Table 6). While it cannot be concluded that frequency of reporting denotes the criticalness of an area in contributing to managerial success, it probably indicates that a large portion of gaming activities are devoted to this function.

The PERSONAL AND ORGANIZATIONAL RESPONSIBILITY factor in Studies A and D displays differences in the attitudes and activities of a lower

level college student game participant and the upper-class or business

participant. Most freshmen students do not adapt well, nor quickly to

the organizational environment and they must be prompted constantly to

accept delegated responsibility. In Table 6 it can be seen that for

Study A, 48.6 per cent of the performance specimens received dealt with

this factor. Of these observations, 68 per cent consisted of ineffective

specimens of behavior, indicating a lack of attention to it.

The percentage of observed performance specimens reported in

Table 6 seem to indicate that the LEADERSHIP factor was a major activity

observed in every study. This may be somewhat misleading since most of

the leadership activities seem to be those of an emerging informal lead-

er, not that of a formally designated manager. In spite of this

limitation, a successful leadership activity in the game required behav-

ior that would be expected of a person in industry such as the ability to

persuade, negotiate, communicate well, sustain failure, and generally to

act in the manner in which a competent leader is expected to behave.

Participants and Observers in Study D

In Table 7 on the following page, the kind of participant observed

was broken down and divided into five categories: Undergraduate Student,

Graduate Student, Businessman, Professor, and Other. Most of the "Other"

category consisted of military personnel. In this table the kind of game

participants for which specimens were submitted is shown distributed among

the eight factors of managerial behavior.

The factor PUBLIC RELATIONS was discovered only in games in which

businessmen were participants. However, from the performance specimens

TABLE 7

NUMBER OF PERFORMANCE SPECIMENS REPORTED FOR EACH KIND OF
GAME PARTICIPANT FOR EACH FACTOR OF STUDY D

Kind of Participant	Planning	Analysis and Clarification of Integrated Relationships	Organization	Decision-Making	Personal and Organizational Responsibility	Leadership	Ethical Conduct	Public Relations	Total*
Undergraduate Student	19	19	19	24	7	24	2	0	114
Graduate Student	13	10	11	13	5	16	2	0	70
Businessman	13	6	3	7	2	10	1	3	45
Professor	2	2	2	0	2	3	0	0	110
Other	0	2	1	4	0	1	0	0	8

*Total does not add to 232 because some specimens were not usable.

cited earlier in this chapter it can be seen that this factor was probably

elicited by the specific tasks and problems built into the games played

rather than because of the kind of participant engaged in game play.

The same is probably true of ETHICAL CONDUCT, which did not appear for

the Professor and Other categories. There was quite an even distribution

of performance specimens from all other factors among the various kinds

of participants.

Table 8, on the following page, illustrates the way in which per-

sons responding within each of the eight factor categories of performance

categorized their role. Note that these roles are not mutually exclusive

and that many of the class professors were also acting as the Game Admin-

istrator.

Comparison of Factors Derived from Study D with

Criteria of Managerial Effectiveness

In Chapter II of this thesis it was concluded that behavior must

be goal-oriented in order for it to be judged effective or ineffective.

The best defined and most acceptable managerial performance criteria

found in the literature was the "Seven Expressions of Executive Effective-

ness," developed by the Educational Testing Service. These categories

were explained in Chapter II. In order to try to promote a scattering of

performance specimens and to sample every possible managerial pattern be-

ing elicited, these expressions were used as reference categories in the

INSTRUCTIONS TO RESPONDENTS (see Appendix D). However, a pretest showed

that categories 2 and 4 were so difficult to separate in the minds of

respondents, they were combined into one category on the instruction sheet.

Also the wording in category 1 was changed.

TABLE 8

NUMBER OF EACH TYPE OF OBSERVER RESPONDING WITH PERFORMANCE
SPECIMENS BY FACTORS OF STUDY C

Kind of Observer	Planning	Analysis and Clarification of Integrated Relationships	Organization	Decision-Making	Personal and Organizational Responsibility	Leadership	Ethical Conduct	Public Relations	Total*
Fellow Participant	6	5	4	3	4	11	0	0	33
Game Administrator or Advisor	26	27	17	29	7	32	2	3	143
Researcher	1	1	2	2	0	1	0	0	70
Class Professor	19	22	15	28	6	24	4	0	118

*Total includes overlapping since some observers engaged in dual roles.

Since the instructions to Study D also included an OTHER category which probably required less mental effort on the part of the respondents to use, it can be presumed that at least some effort and thought went into their decision to put a performance specimen in one of the other five categories.

There are now two independent categorizations of these performance specimens—one derived by the writer and one designated by the respondents to Study D. Table 9, on the following page, displays the number of performance specimens classified under the Expressions of Executive Effectiveness (simplified) compared with the writer's independent grouping of such factors into eight factor categories. In each case there was quite a good grouping of specimens by some respondent category (vertically) and some factor groupings (horizontally).

Note in Table 9 that respondents designated 25 performance specimens as contributing to Development of High (or Low) Morale which were categorized by the writer under LEADERSHIP. This combination not only shows good agreement in classification, but it also indicates the factors derived by the writer representing managerial activities that could be observed, while the Expressions of Executive Effectiveness denote the results which respondents thought would derive from these activities. For this reason, the fact that a factor grouping of performance specimens by the writer also showed up as a rather well-defined grouping of Effective Expressions of Executive Effectiveness in industry by the respondents lends some relevance to the thought that the factor groupings derived may in fact be the activities critical to success or failure in management as well as in business games.

TABLE 9

NUMBER OF PERFORMANCE SPECIMENS DESIGNATED BY EACH CATEGORY REPRESENTING EXPRESSIONS
OF EXECUTIVE EFFECTIVENESS BY RESPONDENTS OF STUDY D COMPARED TO
FACTORS DERIVED FROM AN INDEPENDENT ANALYSIS OF STUDY D

Expressions of Executive Effectiveness (Designated by Respondents)	Factors Derived by Writer								
	Planning	Analysis and Clarification of Integrated Relationships	Organization	Decision-Making	Personal and Organizational Responsibilities	Leadership	Ethical Conduct	Public Relations	TOTAL
Contributions to Company Strategy	6	13	0	24	1	5	0	0	49
Realistic Planning and Organizing for the Future (or Lack of Such)	23	14	9	10	1	3	0	0	60
Development of High (or Low) Morale	3	0	8	3	9	25	0	1	53
Development of Competent Subordinates (or Lack of Such)	1	0	5	1	2	10	0	0	19
Fostering of Good Public Relations (or Lack of Such)	1	0	2	0	1	2	0	3	9
Other	1	0	0	2	0	6	3	1	13

Summary

In this chapter the research methodology was discussed and the returns from the four questionnaire studies were reported. The data collected was summarized in tabular form and a percentage breakdown of performance specimens by "factor" grouping and "critical incidents" was given in Tables 2, 3, 4, and 5. A comparison of the managerial effectiveness criteria described in Chapter II was made with the "factors" derived from performance specimens received in Study D. Some similarity between this independent criteria designation by respondents and the factors derived by the writer appears to be present.

Chapter VI will present the conclusions and implications drawn from the thesis.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

Introduction

The purpose of this study was to describe systematically the be-
havior being elicited by business games, giving consideration to their
possible use as predictors of managerial success. The specific hypothe-
sis was stated as follows: "It is hypothesized that the critical incident
technique, which has been used in several instances to develop perfor-
mance evaluation instruments and job requirements, can be used success-
fully to describe the managerial behavior being elicited by business
games."

Other important questions, upon which this study is designed to
shed some light and which doubtlessly will be the subject of further and
more intensive research, are:

Can a clear, well-defined path be defined for research in the
area of predicting managerial success on the job from behavioral patterns
elicited by business games? If so, what is the best criterion available
in the literature for a measure of managerial success?

How well can business game environments and game developments be
controlled?

Can a relationship be observed between behavior sampled from game
participants and criteria of successful managerial performance in indus-
try?

Conclusions

The findings from this research will be presented as they appeared chronologically in the text of this thesis.

Criterion Development

In Chapter I a model was given indicating the steps necessary to develop business games as predictors of managerial effectiveness in industry. Criteria of managerial effectiveness were selected from the numerous studies reviewed in the literature and are presented in Chapter II. The Educational Testing Service's Seven Expressions of Executive Effectiveness seemed to be the best expression of these criteria since they were related to the goals of an organization required in the model developed in the thesis.

Control Over Game Development

In Chapter III, a synthesis of control measures for game environments was suggested by a review of literature on business games. Four major game characteristics were discovered to be important to environmental control: the industry simulated, the hierarchical level simulated, the business function simulated, and the organizational climate simulated. Several techniques were suggested as possible control devices for these characteristics, such as the business game case and the in-basket technique. It was further suggested that these game characteristics should be carefully described and adjusted to the job profile from Table 1, page 24, for which success was to be predicted.

A Description of Business Game Behavior

A review of previous attempts to use business games and other

simulations as predictors of managerial success is given in Chapter IV.

The rationale for the critical incident technique for collecting and

assimilating performance specimens was explained. In Figure 1, page 6,

of Chapter I, a more complete description was given of the way in which

games might be developed for predicting managerial success in industry.

A summary of the behavioral statements defined as critical inci-

dents and larger categories of behavior defined as factors are given in

Tables 2, 3, 4, and 5 of Chapter V. In the following table the eight

different factors discovered important to individual effectiveness in bus-

iness games are reported. The number and percentage of the total

performance specimens from Studies A, B, C, and D are given to the right

of each factor.

TABLE 10

NUMBER AND PERCENTAGE OF TOTAL PERFORMANCE SPECIMENS
REPORTED FOR EACH FACTOR OF STUDIES A, B, C, AND D

Factor	Studies				Total N	Per Cent (N = 449)
	A	B	C	D		
Planning	7	6	11	42	66	14.70
Analysis and Clarification of Integrated Relationships	8	5	0	39	52	11.58
Organization	0	0	0	28	28	6.24
Decision-Making	20	29	5	46	100	22.27
Personal and Organizational Responsibility	57	13	0	16	86	19.15
Leadership	25	24	7	53	109	24.27
Ethical Conduct	0	0	0	3	3	.67
Public Relations	0	0	0	5	5	1.11
TOTAL	117	77	23	232	449	100.00

These categories include the functions vital to management as cited by most leading authorities. Performance specimens reported also include most behavior discovered in the literature on business games. Therefore, it is concluded that the critical incident technique has proven successful in systematically describing the managerial behavior taking place in business games.

Game Behavior Compared With Managerial
Behavior in Industry

Although eight factor categories of managerial behavior discovered in Study D include all of the major functions of management cited by the more prominent textbooks in this field, some were found to be more strongly supported with performance specimens than others. In all of the studies performed, the three managerial activities, PLANNING, DECISION-MAKING, and LEADERSHIP, were frequently observed in games, judged by the number of performance specimens submitted. In Study D, which can probably be considered somewhat representative of game play nationwide, performance specimens supporting the factors, ANALYSIS AND CLARIFICATION OF INTEGRATED RELATIONSHIPS and ORGANIZATION, were also reported frequently. Based on the <u>number</u> of performance specimens reported in Study D, the single most prevalent managerial activity taking place in business games appears to be the factor defined as LEADERSHIP. However, since games do not usually have well-defined authority structures, these were most frequently the activities of emerging informal leaders. Perhaps the reason for the great emphasis on this function is due to the fact that games tend to lack the formal organizational structure and recognized authoritarian hierarchy of businesses, making them heavily dependent upon informal personal leadership.

The factor ORGANIZATION appeared only in Study D. From the kinds of performance specimens in which it arose, it can be concluded that it is not elicited frequently by the less sophisticated business games. Activities calling for the _implementation_ of plans and procedures were not frequently found in the PLANNING, DECISION-MAKING, or LEADERSHIP functions.

Recommendations

Many of the weaknesses of games in duplicating managerial behavior seem to arise from three faults: (1) most business games do not have more than one level of management hierarchy, (2) formal delegation of authority is usually absent, and (3) most games make use of aggregate variables which assume perfect implementation of a decision after quantities are designated. Therefore, it is suggested that special attention be given to improving realism in these areas if games are to be used for predictive purposes.

The critical incidents derived in this study and presented in Tables 2, 3, 4, and 5 of Chapter V should be integrated into one performance appraisal form to be used for evaluating participants in business games. Once administered to a number of persons, an item validity analysis could be performed to determine which incidents are most critical to success or failure. The superfluous incidents could be removed and suggestions could be solicited for new performance specimens which could be added each time the form is administered.

It is recommended that the model shown in Figure 1 of Chapter I be exploited further by future research in this area. Since the critical incident technique has shown promise as a vehicle for systematically

collecting information as to managerial type behavior in games, a study similar to the one described in this thesis should be performed for managerial work in industry. The critical incidents collected from managers in industry should then be organized into a performance appraisal form similar to the one mentioned above. Once designed and administered to a number of managers whose work history is available, this instrument could be used as a criterion of success against which the game performance appraisal form suggested above could be further validated.

After a reasonably reliable and sufficiently broad set of incidents is obtained, validity studies should be performed by having managers, whose work in industry have been evaluated by the critical incident appraisal form, play games in which their performance could be evaluated by the instrument evolved from this study.

Numerous correlation checks would then be possible with the above information. To mention only one possibility, since critical incident performance evaluation forms can be scored numerically, all participants on a team could have their scores summed and this could be compared with an objective game score on such items as profits and ROI. Analysis of these two scores might possibly lead to a determination of which individual factors and incidents were most important to success or failure in various games. Hopefully this would allow one to determine which individual made the greatest contribution to team success. A model such as that of Vance suggested in Chapter IV could be used to determine team success. The critical incident appraisal form might be used to distribute a team score among individual participants.

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APPENDIX A

QUESTIONNAIRE HANDOUT TO FRESHMAN INTRODUCTION
TO BUSINESS STUDENTS

INTRODUCTION TO BUSINESS

Fall 69

NAME_____   Team #_____

INSTRUCTIONS: Please think of an <u>action</u> (or series of actions) of
a fellow student in a business simulation game that you considered
to be unusually effective or ineffective. Describe exactly what
occurred below. Please give as many effective and ineffective situ-
ations as you can, but be sure to give at least one of each. (Do
not include the student's name that you are discussing.)

UNUSUALLY EFFECTIVE

UNUSUALLY INEFFECTIVE

APPENDIX B

QUESTIONNAIRE HANDOUT TO JUNIOR-LEVEL
MARKETING MANAGEMENT STUDENTS

:

MARKETING MANAGEMENT

Fall 69

NAME_____ Industry_____ Team #____

INSTRUCTIONS: Please think of an <u>action</u> (or series of actions) of a
fellow student in a business simulation game that you considered to
be unusually effective or ineffective. Describe exactly what occur-
red below. Please give as many effective and ineffective situations
as you can, but be sure to give at least one of each. (Do not in-
clude the student's name that you are discussing.)

UNUSUALLY EFFECTIVE

UNUSUALLY INEFFECTIVE

APPENDIX C

QUESTIONNAIRE HANDOUT TO SENIOR-LEVEL
MANAGEMENT POLICIES STUDENTS

INCIDENT ON EFFECTIVE/INEFFECTIVE BEHAVIOR (Write below)
(Circle One)

CATEGORY: I   II   III   IV   V   VI   (Circle one - See INSTRUCTIONS, first page)

PLEASE CHECK

Participant Observed:
Undergraduate Student   _____
Graduate Student   _____
Businessman   _____
Professor   _____
Other   _____

Your Role:
Fellow Participant   _____
Game Administrator or
Advisor   _____
Researcher   _____
Class Professor   _____
Other   _____

INCIDENT ON EFFECTIVE/INEFFECTIVE BEHAVIOR (Write below)
(Circle One)

CATEGORY: I   II   III   IV   V   VI   (Circle one - See INSTRUCTIONS, first page)

PLEASE CHECK

Participant Observed:
Undergraduate Student   _____
Graduate Student   _____
Businessman   _____
Professor   _____
Other   _____

Your Role:
Fellow Participant   _____
Game Administrator or
Advisor   _____
Researcher   _____
Class Professor   _____
Other   _____

Name and Address to which summary of results should be sent: _____

APPENDIX D

MAILOUT QUESTIONNAIRE MATERIALS

Oklahoma
Christian College

AREA CODE 405 478-1661 / OKLAHOMA CITY, OKLAHOMA 73111

**DIVISION
OF BUSINESS**

December 6, 1969

Mr. Richard H. Rawdon
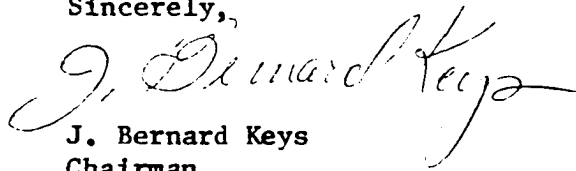American Management Association
Saranac Lake, New York 12983

Dear Mr. Rawdon:

The enclosed request for information concerning business simulation
gaming is being sent to you because you have been suggested as a
person having experience in this area of teaching and research.

As you are probably aware, in order for progress to continue in gaming,
a procedure needs to be developed for systematically describing the
types of behavior that games are capable of evoking. Once the behavior
patterns elicited by games are systematically defined, the continuation
of research projects in this area can be facilitated. This study is an
attempt to make some progress at such a description. The data being
collected here will be used for a Ph.D. dissertation, tentatively entitled
"The Development of a Systematic Description of the Behavior of Participants
in Business Simulation Gaming."

As a courtesy to you, I am enclosing a recently compiled, categorized
bibliography on business simulation gaming and related topics. Your
contribution will be coded and classified and anonymity is guaranteed.
Due to the limited number of professors and businessmen with gaming
experience, your assistance in this study will be very important to its
success and will be greatly appreciated.

Sincerely,

J. Bernard Keys
Chairman

jrl

Enclosures

P.S. All respondents will receive a digested summary of the results of
this study.

307 West Brooks, Room 106A
Norman, Oklahoma 73069

COLLEGE OF BUSINESS ADMINISTRATION
DEPARTMENT OF MANAGEMENT

THE UNIVERSITY OF OKLAHOMA

December 6, 1969

Dear Colleague:

Professor Bernard Keys, a Ph. D. candidate
working under my supervision, is conducting
a survey concerning behavioral patterns in
management gaming as a part of his dis-
sertation research. We have had some
difficulty in identifying all professors who
have had experience with this instructional
device and are asking your assistance with
this problem.

Will you please ask the appropriate person
in your department (it may be yourself) to
fill out and return the enclosed questionnaire
to Professor Keys ?

Please be careful to include the cover letter,
instructions, and questionnaire as you
forward the materials.

Thanks very much,

L. D. Bishop
Professor of Management

jjh

enclosure

Oklahoma Christian College

126

AREA CODE 405 478-1661 / OKLAHOMA CITY, OKLAHOMA 73111
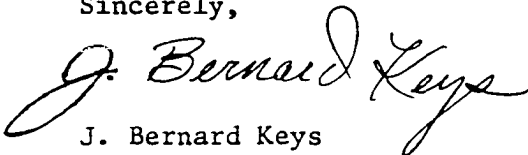
DIVISION
OF BUSINESS

December 6, 1969

Dear Professor:

The enclosed request for information concerning business simulation gaming is being sent to you because you have been suggested as a person having experience in this area of teaching and research.

As you are probably aware, in order for progress to continue in gaming, a procedure needs to be developed for systematically describing the types of behavior that games are capable of evoking. Once the behavior patterns elicited by games are systematically defined, the continuation of research projects in this area can be facilitated. This study is an attempt to make some progress at such a description. The data being collected here will be used for a Ph.D. dissertation, tentatively entitled "The Development of a Systematic Description of the Behavior of Participants in Business Simulation Gaming."

As a courtesy to you, I am enclosing a recently compiled, categorized bibliography on business simulation gaming and related topics. Your contribution will be coded and classified and anonymity is guaranteed. Due to the limited number of professors and businessmen with gaming experience, your assistance in this study will be very important to its success and will be greatly appreciated.

Sincerely,

J. Bernard Keys
Chairman

lmk

Enclosures

P.S. All respondents will receive a digested summary of the results of this study.

INSTRUCTIONS FOR RESPONDENT

Please describe briefly an incident concerning the action of *a participant* in a business simulation game, that you observed or learned about first hand, which in your opinion was an example of *unusually effective game performance* (or *unusually ineffective*, as the case may be). As you write the incident in one of the blanks on the following pages, please describe exactly what occurred, giving only enough detail to explain why the act was unusually effective or ineffective. (See examples back of this page.)

Please classify your response by circling the Roman numeral at the top of each incident which corresponds to the appropriate categories below.

NOTE: Although we would like very much to receive four incidents from each respondent, we would welcome any number of responses. The examples from a pretest on the back of this page might help to clarify this request.

CATEGORIES

I. CONTRIBUTIONS TO COMPANY STRATEGY. This category includes decision on price, product, choice, production volume, etc., that are judgmental in nature and which resulted in a profit (effective) or loss (ineffective).

II. REALISTIC PLANNING AND ORGANIZING FOR THE FUTURE (OR LACK OF SUCH). The results here are viewed in terms of organizational sub-goals, such as defining clear objectives, policies, and plans, and developing standard operating methods, systems, and procedures that contributed to the efficiency of a team. Includes the design of organizational structure, decision-making techniques and analysis for decisions.

III. DEVELOPMENT OF HIGH (OR LOW) MORALE. Incidents falling in this category would include ones by which the participant developed team spirit, fostered enthusiasm for team goals and increased the group's resistance to frustration. It also includes such things as avoiding personal conflicts, observing customs and traditions, displaying loyalty, etc.

IV. DEVELOPMENT OF COMPETENT SUBORDINATES (OR LACK OF SUCH). Although we recognize that this may be a difficult area for games to simulate, it is an important one, and therefore worth exploring. It would include actions taken by formal *or informal* leaders that fostered the development of managerial or technical competence of peers and/or subordinates.

V. FOSTERING OF GOOD PUBLIC RELATIONS (OR LACK OF SUCH). The first thoughts on this category may be that it is simply unrelated to the game environment. However, it seems to be an area which is very important to upper-level management and therefore we wish to explore any possible simulation of such. Perhaps the development of annual reports or promotional programs in interfacing projects might have been touched on this area. Perhaps projects that might cause harm or benefit to a community have been simulated, such as building air and water filtration systems to prevent pollution, or designing products that would not litter communities (paying for return of used containers, etc.).

VI. OTHER. Please use this category for any behavior which you are *uncertain about categorizing.*

EXAMPLES FROM A PRETEST

INCIDENT ON (EFFECTIVE) INEFFECTIVE BEHAVIOR (Write below)
(Circle One)

CATEGORY: (I) II III IV V VI (Circle one - See INSTRUCTIONS, first page)

PLEASE CHECK

Participant Observed:
Undergraduate Student ____
Graduate Student __x__
Businessman ____
Professor ____
Other _____

Your Role:
Fellow Participant ____
Game Administrator or
Advisor __X__
Researcher ____
Class Professor __X__
Other _____

One of my graduate students determined that although everyone was pricing products in the range of $1000—$1,100, demand was inelastic and would sustain a price of over $10,000. He was right! Because he had the guts to make this judgmental decision he outdistanced his nearest competitors by $250,000. He did not sell many units, but then he did not have to. (We changed the elasticity variable.)

INCIDENT ON EFFECTIVE (INEFFECTIVE) BEHAVIOR (Write below)
(Circle One)

CATEGORY: I II (III) IV V VI (Circle one - See INSTRUCTIONS, first page)

PLEASE CHECK

Participant Observed:
Undergraduate Student ____
Graduate Student __x__
Businessman ____
Professor ____
Other _____

Your Role:
Fellow Participant __x__
Game Administrator or
Advisor ____
Researcher ____
Class Professor ____
Other _____

One dynamic type of individual assumed leadership of a five-man team. He used others and did not effectively communicate. Interactional problems among the group members became acute. One subordinate remarked to this individual, "Just because you are an officer in the Guard on Sundays doesn't swing any weight here!"

INCIDENT ON EFFECTIVE/INEFFECTIVE BEHAVIOR (Write below)
(Circle One)

CATEGORY: I   II   III   IV   V   VI   (Circle one - See INSTRUCTIONS, first page)

PLEASE CHECK

Participant Observed:
   Undergraduate Student   ____
   Graduate Student   ____
   Businessman   ____
   Professor   ____
   Other _____

Your Role:
   Fellow Participant   ____
   Game Administrator or
      Advisor   ____
   Researcher   ____
   Class Professor   ____
   Other _____

INCIDENT ON EFFECTIVE/INEFFECTIVE BEHAVIOR (Write below)
(Circle One)

CATEGORY: I   II   III   IV   V   VI   (Circle one - See INSTRUCTIONS, first page)

PLEASE CHECK

Participant Observed:
   Undergraduate Student   ____
   Graduate Student   ____
   Businessman   ____
   Professor   ____
   Other _____

Your Role:
   Fellow Participant   ____
   Game Administrator or
      Advisor   ____
   Researcher   ____
   Class Professor   ____
   Other _____

Name and Address to which summary of results should be sent: _____

A SELECT BIBLIOGRAPHY ON BUSINESS SIMULATION GAMES SINCE 1960

J. Bernard Keys
Chairman, Division of Business
Oklahoma Christian College

A Six-Page (89-item) Bibliography

Mailed with Questionnaire