AN ADAPTATION-BASED
ORGANIZATION TYPOLOGY

DISSERTATION

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By

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CHAPTER I

INTRODUCTION

A perusal of organization behavior literature reveals a rather consistent preference by authors to treat either intraorganizational problems or the social function of the organization as key organizational dimensions. Those focusing on intraorganizational problems usually emphasize prescriptions for the "rational" management of organization operations (Koontz and O'Donnell, 1968), descriptions of organizational behavior (Simon, 1957; Etzioni, 1961a, 1964; Cyert and March, 1963), individual motivation (Vroom, 1964), or leadership and interpersonal relations (Argyris, 1957, 1964; Bennis, 1962, 1966).

Those concerned primarily with the social functions of complex organizations include Galbraith (1967), Merton (1957), Parsons (1960), and Stinchcombe (1965), as well as the work of many early social philosophers.

Beginning perhaps with Barnard's (1938) work, written in 1938, there has developed a sporadic interest in an intermediate level approach to organizations wherein problems in the relation of the organization to its environment-in-contact are focal. Authors in this area,

besides the economists who focus on markets, include Alderson (1957), Blau and Scott (1962), Evan (1966), Lawrence and Lorsch (1967), Thompson (1967), and Udy (1965). The recently developing field in sociology concerned with associations and organizations (Inkles, 1964) promises to stimulate further interest in organization-environment relations. Hopefully the present study will contribute to this area of knowledge.

Rather than further introduce the paper with conventional prose style, that end is accomplished by means of a flow diagram which is presented on the following page. The reader should refer to it while reading the paper. The summary beginning on page 112 can also serve as an introductory statement.

The Formal Organization Defined

A number of proposed definitions of the organization will be noted. This is necessary as part of the process of defining the organization for purposes of this research. Existing definitions will help conceptualize the organization as different aspects of those definitions are emphasized, de-emphasized, modified, or rejected, for purposes of this study. Perhaps an analytically more useful perspective of organizations can be taken.

Galbraith (1967) calls Barnard's the most famous definition of an organization. Barnard (1968, p. 73) stated in 1938 that:

Fig. 1.--Toward an Adaptation-Based Organization Typology

The most useful concept for the analysis of experience of cooperative systems is embodied in the definition of a formal organization as a system of consciously coordinated activities or forces of two or more persons.

To Barnard the formal organization constituted part of a "cooperative system," which he defined (p. 65) as:

...a complex of physical, biological, personal, and social components...evidently a subordinate unit of larger systems from one point of view; and itself embraces subsidiary systems--physical, biological, etc.--from another point of view... The survival of cooperation, therefore, depends upon two interrelated and interdependent classes of processes: (a) those which relate to the system of cooperation as a whole in relation to the environment; and (b) those which relate to the creation or distribution of satisfactions among individuals.

Barnard carefully differentiated between his conception of a formal organization and a cooperative system of which the formal organization is a part. This differentiation is in its clearest form in his footnote (p. 73) which reads in part:

It is to be borne in mind that we are dealing with two systems: (1) an inclusive cooperative system, the components of which are persons, physical systems, social systems, and organizations; and (2) organizations, which are parts of cooperative systems and consist entirely of coordinated human activities.

Chapter four of The Functions of the Executive is a labored attempt by Barnard to get at the essence of formal organization. In it he argues forcefully that to include persons or a group in the formal organization results in so much variability among formal organizations that a

general definition is not possible.

Barnard's classic treatise is filled with the notion that in the final analysis an organization is a process, or activity. To later relate this process or activity to the executive and his functions, it is called "system," "coordination," and "cooperation." Barnard gets at the holistic nature of an organization by pointing up the productive aspect of the "cooperation," which he labels effectiveness of cooperation in achieving organization purpose in contrast to the internal aspect of the cooperation, which he labels efficiency. That is, organization effectiveness is the degree to which organization purpose is attained and organization efficiency is the degree to which effectiveness achievement is with minimal undesired consequences. "Undesired" is from the viewpoint of the survival of the organization because (net) consequences undesired by organization contributors lead to withdrawal of contribution and hence to cessation of the formal organization.

Barnard's definition is in agreement with Parsons (1960, p. 17) who states that:

....primacy of orientation to the attainment of a specific goal is used as the defining characteristic of an organization...The attainment of a goal is defined as a relation between a system (in this case a social system) and the relevant parts of the external situation in which it acts or operates...An organization is a system which, as the attainment of its goal,

'produces' an identifiable something which can be utilized in some way by another system... There is some kind of exchange of this for entities which (as inputs into it) are important means for the organization to carry out its function in the larger system.

On examination, one sees that Parsons' definition emphasizes the extra-organizational dimension of the organization while only hinting at the intraorganizational dimension.

Cyert and March (1963) conceive of the organization as a coalition of individuals, some of whom are organized into subcoalitions. This appears to be an extremely introverted stance until it is noted that these authors include, as business organization coalition members for example, the managers, workers, stockholders, suppliers, customers, lawyers, tax collectors, regulatory agencies, et cetera. Major coalition members are identified over a relatively brief, specified period of time or for a particular decision.

Where Barnard's conception of the organization implies that individuals are outside it and choose to exchange with it or to not exchange with it, Cyert and March include in the organization everyone having any direct or indirect contact with it. And whereas Barnard's organization is bounded and subject to outside influence, Cyert and March state that it is impossible to draw the boundaries of an organization. The authors then note that shifts in the external environment must be adjusted to. Thus much

of the wide physical, personal, and social variability which Barnard chose to define as organization environment is seen by Cyert and March as playing a decision making role within the organization.

Stogdill (1967) proposes a definition of the organization useful at different levels of analysis. He sets its boundaries and recognizes the organizational environment. (Yet he deals wholly with internal organization phenomena.) In his words, (p. 667) "An organization, in the real world, can be regarded as an input-process-output system." At one level these terms refer to physical items and at another level they refer to expectations and interactions, structure and interpersonnel, and drive and cohesiveness.

This carefully-derived formulation is explicitly a system, thus its boundaries are drawn with an attempt to distinguish the organization from its environment. Stogdill's theory of organization takes the boundary processes and the environment (on the other side) separable from the organization. Thus he states (p. 668):

An organization also engages in exchange relationships with its environment at both the input and output ends of its operations. The theory under discussion, while recognizing the interactions between organization and environment, is concerned solely with the internal organization as a structured operational system.

It will be noted that some definitions of the organization set out to define "the formal organization"

while some simply define "the organization." Those who do not differentiate between the formal and nonformal organization, by that omission, imply that the differences are insignificant to a theory of organization.

Dubin (1958) asserts that each of four "behavior systems" must be understood before organized working behavior can be understood. The technological behavior system comprises task activities. Job descriptions are supposed to define this system.

The formal behavior system specifies the minimum conditions of acceptable membership in the work organization. This system comprises the rules, regulations, and procedures governing conduct at work and is aimed at the performance goals of the organization. The relation of employee to employer is spelled out.

The nonformal behavior system, according to Dubin, orients the individual with respect to his specific working objectives. When the individual accomplishes formal work goals but does so by deviating from formal rules and regulations, he is acting nonformally.

Informal behavior systems cover the area of direct interpersonal relations of a voluntary character. Dubin sees work assignments as demanding less than the full attention of their occupants, thus providing (time) space for interpersonal interaction. The grapevine is used by Dubin to illustrate the distinction between informal and nonformal

behavior systems. Grapevine information is highly relevant to work, thus it is not informal but is nonformal. In summary, Dubin states that job relatedness is the criterion that separates informal from nonformal behavior, whereas hierarchical expectations distinguish between formal and nonformal.

In contrast to the internal orientation of Stogdill and Dubin, Udy (1965, p. 678) states that "organization" in its broadest sense denotes, "Any group of persons plus the system of roles defining their interactions with one another." Formal or complex organizations he understands to be, "Organizations with objectives which are explicit, limited, and announced." Udy expands the definition of the formal organization as follows (p. 687):

...any group of people incumbent to a system of roles purposely designed to yield limited announced objectives. In turn, the system of roles purposely designed to yield limited announced objectives is referred to as the administrative system of the organization, in contrast to its group structure, the pattern of interactive relationships among members. Any person incumbent to a role in the administrative system and hence interacting in the group structure is designated as a member of the organization, and all members considered severally are referred to as the membership.

Udy sees the total configuration of interrelationships between the membership, group structure, and administrative system as constituting the internal organizational system. Following Parsons (1960) he defines the institutional system as the configuration of interrelation-

ships between the formal organization and its social setting and the technical system as the configuration of interrelationships between the organization and its technology.

Udy observes organizational research as being one of two broad types, internal or external. Most comparative research is external and most external is comparative. He focuses on comparative research and sees the fundamental differences in organizations as due to differences in social or technological settings in which they exist. That is, the organization is viewed as basically passive or adaptive, much as Thompson, Perrow, and others viewed it. In the present paper the organization is also viewed as adaptive in the sense that it is dependent upon and thus reacts to its environment. However, in this paper it is the effect or the extent of adaptation which is focal, not the means of adaptation as in Udy's writing.

Thompson's conception of the organization is the last to be examined. Thompson (1967, p. 176) states:

For purposes of this volume, then, we will conceive of complex organizations as systems, hence indeterminant and faced with uncertainty, but at the same time as subject to criteria of rationality and hence needing determinateness and certainty.

Thompson's thesis, which he labels simply the "newer tradition," is that the design and structure of organizations is largely determined by the technology and

environment in which they find themselves. The "technological determinism" is in the vein of Burns and Stalker (1961), Woodward (1965), Lawrence and Lorsch (1967), and Perrow (1969). Thompson's "environmental determinism" thesis is related to Parsons' (1959, 1960) statement that organizations are comprised of three qualitatively different hierarchical levels of responsibility and control. These levels are presented next.

The first of these is the technical level--the operating or producing level. As such it requires routine, predictability, and technical rationality to function well.¹ It is at this level that Thompson's technological determinism applies.

At the second, or managerial level, mediation occurs between the technical suborganization and those who use its products as well as those from whom it procures resources. This level also controls the technical level in matters of policy.

The third level, including but not limited to suppliers and customers, consists of the wider social system of which the organization is a part. The control

¹It is interesting to note that Galbraith in the widely acclaimed book, The New Industrial State (1967) builds his argument, that the economy is experiencing a shift from a competitive, market economy to a planned one on what Thompson calls the need to reduce uncertainty at the producing level of the organization.

exercised by the social system over the managerial level is, according to Parsons and Thompson, different in kind from that exercised by the managerial over the technical. The former control is by way of legitimation--a source of meaning.

Thompson justifies his "newer tradition" by pointing up the inadequacies of what Gouldner (1960) called the "rational model" and the "natural system model" as found in organization theory literature. This newer tradition essentially equates the determinant, rational model with the technical level of the organization. The indeterminant, natural system model is needed to give recognition to the uncertainty that is the environment of the organization. Thompson's intermediate, managerial level of the organization acts to buffer, smooth, or adapt transactions between its basically incompatible first and third levels.

An attempt will now be made to formulate a conceptually plausible, operational, intermediate level definition of the formal organization, using ideas previously conceived as well as perhaps some needed new ones.

Three points need to be made with regard to a definition of the formal organization. First, a definition, to be useful, should define certain things "in" and certain things "out" of the thing being defined. Second, the

definition of certain phenomena and entities in and other related ones out leads to the need for specifications about those relations. The Barnard-Simon conception is that the organization receives from certain environmental entities valued activities and forces which are combined and produce other valued activities and forces for the same or other environmental entities. Simon, Smithburg, and Thompson (1950) appropriately labeled these values inducements (from organization to environment) and contributions (from environment to organization). Thus the formal organization produces internally for those external to it.²

The formal organization is formally defined for purposes of this paper as a cooperative system of role incumbents' decisions and actions, creating perceived benefit for its environment in exchange for which it obtains resources, some of which are used as role incumbent inducements. Those who voluntarily engage in

²Homans (1950) develops notions along similar lines, discussing the interrelatedness of activities, interactions, and sentiments, each in the external, then in the internal system. His exchange theory is part of a sociological school which relies on exchange notions to explain social organization. The circular flow of the economy from income to product to income...is similar to the above notion and if "income" were defined broadly enough, would be the same.

exchange with the organization perceive benefit thereby. Therefore they desire chiefly that it survive. The primary measure of an organization is perceived net value of exchange to customers, employees, owners, suppliers, clients, and others in contact with it. The secondary measure is its value to society at large.

The above definition departs from orthodox thinking about the boundaries of an organization and thus may be confusing without further elaboration. The formal organization includes only those decisions and actions made by participants for the purpose of producing (production to include the physical process of exchange). It does not include clients or customers, or suppliers, et cetera, in their non-organizational roles. The above definition is compatible with Lawrence and Lorsch (1967, p. 27) who conceive of "...the physical machinery, the nonhuman aspect of production, as part of its environment."

The above concepts are illustrated with a Venn diagram on the following page showing the major components of the (economic) organization, and its relevant environment.

The formal organization is not coterminous with the sum of persons working in it and persons owning or otherwise charged with exercising control over it, but rather is the sum of their decisions and actions in those roles.

The formal organization does include organization employees, customers, suppliers, and owners as incumbents to those roles but does not include those persons as they

Fig. 2.--The Formal Organization and its Relevant Environment

exchange resources--their decisions and actions--with the organization. That is, a person as role incumbent is part of the organization but the same person as one who exchanges with the organization is not a part of it but rather is part of the organization environment. Splitting

something as concrete as a person to define something as amorphous as a formal organization is justified here because the latter is the unit of study, not the former.³

"Organization" production is the production of the cooperative producing system less the production of those persons that would occur without the cooperative system, where production means value creation. This last statement is not original. It is comparable, for example, to Lorsch and Lawrence's (1970, p. 13) statement that "...the essence of organized work is to help people together to accomplish work more efficiently and meaningfully than they could as a collection of individuals." Net organization production would, then, be positive-valued output minus negative-valued output. Net organization production will be called "benefit" and will be made operational in chapter three.

The formal organization exists only because it is perceived by some persons as productive. If there were no output perceived by potential members as beneficial there

³The conflict between the individual's need for independence and organization's need for employee dependence (see Argyris, 1957) could perhaps be analyzed in an exchange framework wherein the employee is viewed as part of the organizational environment rather than a part of the organization, insofar as his independency need is concerned. Thus it would be valid to say that the organization should allow and promote employee independence only if by so doing the organization obtained productive services "in exchange."

could be no membership inducement and thus no organization.

The purpose of the preceding definition and discussion is to emphasize the dual nature of the formal organization. The entity comprising role incumbents' decisions and actions must be distinguished from its environment from which its purpose, as well as resources and constraints come. This conceptualization is needed in order to consider the nature and recipient(s) of benefits and costs associated with the organization. Particularly, the above abstract definition is needed to consider organizational adaptation to its environment.

Having surveyed a number of conceptualizations of the formal organization and tentatively developed another, hopefully more useful one, attention is now turned to organizational analysis via typologies. After a brief examination of what a typology is and how it is used, five existing typologies of organizations will be presented.

Typology And Recent Organization Typologies

A type is a classification, kind, or group, sharing a particular characteristic. More formally the constructed type is defined by McKinney (1966, p. 5) as, "A purposive, planned selection, abstraction, combination, and (sometimes) accentuation of a set of criteria with empirical referents that serves as a basis for comparison of empirical cases."

McKinney's rather formidable definition convey's a number of ideas. Science is concerned with finding recurrent, common phenomena, whether the effect of a drug on an organism or the activities performed to carry on a large social endeavor. This task of finding the recurrent and eliminating the unique is accomplished by the choice of dimensions on which observed cases are compared.

A typology of organizations serves as a shorthand description of the particular organizations typed and facilitates the comparison of the organizations along some dimension(s). Schellenberger (1969, p. 87) helps with the task of choosing those dimensions with a statement on the classification of models:

The purpose of looking at schemes of classifying models is a means of focusing upon essential characteristics. However, the essential characteristic of models may depend upon the end purpose. Let us draw an analogy between the different types of automobiles and the different types of models. We can classify automobiles by age, cost, or manufacturer...The point is that all of these factors are valid in a particular situation...

It is necessary of course that things being typed possess some attribute in varying amounts. The question faced now is which attributes shall be focal.

Hall, Haas, and Johnson (1967, p. 118) state that, "Despite the importance of classifications, however, it is clear that there is little agreement as to criteria by which organizations should be classified." As

Schellenberger points out, it is the essential characteristic, or attribute, that should be focal. What is essential depends upon the end for which the entity exists. After a review of the leading typologies of the organization, it will be argued that none of them do focus on its most basic attribute--continued production of perceived benefit.

The selection of the following five typologies was based on the frequency of reference to typologies in recent organization literature. Other less widely known typologies are cited by Blau and Scott (1962) and Perrow (1967). These five typologies are outlined in Table 1 on the following page.

Compliance--Etzioni

Compliance is defined as a relationship in which an actor acts according to a directive supported by the power of another actor. It also refers to the orientation of the subordinate actor to the power applied. "Supported" means that the one who has power manipulates means in his possession so that other actors find following the directive more rewarding than would be the failure to follow it. Etzioni feels that compliance is universal and that it is a major element of the relationship between one who has power and those against whom the power is exercised.

TABLE 1.--Recent Organization Typologies

Author	Dimension	Organization Types
Amitai Etzioni (1961a)	Compliance of Members	1)Coercive 2)Utilitarian 3)Normative
Peter Blau and W. Richard Scott (1962)	Prime Beneficiary	1)Mutual Benefit 2)Business Concerns 3)Service 4)Commonweal
Talcott Parsons (1959) (1960)	Function	1)Pattern-Maintenance 2)Goal-Attainment 3)Adaptive (Implementive)
Warren G. Bennis (1959)	Functional Activity	1)Habit 2)Problem-Solving 3)Indoctrination 4)Service
Charles Perrow (1967)	Technology	1)Exceptions faced a.Few b.Many 2)Search a.Analyzable b.Unanalyzable

Power is defined as the ability of an actor to induce another actor to carry out his directives. The means by which power is manifest are physical, material, and symbolic, these being awarded or withheld by their possessor. Use of physical detention and force is called coercive power. Use of material means is remunerative

power, and use of symbols (for example, status) is called normative power. The above is called the structural aspect of compliance.

Looking at the subordinate participant, it is noted that he has some amount of involvement in the organization. This is called the motivational aspect of compliance. Subordinates are distinguished from higher participants primarily on the basis of organizational position held but also differ on each of the three dimensions, involvement, performance obligation, and subordination. Subordinates usually have lower positive commitment, lower performance obligation, and higher subordination according to Etzioni.

Etzioni names three zones of the involvement continuum, alienative, moral, and calculative, all applying to subordinates. The first denotes an intense negative orientation. Calculative involvement designates either a negative or a positive orientation of low intensity. Calculative orientations are predominant in relationships of businessmen in their contacts with other businessmen and customers. The moral involvement designates a positive orientation of high intensity. Examples are the involvement of the member in his church, the devoted member in his party, and the loyal follower and his leader.

Combining the three kinds of power with the three kinds of involvement yields nine types of compliance. Only three congruent types are of interest here. The congruent types are coercive-alienative, remunerative-calculative, and normative-moral. They are found more frequently than non-congruent types because they are more effective. Etzioni calls the three congruent organizational types coercive, utilitarian and normative organizations.

Etzioni discusses four correlates to organizational type: goals, communication, recruitment, and pervasiveness. The coercive organization's goal is order, its communication is downward instrumental, its recruitment has little or no selectivity, and its pervasiveness is low. The utilitarian organization's goal is economic, its communication is vertical instrumental, its recruitment is highly selective and its pervasiveness is low. The normative organization's goal is cultural, its communication is vertical or horizontal, expressive or instrumental, its recruitment varies in selectivity and its pervasiveness may be high or low.

Prime Beneficiary--Blau and Scott

Blau and Scott reason that organizations are established to benefit some persons or groups more than others and that the basic dimension of an organization

typology should be prime beneficiary. They see four types of organizations on this basis, (1) mutual benefit associations, (2) business concerns, (3) service organizations, and (4) commonweal organizations. The primary beneficiary of the mutual benefit association is the member or direct participant. The prime beneficiary of the business concern is the owner. The primary beneficiary of the service organization is part of the public which is in direct contact, such as the client, patient, or student. The primary beneficiary of the commonweal organization is the public-at-large.

The correlates of these four types of organizations of primary interest to Blau and Scott have to do with problems of controlling them. The first type has the problem of membership apathy and the prevention of over-centralized control. The primary concern of the second type of organization is to control operations so as to be efficient. The problem of the third type of organization is the maintenance of its integrity. Care must be exercised to prevent the client from leading the organization and to prevent the organization from "using" the client. The fourth type of organization has the problems of dealing fairly with those whom it is to control, of power distribution and of maintaining external democratic control.

Function--Parsons

Parsons' (1959, 1960) notion of "function" in the social system primarily relates to the problem of mediation or integration between the relative constancy of the structure of the system and the more dynamic situation external to the system. The environment includes the cultural system, personalities, and the physical world. Parsons suggests that there are four essential functions of any social system. These are pattern maintenance, integration, goal attainment, and adaptation, in the order of the scope of their control of social action. These functions are arrived at by dichotomizing one axis into internal and external concerns and a second axis into instrumental and consumatory concerns (Parsons, 1959).

Pattern-maintenance is internal instrumental. Integration is internal consumatory, goal attainment external consumatory, and adaptive function external instrumental. His four types of formal organizations correlate with these four functional imperatives in a social system. These four imperatives and their correlated organization types will be discussed.

Values always develop "above" the subject social system. Pattern-maintenance refers to the action of stabilizing these societal, economic, political and moral values within the given social system. Parsons states

that stability is empirically not predominant over variation but is analogous to inertia in mechanics in that it serves as a reference point from which to study variation. Still, as Buckley (1967) quickly points out, his work suggests a belief in the inherent desirability of social stability around certain social values. Buckley, following Coser (1957), Dahrendorf (1958), and others suggests that a degree of conflict and resultant instability are socially functional.

There are certain organizations which perform the function of pattern-maintenance. Theirs is a socializing (internalizing normative patterns) or educating task. Cultural, educational, and religious organizations are of this type. Parsons again disclaims the seeming conservatism by noting that though these organizations are primarily pattern-maintaining, they are sometimes expressive or even creative in that they modify values.

Omitting integration for the moment, because of its pervasive nature, goal attainment is the next functional imperative. Goal attainment concerns the relation of a social system to its external situation, specifically the discrepancies arising between (the inertial tendencies of) the system and the (changing) environment. Goal is thus defined as a relation between the system and its situation wherein the differences between system "needs" and

situation are reduced. Thus goal-attainment is "situational" as opposed to pattern-maintenance, which is constant. Yet even goal-attainment has a constancy in that the system-situation relation moves toward equilibrium. Parsons states that the focal environment of a social system's goal orientation is the personalities of participating individuals.

Political organizations perform the goal-attainment function, thus they are the second organizational type. Governments are this type, as are credit originators, and the corporate aspect of all formal organizations to the extent that they allocate social resources.

Going one more step from the metaphysical to the physical Parsons conceptualizes an adaptive or implemmentive function. Because physical facilities are necessary for the attainment of many valued goals, and because there are alternative goals the problems of scarcity and cost arise. There is a function of providing disposable facilities for the attainment of goals which is independent of any particular goal. That provision is the adaptive function and is synonymous with the economy. Thus the third type of organization, called adaptive organizations, contributes economic value and consists primarily of business organizations.

The fourth function, integration, is placed between pattern-maintenance and goal-attainment in Parsons' scheme.

The integration imperative arises because each of the other three subsystems is segmented and to a degree is autonomous. Thus the function (of) integration is to adjust the other subsystems so that the entire social system is a whole.

To perform this fourth function, integration, is the assignment of legal organizations. Principal among integrative organizations are the courts, the legal profession, and political parties. Political parties fall here rather than with governments in the pattern-maintenance type because they direct motivation to the fulfillment of expectations of other subsystems. Thus integrative organizations are not concerned with effectiveness in creating value, but with the efficiency of others in creating value.

Parsons notes that in a well integrated society every type of organization contributes to every one of the four basic functions. Thus the typology is in terms of primacy of function only.

Functional Activity--Bennis

This typology is conceptually close to Parsons' approach, and is related to that of Blau and Scott. These three have in common an ends-means perspective, whereas Etzioni's and Perrow's are primarily means oriented. Each of Bennis' organization types has a different major func-

tion, and thus a different effectiveness criterion.

The "habit" organization replicates standard and uniform products, and the effectiveness criterion is the number of products produced. Apparently Bennis assumes they are the right products as there would otherwise be no "market" for them and they would not be produced. The best example of this organization type is a mechanized factory.

"Problem-solving" organizations create new ideas and the effectiveness criterion is number of ideas created. Examples of this type of organization are research organizations, design and engineering divisions, and consulting organizations.

"Indoctrination" organizations such as universities, prisons, and hospitals primarily exist to change people's habits, attitudes, intellect, physical behavior, and mental behavior. The effectiveness criterion is number of "clients" leaving.

"Service" organizations distribute services either directly to consumers and/or to the other types of organizations. Examples are the military, governments, advertising organizations, and taxi companies. The effectiveness criterion is the extent of services performed.

Technology--Perrow

Technology is defined as the work done by individuals in organizations, upon objects or raw materials. The defin-

ing characteristic of organizations is that they are systems for getting work done; for applying techniques to the problem of altering raw materials--whether the materials be people, symbols, or things. Technology is treated as an independent variable, and structure--the arrangements among people or the relationships that permit coordination and control work--is treated as a dependent variable. Goals also are primarily conceived as being dependent variables.

Perrow aims his treatment at the whole organization, not to particular work groups or processes within it. His central assertion is that technology is a better base for comparing and contrasting organizations than the bases of Parsons, Blau and Scott, or Etzioni for example. (His examples.)

Perrow's concern is with two aspects of technology that seem to be directly relevant to organizational structure. Whereas technology is his primary classification base it subsumes first, the number of exceptional cases encountered in the work and second, the nature of the search taken when exceptions occur. Thus there are four types of organizations: those which face (1) few exceptions and unanalyzable problems, (2) unanalyzable problems and many exceptions, (3) many exceptions and analyzable problems, and (4) analyzable problems and few exceptions. Alternately, focusing on raw material inputs instead of cases encountered,

few and many exceptions above translate to uniform and nonuniform raw materials.⁴

Structure, the dependent variable of interest, is dichotomized into task structure and social structure. Task structure is further divided along two dimensions, control and coordination. Control is then broken up into the discretion an individual or group possesses and the amount of power it has to mobilize resources. Power involves choices of basic goals and strategies, while discretion involves choices of means and tasks required.

One more concept allows Perrow to integrate and arrive at some conclusions regarding technology and structure. This is the matter of functional or task area or what business literature calls level of management. Perrow focuses on technical (middle management) and supervisory areas to the exclusion of the design and planning area (top management). Relative to task structure, and depending upon which functional area and which technology class under consideration, discretion, power, coordination and group interdependence are rated as high or low. Regarding social structure the basis of identity will be communal, goal,

⁴ Burns and Stalker (1961) as well as Lawrence and Lorsch (1967) suggest that the degree of certainty in the organization's environment partially determines the most effective organizational structure.

instrumental, or task, for the four respective technology classes.

The third major dependent variable, after task structure and social structure is goal. Goal is broken into three possibilities, system, product, and derived, and numerous differences under each of these are pointed out, again depending upon the technology class.

In sum, Perrow states that types of organizations--in terms of their function in society--will vary as much within each type as between types. He feels that anytime the effect of a parameter variable is tested the researcher should control for technology. Finally, for the social scientist to propose decentralization, or employee-centered management, for example, irrespective of the (technological) type of organization is unjustifiable unless there is a willingness to sacrifice output. The "right" structural and goal prescription or the best organization theory depends upon the type of technology found in a given organization.

Justification For An Adaptation-Based Typology

Bennis (1966) states that the basic flaw in extant organizational effectiveness criteria is their inattention to the problem of adapting to change. If we view organizations as adaptive, problemsolvers, he states, then inferences about effectiveness have to be made, not from static measures of output; though these may be helpful, but on the

basis of processes through which the organization approaches problems. The argument of this paper is that before those processes are studied measures of output must be furthered. Dynamic measures of output do form the basis of measuring organizational effectiveness.

Conceptually defined by Von Bertalanffy, the notion of an organization as an open system is being increasingly espoused by Parsons, Katz and Kahn, Stogdill, Lawrence and Lorsch, and to a lesser extent by Etzioni as well as Cyert and March. An open system interacts continuously with its environment. Thus environment shapes the organization by direct pressure as well as by permitting only those meeting certain criteria to survive. An open system also imports resources from and exports resources to its environment.

Thus the essence of the justification for an adaptation-based typology is that the dimensions along which organizations should be typed to facilitate the understanding and management thereof are those accentuating the organization's "most essential characteristics." (See page 19.) If one is interested in how to plan for and control an organization he must begin by focusing upon the nature and extent of organization benefit to its environment. When the adaptation-based typology is constructed, toward the end of this paper, it will be critically analyzed.

The importance of a typology based on adaptation variables does not derive principally from the increasing

prevalance of what Emery and Trist (1965) call a "turbulent field" nor from Terryberry's (1968) allied idea of highly evolved environments. Rather, the need for consideration of organization adaptation stems from the fact that resources are imported by the formal organization from an environment and benefit is exported by the organization to an environment.

CHAPTER II

THE ENVIRONMENT OF FORMAL ORGANIZATIONS

The environment of organizations plays a two-phased role. First, it provides the climate in which organizations grow and thrive, supposedly by being of service to elements of that environment. Second, the environment acts as a constraint, as values and norms act plastically to contain organizational ends as well as means. This generalization seems to hold for the social environment, the economic environment, or the "relevant environment," a term to be developed later.

The discussion of the environment of organizations will be divided into two parts. First, the broad socio-economic environment will be discussed. Then what will be called the "relevant environment" will be discussed. The latter refers to the environment in more direct contact with the organization than the former and hence more directly affecting it. It will be argued that relations with those in the relevant environment constitute the primary arena for organizational adaptation. The socio-economic environment influence is manifest through the more immediate or relevant environment.

The two kinds of environment plus a focal organization can be viewed as a hierarchial order. The socio-economic system contains the relevant environment of the organization (customers, clients, owners, employees, et cetera) which contains the organization. Or, building from the micro to the macro level, one can view organizations (systems of role incumbents' decisions and actions) as constituting the patterned part of individuals' activities. Individuals' total activities in turn, constitute the socio-economic system.

The Socio-Economic Environment

Stinchcombe (1965) states that the general characteristics of populations and social structure which most affect organizational forms are level of literacy, degree of urbanization, presence of a money economy, political stability, and level of past organizational experience in the population. These social characteristics affect both motivations to form new organizations and the viability of those organizations once formed.

One aspect of the social environment of organizations is the dispositions brought to organizations by those who work in them. Thus William H. Whyte, Jr. in The Organization Man (1956) gave a widely read portrait of the social environment of business organizations. He argued that the values of the Protestant Ethic supposedly clung to tenaciously by our fathers has given way to a Social Ethic into which we

have more or less drifted. By way of contrast to the individualistic, risk-taking, self-starting frontiersman of early America we now seek the security of anonymity by burrowing in the group, detouring in the face of risk, and starting only at the prod of the organization, according to Whyte.

Today's giant corporations, Ford excepted, are run by nonowner professional managers, usually in the form of multilayered boards and committees instead of entrepreneurial magnates. While risks are still taken, they are preceded by more calculation. Also, what risk there is is less personal. Though the careful group man thesis is rejected by many (Dill, 1965) as not characteristic of Americans, its validity depends partially upon whom Americans are compared to. If the comparison is of American to British or European management the American still looks very aggressive (Lewis and Stewart, 1961).

Within the past two decades especially, another facet of the social environment of business has emerged. This is the idea that training of individuals particularly for business jobs, is coming to dominate liberal arts at the higher education levels (Gordon and Howell, 1959; Pierson, 1959). More recently the educational process has been questioned

by the students, and by teachers with varying viewpoints.⁵

In addition to the organizational context formed by individuals, a fabric is woven by social institutions. Our society supposedly functions more effectively because of institutional specialization--the church will attend to religious needs, governments and political parties will attend to political needs, business will attend to economic needs, and schools will attend to educational needs (Parsons, 1960). In practice these functions overlap considerably. For example governments produce and allocate scarce goods and services while business know-how is sought by many in government. Schools train students for business and government employment while grants from business and government support the schools.

Thus at the same time an organization is affected by individuals coming into it, by the prevailing ethics, and by manifestations of acute social problems, its activities are affected by the "web of organizations" (Blau and Scott, 1962) in which it finds itself. As the web of organizations is defined as those organizations which are most closely interrelated, the nature of the relationships becomes focal. The characteristics describing these relationships include

⁵Sidney Hook, a leading American philosopher and educator believes higher education to be a potential candidate for politicalization as has occurred in many Asian and South American nations (U.S. News and World Report, 1969).

interorganizational power, interorganizational insulation, and interorganizational information. The nature of the relationship is characterized as either competitive or cooperative, the latter to include bargaining, cooptation, and coalition formation (Thompson and McEwen, 1958).

While some facets of our society are neither positive nor negative in terms of their value there has developed over the past decade social problems (or their symptoms) which are unparalleled since the Great Depression if not since the Civil War. The Report of the National Advisory Commission on Civil Disorders (1968), popularly called the "Kerner Report," describes the problem as primarily racial and due to racial discrimination. Six prominent historians writing in Newsweek (1970) see a scope and depth of the social malaise in the United States as extensive and intensive enough to touch and be touched by every imaginable aspect of life. While their specific diagnoses range from corruption of all present institutions to rapid technological change to hypocondria, they were in agreement that the American society is undergoing a socio-economic crisis.

Whatever the specific manifestations of social problems emphasized, there is a general consensus that business and other organizations have a social task of unprecedented proportions. While social duties have been brought to the attention of business by writers from Robert Owen (1825),

to Mayo (1945), to Mary Parker Follett (1949), the notion that business in particular must involve itself in other than economic endeavors is being embraced to an extent never dreamed of a generation earlier.

Like the social environment of organizations, the economic environment is difficult to comprehend. Only the elemental ideas will be presented here. The major elements of an economic environment of organizations are the same whether the subject organizations are themselves businesses or other kinds of organizations. All societies have what Samuelson (1967, p. 15) calls "Central Problems of Every Economic Society." These are problems of economic organization and may be stated in terms of three questions: What commodities shall be produced and in what quantities? Who will produce which commodities? For whom shall they be produced? Further, as Samuelson points out, a number of economic laws operate in all societies. The most basic of these laws is the law of scarcity, giving rise to the notion of "economizing." Basic to the notion of economics is the fact that a full-employment economy produces more of one commodity only by giving up production of another. This then is most fundamentally what is meant by the economic environment. The questions and the laws apply not only to business firms but to all formal organizations if the definition of commodities is allowed to include perceived benefits.

According to McGuire (1964), "economic environment" of the individual firm is synonymous with the market structure. Traditional economists see a continuum of such environments ranging from perfect competition to monopoly. This continuum is expressed by the shape of the demand curve faced by a given organization. When the demand curve is horizontal the environment is purely competitive. As the curve is rotated clockwise a progressively less competitive environment is depicted.

Oligopolistic environments, made famous by Sweezy (1952) and others and infamous by Galbraith (1967) occur frequently in the United States. A distinguishing feature of an oligopolistic environment is that there is no clear answer as to what actions should be taken by those firms to reach a given goal. Even if the firm's behavior were consonant with rational acts by a single individual, as traditional economics assumes, the oligopolistic firm's proper action is indeterminant because other firm's actions are consequential for a given firm, yet are unpredictable.

Concepts of economic environments are essentially market concepts and traditionally have stated that profit is the one variable which market decisions are to maximize. Alternative theses are that sales maximization is sought (Baumol, 1958), that optimal liquidity position is sought (Cooper, 1949) that satisfactory profits are sought (Margolis, 1958; Simon, 1957) that homeostasis is sought (Cannon, 1939;

Boulding, 1950; Knauth, 1956) or that firms seek to survive by emulating other surviving firms (Alchian, 1950).

Cyert and March (1963) argue that business organizations have five goals, none of which has clear priority over the others. Thus they feel that most decisions about price, output, and sales strategy are affected by a production goal, an inventory goal, a sales goal, a market-share goal, and a profit goal. This formulation owes much to earlier attacks against the primacy of the profit motive and attempts to find other motives as in the preceeding paragraph.

Going beyond institutional goals, as decision inputs, to societal economic goals, Dill (1965) cites an array of studies on the direction of societal pressures on organizations. Two main directions are toward limiting the concentration of power in a given organization and toward improving the lives of people who work for organizations. Other economic norms which are aspired to and which organizations are held partially responsible for achieving include prosperity, a fair distribution of income, and jobs for everyone.

All the socio-economic conditions create opportunities as well as constraints on organizations. These opportunities and constraints may take the form of a desire for order and security, a desire for expression, a desire for fair competition in labor and product markets, and recently a heightened desire to preserve the ecosystem. For example,

the public concern with environmental pollution has resulted in considerable cost (constraint) to certain organizations while providing needed revenues (opportunities) to others.

The Concept Of Relevant Environment

Emery and Trist (1965) utilize a concept called "the causal texture of the environment" to deal with those processes in the environment which are among the determining conditions of exchange with an organization. They propose that an understanding of organizational behavior requires some knowledge of each member of the following set, where L indicates some potentially lawful connection, suffix 1 refers to the organization, and suffix 2 refers to the environment:

$$L_{11}, L_{12}$$

$$L_{21}, L_{22}$$

The present paper focuses on what they call L_{12} and L_{21} , as these are the primary exchanges between the organization and its relevant environment.²

Parsons (1960) states that goal attainment is implemented 1) in the "market" for the organization's output, and 2) in the market in which the organization obtains its input; that is, when the organization meets the "super organization."

² L_{11} , the internal organizational processes, constitutes the domain of most classic and behavioral organization theory. L_{22} , is within the domain of classical sociology and economics.

His two markets are the central part of what will be considered the relevant environment.

Dill (1958) found that the "task environments" of two Norwegian firms comprised four major sectors: customers, including both distributors and users; suppliers of materials, labor, capital, equipment and work space; competitors for both markets and resources; and regulatory groups including governmental agencies, unions, and inter-firm agencies. Customers and suppliers of labor (Parsons' input and output markets) are herein considered the primary factors constituting the relevant environment, with competitors and regulators considered only as they influence customers and employees.³

Dill (1962) later distinguishes between the supplier or customer himself and information about him which is available to the organization. Thus the environment is treated as information. Though the difference between a (known) customer and information about him is largely semantical, use of the latter concept does facilitate the analysis of environmental influence on organizations.

³Blau and Scott (1962) note that of the four processes governing relations among organizations--competition, bargaining, cooptation, and coalition formation--only competition does not involve direct interaction. Competitors aim at the same goal and the outcome of the conflict is indicated via the goal. In the above discussion customers and employees embody that goal.

Dill's analysis yields three elements of short-run influence and two basic elements of long-run influence.

Short-run inputs begin at a stage of searching for and recording information from the environment. Next follows an interpreting stage or the conversion of information to tasks. The third stage is the action stage wherein certain tasks are selected for performance and are given priorities.

To summarize, the relevant environment of an organization consists of those persons and organizations which supply activities and material in exchange for other activities and materials, and those that regulate it. The term encompasses the exchange setting including implied and expressed agreements between the organization and others. It is primarily to those entities in the relevant environment that the organization must adapt.

CHAPTER III

ORGANIZATIONAL ADAPTATION

The terms change, innovation, and adaptation are frequently used interchangeably. "Change," as the term is used in the literature is an umbrella term. Two notions which are subsumed under change are innovation and adaptation. An attempt at further clarification of these terms and concepts suggested will be made. Very briefly, change is any alteration in the state of an on-going system. Innovation refers to a specific kind of change--that which is new to the organization and intended by organization participants. Adaptation is the process by which the organization more closely meets the needs of its environment, while insuring that its own needs are met. A further exploration of this concept follows.

Organizational Adaptation

The biological definition of adaptation best fits the need for its conceptualization. That definition, according to Random House (1968) is: "a) any alteration in the structure or function of an organism or any of its parts by which the organism becomes better fitted to survive in its environment, b) a form or structure modified to fit changed

environment." Terreberry (1968) argues that viability equals adaptability. Thus in contrast to all change and all innovation, all adaptation is by definition functional for whatever adapts. Only if a change or innovation results in a greater probability of organization survival is there organizational adaptation.

The organization's goal (the goal of those who receive benefit from it) is herein viewed as survival at or above existing benefit levels. It achieves this goal by performing a function in society. The function performed by the organization may change. If so, its "operational goal" (means) changes. The term "operational goal" is sometimes used to denote a tangible, measurable goal, the achievement of which is a condition of achieving the "ultimate goal." "Function" denotes a "role" or "purpose," which all indicate a relation of "A" (organization) to "B" (environment) wherein A's purpose or raison d'etre is determined by B. Thus while from the standpoint of the organization its goal is survival, from the standpoint of society, or more particularly of its relevant environment, the function of the organization is the efficient production of some wanted good or service. This input-output approach to adaptation will be explored further in the following section.

Thus emphasis should be given the fact that all changes are not adaptive. Only those alterations by which

the organization becomes better fitted to its environment are included in the definition. (The notion of a better fit will be developed shortly.) Stated another way, adaptation is one possible effect of change.

If the primary goal of the organization is survival in a changing environment then organization change that results in (positive) adaptation to that environment is functional change. Conversely, change that results in less benefit exchanged between the organization and its environment is dysfunctional change. Change that results in no discernible alteration in the quality of the organization's relationship with its environment is non-functional change. Thus an organization may move either to the left or right on a dysfunctional-to-functional change continuum. This continuum is synonymous with negative to positive adaptation. For example, should an organization move geographically its sphere of interest, then it would probably find itself in either a more or less favorable location in its new location compared to the former. The move would be either positively or negatively adaptive.

This study aims to distinguish between organizations that are adaptive and those that are unadaptive, and to analyze that adaptation as to whom the organization adapts, whether or not that adaptation is planned. That is, it is conceivable that an organization would adapt by simply

"drifting with the current" of its environment without its participants being aware of its change. For example, it is widely believed that racial and ethnic discrimination are practiced less by organizations today than at any period in the history of this nation. Most formal organizations cannot be said to be leaders in this area. Rather the change for most is a (reluctant or enthusiastic) response to environmental pressures. Whether the actual implementation of the change is "planned" in the sense that integration schedules are set up, for example, is not the question.

The central question is whether the organization does adapt to needs in its environment or whether it either does not perceive nor respond to that environment's needs or does perceive them but chooses to not be compatible with it.

Adaptation can be analyzed from a number of different perspectives. In dichotomizing organizational change into functional and dysfunctional, the evaluation of change was based on the organization's relation with its environment in time period one (t_1) compared to that relation in (t_{-1}). That is, the consequences or results of that change were central. Another dimension of that change revolves around its immediate cause or inducement. What brought about the change?

This frontal or causal aspect of changes is first broken into internally (organization) and externally (environment) induced changes. Externally induced changes are felt at one of the organization's points of contact with its relevant environment. These changes are in anticipation of or in reaction to changes (including changed preferences) in the relevant environment, or possibly simply attempts to improve relations with a stable relevant environment. Internally induced changes refer to those initiated by members or groups within the organization as organization decision-makers or members, and such changes are not strongly connected to the environment.

Externally induced changes affecting the organization are either made consciously to affect the organization (likely if by suppliers, certain regulatory agencies, or large buyers) or consciously to affect the group of which the organization is a member (the recent court ruling on cyclamates) or with no attention to its effect on the organization or its group (a winning football team unintentionally affects the local police organization on fall weekends). As previously stated, it is felt that environmental change will usually precede organization change; that is, most intended organization changes could be traced by the organization management to an earlier change in the environment (Terreberry, 1968).

The feedback from effect of an organizational change to other internally generated change is recognized but will not be researched. The "feedforward" to change in the environment is recognized but is not within the scope of this study. In fact, as Udy (1965) notes, such problems are usually studied from the point of view of society, the recipient of influences.¹ The above source and result aspects of organizational changes can be illustrated with a basic system diagram as follows:

Fig. 3.--Sources and Results of Organization Change

Components Of Organizational Adaptation-- Maintenance and Benefit

To achieve its basic goal--survival--the organization must achieve one relation with its environment. This relation is one in which the organization (cooperative producing

¹Interestingly, a battle is currently raging in the marketing literature over the adaptive versus the formative role of business organizations.

system of role incumbents' decisions and actions) can acquire resources from some part of the environment which it can pass on directly or in modified form, to another or the same part of its environment. The prerequisite to or means of this resource acquisition refers to the "means of support" of the organization and will hereafter be called maintenance.

If the served part of the environment is to be induced to provide resources to the organization, then the organization must provide resources directly or indirectly to that part of its environment. The organization's production is called benefit in this paper. Thus a two-sided positive relation must be maintained between the organization and its environment for the organization to survive.²

Benefit includes what Simon (Simon, Smithburg, and Thompson, 1950; March and Simon, 1958) calls "inducements," and maintenance is comparable to his "contributions." According to March and Simon (1958, p. 84), "Inducements, are 'payments' made by (or through) the organization to its participants (e.g., wages to a worker, service to a client,

² This notion is similar to exchange theory in sociology. Social interaction occurs, according to the theory, when a social actor--either an individual or an organization--attempts to gain some kind of benefit from an exchange with another social actor (Olsen, 1968). The economic theory of the market is also an exchange theory. Market theory is primarily concerned with the determination of the exchange ratio or price.

income to an investor)." And in defining contribution, they state (p. 85), "We assume that a participant in an organization makes certain 'payments' to the organization (eg., work from the worker, fee from the client, capital from the investor)." The above examples are theirs. While similarities between the two sets of ideas are substantial, there are also important differences.

March and Simon state that the manager either implicitly assumes non-monetary inducements are similar in all organizations or adjusts monetary inducements to compensate for non-monetary differences. Benefit involves no ceteris paribus assumptions. It does explicitly recognize that non-monetary as well as monetary inducements are adjusted.

The primary difference in benefit-maintenance and inducement-contribution is the perspective from which they are viewed and the roles they play in the explanation of organizational behavior. Contribution is defined by the individual (participant) contributor, while maintenance is defined by the recipient organization. The role of contribution is to provide closure in a theory of the individual's decision to participate. Contribution provides the way for the "step" in a motivation step function. Were it not for the mechanical difficulty of having a continuous participation function, one would simply find participation a smooth positive function of inducement. In fact, however, a person cannot decide to participate twenty hours a week for what he

considers one-half pay, or ten hours for one-fourth pay. Instead he must decide to participate or to not participate, depending upon the inducement-contribution balance. Contribution does help explain this personal decision. But it does not clarify the idea of the amount of the organization's resources.

There should be a concept to embody the value to the organization of its inputs. (Human asset accounting (Likert, 1967) is an attempt to measure the value to the organization of its employees.) This is the role of maintenance. If organization "A" is experiencing an increase in maintenance and organization "B" a decrease then the former by definition has more resources to work with relative to its past than the latter. (It will shortly be argued that sales is the best indicator of maintenance for the economic organization.)

Another important difference between inducement-contribution and benefit-maintenance is that the former does not attempt to relate benefit to one group to benefit to another. Only in passing do March and Simon relate contribution by one group to inducement to another. The hypotheses developed shortly in the present paper link different organization groups, their benefit, and organization maintenance.

There is a third facet (after benefit and maintenance) of the organization-environment relation which is essentially negative in nature. The organization must stay

within the constraints imposed by regulating parts of the environment, including competing organizations, governmental and other societal regulatory agencies. It is also "regulated" by its customers or served environment and its own members when the latter relate to the organization in other than their primary ways of relating to it.

The third contact area is also different from the first two in that it does not involve the passing of physical resources from one party to another. Here the organization is explicitly regulated by its environment legally, economically, and in ways not easily classed as either. The most obvious examples of this regulation are perhaps state-granted charters and legislation governing the input and output markets as well as the means--safety, ingredients, subject matter, and facilities, for example--the organization uses to produce and dispose of products.

Competition is the chief economic regulator in a "competitive economic system" and is argued to be the most effective regulator in economic as well as non-economic systems. Clark (1968) states that the more competitive the system the more innovative its institutions will be.

Perrow's (1969) statement, that all organizations have four tasks, should be compared to the three facets of organization-environment relation as set forth above. He states that organizations must secure capital inputs, secure

acceptance or legitimacy, marshal the necessary skill, and coordinate the activities of members and the relations of the organization with other organizations and customers. The relative emphasis on one or another of these tasks, according to Perrow, varies with the nature of the work the organization does and the technology appropriate to it.³

Securing capital inputs and marshalling necessary skills are directly depended upon "acquisition of resources." Perrow's securing of acceptance or legitimacy is in the narrow sense of legal and regulatory agency acceptance. Coordinating the activities of members is not a task of the organization in the same sense that the previous items are. The first three tasks are herein viewed as dependent upon the coordination of members' activities. If the organization could adapt in the first areas and in Perrow's "relations with other organizations and customers" without internal coordination then from the standpoint of the organization as a whole, internal coordination would be unimportant. Its importance derives from the dependence of the organization's extra-relations upon it.

³Depending upon which task is most crucial, one of three groups will be in control or in power. These power centers are, chairman of the board of trustees, representatives of critical skills, and administrators. The first group tends to be protracted, thus creating a lag in the organization's adaptation.

Approaches To The Analysis Of Adaptation

Before going further into the analysis then measurement of extra-organizational relations, a brief recapitulation is in order. The formal organization has been defined as a cooperative system producing and exchanging things of value with its relevant environment. The relevant environment has been defined as those individuals and organizations that supply the organization with activities and materials (including money), in exchange for other activities and materials, and those that regulate it. The formal organization and the organization set constitute the chief structural aspects of the phenomena being conceptualized.

Whereas the maintenance of an organization is defined in terms of means of resource acquisition, benefit is defined as exchange which is viewed by the relevant environment as beneficial. Thus the two-sided concept of benefit provided in exchange for resources is now established. Maintenance and benefit constitute the chief process aspects of the phenomena being conceptualized.

The organizational dimension defined as adaptation is basic for distinguishing among organizations, yet will be difficult to measure with confidence. As previously noted, this adaptation seems to occur in three areas: first is the area of contact with the environment at which resources pass

into the organization. "Resources" is used instead of "inputs" to denote supportiveness or usefulness thereof to the formal organization. Thus resources equals supportive inputs, as opposed to all inputs. Stated another way, an input is a resource only if it is useful in providing benefit to a part of the organization environment. Resources can be distinguished from non-resources by whether they are sought or unsought by the organization.

Once acquired, organizational resources are converted to personnel, services, information, materials or real property. (It could be argued, in the Simon vein, that information is the independent variable and that exchange for other resources are dependent upon information. However, the primary concern is not with the level or use of information, but with total exchange behavior by the organization. Thus acquisition of information is subsumed by acquisition of personnel and services.)

The second contact area is where resources pass from the organization to the environment.⁴ All organizations produce environmental benefit which they exchange for remuneration--that remuneration allowing them to "purchase" their needed inputs. The ideas of an input market and an

⁴Resources to the environment coming from the organization refers to outputs which are perceived as beneficial by the recipient.

output market and thus points of contact with the environment is not limited to economic organizations. The elementary school produces education for which it is "paid" in the form of tax dollars with which it hires personnel and purchases real property and supplies needed to operate.⁵

The first operational problem is to recognize then measure adaptation (change in relation to relative environment). Four alternatives seem open here. First, separate measures of adaptation in a number of distinct areas could be developed. Observed adaptation might be designated as being one of a number of types, for example, structural, technological, or people (Knight, 1967).

A second approach would be to compile an overall index of adaptation which would apply to many traditional "types" of formal organizations. This approach is conceptually preferable in that it allows correlation of the index with a number of different operational factors.

Ideally, work toward a single index would utilize the concepts of resources to the organization and to its relevant environment and regulatory contacts with the environment. First, an attempt would be made to measure organizational benefit to the various input segments of its

⁵The things which are produced and the payment to the organization are not necessarily of equal value, although they may be. The essential fact is that here the organization has crucial contact with its supportive environment.

relevant environment. This might be done by first ranking these segments on the basis of importance to or ease of replacement by the organization according to the perceptions of the appropriate officers of the organization. Then the researcher would go to these segments and ask each to indicate their perceived benefit from the exchange relationship with the subject organization in comparison to similar organizations. Response values would be weighted according to the importance of each input segment to the organization.

Similarly with output markets, these could be segmented along a given dimension, and the segments ranked according to their ease of replacement by the organization as output markets. The researcher would then ask persons in each segment to indicate his perceived benefit from the organization as a producer of whatever each obtains from it. Response values would then be weighted according to the importance of each market segment to the organization.

Regulation poses a different kind of problem. There are groups, agencies, bodies, et cetera, that can impose penalties of one kind or another on the organization. Accrediting associations, the Federal Trade Commission and health departments, for example, fall in this category. Their relation with the organization can be viewed as essentially negative. Thus the absence or presence of action by them affecting the organization is an indication of adaption or nonadaption by the organization.

The perceptive reader has by now noted the serious error of omitting from the notion of "benefit to the environment" what Ferguson (1969) calls "externalities." An externality is the difference between total environment benefit and the benefit to the relevant environment. Thus if the production of benefit for the relevant environment results in negative benefit (physical nuisance, social disintegration) to those not in the organization set, there is an external cost of that production. This costly "by-product" is one factor causing the need for regulatory agencies.

A second factor is the lack of balance in influence by the different parts of the relevant environment. Thus if owner influence is not offset by employee influence it is likely that employees would be protected by a governmental agency. Likewise, if customers are relatively powerless with the other groups in the relevant environment they are likely to be protected. This seems to be true in highly developed societies.

Competitors also act as regulators. The measurement of the organization's adaptation at this point could be included in the previously discussed procedure by asking participants to simply compare the subject organization with its competitors when evaluating it.

The above approach to determining whether an organization adapts and to what degree appears to be operationally

feasible. The weakness of this approach is that it yields no much-needed conceptualization of organizational adaptation. Intuitively it seems there should be a "standard of adaptation" to which organizations could be compared, if adaptation is the key extra-organization variable, as is herein maintained.

Ross' (1951) information-gathering worksheet (Appendix A) represents a third possible approach to measuring organization adaptation. Adaptability was defined as the probability, based on past practice, that the school would readily adjust to new forces and new knowledge. The instrument allowed one to determine at what stage of the diffusion of a given adaptation a school introduced it. Each participating school could be placed at some point on an adaptability index as a result of when it adopted each of twenty-two pre-established adaptations. "Adaptations" were used as a basis for predicting adaptability. The second approach suggested does overcome the major weakness of Ross' measure taken in school systems--that of assuming that adoption of a number of "adaptations" accurately reflects the system's adaptability. A convincing argument could be made that any one of the adoptions used in those studies resulted in less compatible environment relations. The indicators of adaptation should come directly from the relevant environments, not through experts in the field.

A fourth possible approach, focusing on the dynamics of adaptation, would be for the researcher to ask each contact to indicate a specified number of perceived changes in the subject organization within a certain time period, to rank the changes according to the magnitude of their effect on him, then to place each change on a continuum from highly negative to highly positive according to its effect on the organization's benefit to him. Thus a conceptualization of changes would be obtained which would not be subject to the bias that all changes are adaptations. That is, a change could be negatively adaptive, non-adaptive, or positively adaptive.

A modification of alternative two will be used in this investigation. A weakness of either of the four suggested approaches to empirically researching the area of organization adaptation is the fallibility of contacts questioned. What biases would they have? Would they know whether given organization changes resulted in positive or negative compatibility. This weakness appears acceptable in view of the basic soundness of going to the relevant environments for a measurement of adaptation instead of relying on an intervening party or to using some preconceived "measure of effectiveness" as a measure of adaptation.

Organizational adaptation will now be analyzed more specifically with the use of a number of figures. Essen-

tially what has been called the relevant environment in this paper is called the "organization set" by Evan (1966, 1968). He and others dichotomize the relevant environment into an "input set" and an "output set." That terminology is adopted in the following analysis. Figure 4 shows the typical conception of input, organization, and output.

Fig. 4.--The Organization and Organization Set (Relevant Environment)

The conventional wisdom places in the output set those that pay money for services and in the input set those that pay services for money. From the point of view of the organization one is as important to its maintenance as the other. Further, it is the argument of this paper that the social productivity of an organization is best measured by its (net) benefit to those in both the input and output sets.

There are two "channels" connecting each organization subset to the organization. The channels or links through which benefit passes are labeled "IB" to the input set and "OB" to the output set. The channels through which

organization maintenance passes are labeled "IM" and "OM."⁶

As these relations between the input set and the organization and the output set and the organization are of primary concern, they are graphically portrayed in Figure 5.

Fig. 5.--Input-Output Channels

The term "input" has earlier been distinguished from maintenance and input set. It is seen in Figure 5 that input comes from both organization sets and for convenience is called maintenance in each instance. Conversely, output goes from the organization to both sets and is called benefit in each instance.⁷

⁶OM is revenues for the economic organization. Revenue is the necessary but not sufficient means of organization support. It is a pre-condition of IM.

⁷The above view is close to the economists' view but differs from that view by recognizing that inputs are not limited to land, capital, and labor and that outputs are not limited to goods, services, and purchasing power. It also recognizes that inputs and outputs are not all in terms of dollars, thus that the exchange ratio is not equal to dollar price. Other values also go through the channels. These are simply called social values for the present.

The concepts in Figure 5 most noticeably incorporate the work of Evan (1966, 1968) and Stogdill (1966, 1967) in organization theory. Evan explicated the notion of inputs and outputs. Inputs and outputs are defined as within the organization by Stogdill and are herein defined as crossing a boundary and coming into or going out of the organization.

One more refinement, to be utilized later in the paper, will allow the schema to be displayed in full. That is the distinction between two kinds of (external) benefit generated by the organization. These will be called product and process benefit following MacIver and Page (1949). Product benefit derives primarily from monetary pay to the input set and from goods and services to the output set. This is the notion of productivity emphasized in the field of economics.

Process benefit derives from interaction with others, with the organization, and with the task. For example, employee benefit from task interaction is frequently labeled "intrinsic reward." Process benefit in either form is generally held to be secondary, insofar as the purpose of the formal organization is concerned, to product benefit. For example, benefit from social interaction is called "social surplus" by Homans (1950).

At this point it is necessary to interject an attempted justification for "grossing over" the complexity of organi-

zation set benefit. The research goal is not primarily concerned with the components of benefit from an organization, as perceived either by the output set or the input set. The formal organization is focal to the study instead of organization sets or individuals. Thus the first reason for being concerned with a holistic or general notion of organization benefit. Because that benefit goes to two empirically different sets differentiation between input set and output set is useful.

The differentiation of product from process benefit is made in this paper only because examination of changes in benefit will be performed and that is best done by distinguishing between two kinds of benefit. In the input set Vroom (1964), in an extensive survey of motivation and work findings, notes six widely accepted determinants of job satisfaction. These are (1) supervision, (2) the work group, (3) job content, (4) wages, (5) promotional opportunities, and (6) hours of work. If promotional opportunities were split into opportunities for advances in pay (5a) and advances in status (5b), prestige, et cetera, then the questions to be used to measure product benefit subsume Vroom's determinants 4 and 5a. Process benefit subsumes determinants 1-3 and 5b-6.

The analysis could be carried to the point of noting literally dozens of aspects of organization benefit to the organization set, or it could stop with only two aspects.

The reason for investigating two aspects of organization benefit in this paper instead of one general one is that these aspects will shortly be related analytically to the first differentiation, that between input set and output set.

Benefit to the output set is also broken into product and process and for the same reason that benefit to the input set was. That process benefit is not a distortion of reality is attested by the academic field called marketing. A large part of marketing thought is concerned with the benefit to the user added after the product has been given utilities of form, time, and place (Beckman and Davidson, 1967).

To further the comparison of the two basic aspects of benefit to the output set to the two basic aspects of benefit to the input set, components of each will be listed in Table 2 on the following page.⁸

The organization itself is not human nor even an organism and therefore receives only product benefit. But individuals in its set receive process as well as product benefit. One can be substituted for the other to a point,

⁸An interesting study, beyond the scope of the present paper, would compare historical changes in customer desires to changes in employee desires. For an example of parallels between the "new employee" and the "new customer" see Miljus (1970) and Doody and Davidson (1964), respectively.

and only the sum of the two must be held at a given minimal level. The literature suggests that this level is most economically achieved when balanced proportions of each are present.

TABLE 2.--Product and Process Benefits to the Input Set and the Output Set

<u>Benefit</u>	<u>Input Set</u>	<u>Compare to</u>	<u>Output Set</u>
Product benefits	Pay	Compare to	Physical product
Process benefits	The work group	Compare to	Sales personnel, other buyers
	Consideration by supervisor	Compare to	Consideration by sales personnel
	Job content	Compare to	Transaction process
	Hours of work	Compare to	Hours of service
	Promotional opportunities	Compare to	New, differentiated products

It is suggested that the laws of diminishing marginal utility and diminishing marginal rate of substitution are applicable to product and process benefit. The first law suggests that (objectively) equal increments of either kind of benefit result in (subjectively) diminishing increments

of utility. The second law suggests that should an organization substitute product (process) benefit for process (product) benefit the number of units of one that must be substituted for the other, to leave the individual at a given level of satisfaction, increases.

The above ideas yield a consideration of fundamental importance to organization management. A prime function of organization management is to seek to determine the preferences of those in other organization subsets and the costs of meeting those preferences so that the organization's production of different kinds of benefit can be optimized.

CHAPTER IV

METHODOLOGY, HYPOTHESES, AND EMPIRICAL FINDINGS

The Measurement Of Organizational Maintenance

Maintenance is here used in the sense of "means of support" and does not refer to a state of being kept up. The latter would require means of support plus efficient utilization of that means. Only the former is a boundary condition and involves inputs. The utilization of that means is an inner-organization problem to which this paper is not addressed.

It is proposed that for the economic organization revenue is operationally substitutable for maintenance (Flippo, 1970). That is, revenue can be viewed as the sole means of support of an economic organization because with revenue other inputs, particularly cooperative activity, can be acquired and without revenue they cannot. To a lesser extent revenue is the means of support of any formal organization which has a payroll. This is not to assert that revenue is the only prerequisite to resource acquisition. Product demand, licenses, or charters are even prerequisite to revenue.

Whereas a central feature of certain organizations is cooperative activity which is induced primarily with dollars, a central feature of other organizations is that such activity is induced with other than dollars. It now becomes apparent that revenue is a variable which may or may not be primary as a prerequisite to resource acquisition by the formal organization.¹

One problem with measuring revenue to the organization is how much revenue is required for resource acquisition. As this cannot be answered, it is suggested that increasing revenue is always a sufficient if not necessary condition to that acquisition and decreasing revenue is, over some time period, a sufficient condition for organizational collapse.

Thus an index of organization maintenance should show an organization increasing on this factor if revenue is increasing and decreasing if revenue is decreasing. Constant revenue would be interpreted as static maintenance.

The time over which maintenance is measured should be several years, to account for random deviations from a trend.

¹Whatever it is besides dollars that induces cooperative activity would be maintenance to the organizations where cooperative activity is not bought with dollars. This nondollar inducement is usually related to organizational benefit whether or not that benefit is exchanged for dollars. It is suggested that membership could in many instances serve as a measurable substitute for organization maintenance when membership is not purchased with dollars; that is when membership is voluntary.

However, the object is not only to measure a required input but also to determine the relation between that input and key outputs, as the understanding of that relation will help clarify the nature of organizational adaptation.

The Measurement Of Organizational Benefit

The questions to be asked persons constituting the relevant environment of an organization to determine perceived beneficiality of exchange should be in a form to allow quantification of what obviously are qualitative data. A number of questionnaire techniques will be discussed as they relate to this task.

The semantic differential developed by Osgood, Suci, and Tennenbaum (1957) is well suited for this kind of data collection except for problems of semantics. This tool relies on judgments of a concept, such as beneficiality of exchange, against a series of descriptive polar-adjectival scales on a seven-point supposedly equal-interval scale. The primary weakness of this device, using ad hoc untested adjectives, is the fact that adjectives which would connote polarity to one person would connote complementarity to another. This problem is overcome by the second tool to be discussed, the Stapel scale.

The Stapel scale was devised by Jan Stapel, Coordinator of the Netherlands Institute of Public Opinion, a Gallup-International affiliate (Crespi, 1961). This scale allows an entity to be compared to a single adjective or phrase on a given dimension, such as beneficiality of exchange. Both

direction and intensity of perceptions are measured by using a range of -5 and +5 for possible responses.

Work has been done to develop indexes of employee satisfaction and potential or actual customer image of a product or establishment. However, it is felt that these indexes do not get at the exchange relationship which is the essence of adaptation. In the present study questions are asked to investigate this relationship.

A number of widely used indexes of employee and customer satisfaction were borrowed from in constructing the indices of benefit used in this study. Employee related indexes which were most helpful are the Science Research Associates Employee Inventory, Morse Indexes of Employee Satisfaction, Brayfield and Rothe's Index of Job Satisfaction, all from Miller's Handbook of Research Design and Social Measurement (1964), and Stogdill's Job Satisfaction and Job Expectation Manual (1965). Customer benefit questions were constructed after a search of marketing publications in product perception and consumer attitudes.

The twenty questions constituting the index of customers' perceived benefit from the organization are in Appendix D as are the twenty questions constituting the index of employees' perceived benefit. The number used in the statistical analysis is the algebraic sum of the numbers above the box checked by each respondent. In each case the

first ten questions relate to product benefit and the second ten relate to process benefit.

Research Hypotheses About The Nature
Of Organization Adaptation

Although a number of hypotheses about relationships between changes in maintenance and benefit will be formulated, these hypotheses do not constitute the core of the study. The aim of the study, as has been earlier stated, is to justify and construct an organization typology based on adaptation. Thus the "success" of the empirical findings rests not upon whether specific hypotheses about the relations of variables can be accepted, but on whether organizations are found to vary significantly along the primary dimensions of adaptation--maintenance and benefit. The conceptual work done so far on the typology has resulted in a two-dimensional typology, implying a degree of independence between these dimensions. If maintenance and benefit vary together in organizations, then perhaps dependence should be inferred.

For the purpose of exploration a number of research hypotheses will now be stated and arguments presented. Admittedly the arguments are sometimes more intuitive than factually based. Hopefully, after the data are analyzed reformulations can be made with foundations consisting of more fact and less intuition.

It is necessary to attempt to analyze the relations of benefit and maintenance and of their major components. With the analysis three concepts are presented as arguments that maintenance and benefit should be found to vary together.

First, sociological and economic exchange theory states that two partially autonomous entities, A and B will transfer (export) things of social and economic value if and only if they perceive that things of value will be transferred (imported) in return. Further, the level of transfer that A will make to B is directly related to the level of transfer B will make to A. The organization and the different sets of its relevant environment are such partially autonomous units.

A similar approach is to view exchanges as obligational rather than simply conditional. Whereas the exchange, and the input-output, notions are essentially conditionals, or A if B, the "norm of reciprocity" is obligational, or B because A.² Reciprocity does not, however, imply a sequence of A to B to A...over successive time periods. B may feel obligated to act because A will act as well as because A has acted. Still, an act fulfilling an obligation in advance is not the same as an act on the condition of a preceeding act.

²Gouldner (1960) quotes Cicero and a long list of "other sociologists" to the effect that there are few if any duties more strongly felt than the duty to reciprocate.

Second, the concept of the organization as an input, process, output unit implies that output is high from organizations whose input is high and low where input is low. So long as there is no reason to believe that the efficiency of the process varies predictably from one organization to another, level of output should primarily be a direct function of level of input. Maintenance and benefit are the primary components of input and output. It is widely understood that two variables may function interchangeably as cause and effect. Such a relationship is said to be symmetrical.³ Those receiving organization output would be influenced to return an input to the organization. Thus the relation of input and output would be symmetrical.

The third reason maintenance and benefit are expected to vary together relates to the internal direction given the organization. A "well-managed" organization would tend to achieve steady or increasing levels of both transfers and a poorly managed one would tend to achieve neither. This would follow from management's awareness that in a free exchange the maintenance of the organization is a function of perceived benefit from the organization.

³For example, Homans (1950) hypothesized that the relation of a person's rank in a group to the conformance of his activities to group norms is mutual, or symmetrical. Thus either rank or closeness of activities to norms may be viewed as independent or dependent variable.

As noted earlier, two primary subsets of the organization's relevant environment are its employees and its customers. Arbitrarily beginning at customer benefit it is reasoned that this generates dollars flowing to the organization, or organization maintenance. Ceteris paribus, changes in maintenance lead to changes in the same direction in employee product benefits as well as changes in process benefits. Thus maintenance leads by way of product and process factors, to employee benefit. The argument achieves closure as employee benefit leads to employee productivity which leads to customer benefit. Employee benefit should be contagious also, leading to customer benefit.

The previous arguments lead to the following hypotheses relating organization maintenance and benefit.

Hypothesis 1--There is a positive correlation between changes in organizational maintenance and changes in organizational benefit.

Hypothesis 1.1--Changes in maintenance correlate positively with changes in customer benefit.

Before stating the next hypothesis it is important to distinguish between two categories of employees. The primary concern of the next hypothesis will be with the relation of changes in organization maintenance and employee benefit. That relation could vary over different employees. Specifi-

cally, certain employees can make their weight felt or can convince the organization of their special importance to it much more than others. That is, certain employees have more power in their relation to the organization than other employees due to the positions they hold.

A number of possible approaches exist for determining to what extent a given organization member is important to the organization's functioning. Although the question of relative importance to and hence power with the organization has not been specifically addressed in the literature, similar questions have been investigated.

According to Patton, Littlefield, and Self (1964) job evaluation has as its central purpose the determination of the relative worth to the organization of the jobs of an enterprise. They state that based on job evaluation, fair pay differentials among jobs can be established. Jacques (1961) suggests that job level can be measured by noting time-span of discretion, and that pay is proportional to job level. Dubin (1958) expresses the sociological sentiment by stating that the more important jobs in an organization are paid more money to insure that they are filled. Thus employees have greater incentive to strive for more important jobs.

Based on the above propositions location in the organization hierarchy plus the location in the wage

structure were selected to determine the relative power of given organization members. Employees are dichotomized into two ideal types, strategic and non-strategic. Specifically, all the jobs in the organizations are ranked by an official familiar with them according to their importance to the organization.⁴ A median job level is chosen above which the jobs are called strategic and below which they are called non-strategic. Employees also qualify for the strategic category if their level of compensation is above a certain level. Again a median compensation level within the stores is chosen as the breaking point. Thus an employee participating in the study is in the strategic category by virtue of being in the top half of either the job ranking or the compensation ranking. Three employees are above the median level job and below the median salary level, while the opposite is true for two employees. The remainder (79) are consistent.

It is expected that strategic employee benefit varies strongly with maintenance on the upside and that non-strategic employee benefit varies strongly with maintenance on the downside. That is, when maintenance is up benefit to

⁴A number of store managers and assistant managers, in addition to the top personnel executive in the company, were asked to rank jobs in their stores. There was disagreement on only about four of twenty jobs. This small disagreement did not affect the measure of job importance used.

strategic employees will follow it up more closely due to the power of those employees with the company, than will benefit to non-strategic employees. But when maintenance is down, benefit to non-strategic employees will follow it more closely than will benefit to strategic employees. Benefit to different types of employees and given conditions of organization maintenance will be explored via the following four hypotheses.

Hypothesis 1.2.1--When organization maintenance increases, employee benefit increases.

Hypothesis 1.2.2--When organization maintenance increases, the correlation between maintenance and strategic employee benefit will be positive and greater than that between maintenance and benefit to non-strategic employees.

Hypothesis 1.2.3--When organization maintenance decreases, employee benefit decreases.

Hypothesis 1.2.4--When organization maintenance decreases, the correlation between maintenance and non-strategic employee benefit will be positive and greater than that between maintenance and benefit to strategic employees.

Referring again to the proposed chain of effect from customer benefit to maintenance to employee benefit, it is seen that maintenance may be treated as simply as intervening variable between customer and employee benefit. Justifica-

tion for this treatment would be found if the next hypothesis, explicitly relating customer benefit to employee benefit, is supported empirically.⁵

Hypothesis 2--There is a positive correlation between changes in customer benefit and changes in benefit to employees.⁶

Boundary personnel in an economic organization consist primarily of those in marketing, purchasing, and personnel administration. Marketing personnel are a subset of employees whose relation with customers is strongest. That relation may be viewed by the parties as a competitive one--the zero sum game--or a cooperative one in which both parties benefit from the same situation. As the cooperative attitude is more conducive to mutual benefit that attitude is expected to prevail in most such relations. Thus it is proposed that both the sales person and the customer are likely to perceive benefit from the same situation. This is

⁵Friedlander and Pickle (1968) found statistically significant (to .95) correlations between three separate components of employee satisfaction and one index of customer satisfaction. They suggest that management, overlapping membership, and contagion of satisfaction account for the correlations.

⁶To test this hypothesis will require an assumption not to be made in other treatments of the data. Here, average customer benefit and average employee benefit will be found for each store. Only in this way can a relation between variations in the two be tested. To find the average requires the additive assumption about the numbers, whereas all other statistical tests assume only ordinality.

made more explicit in the next sub-hypotheses.

Hypothesis 2.1--Perceived benefit by sales employees correlates with benefit perceived by customers higher than does perceived benefit of non-sales employees.

The organization set has been divided into two subsets on the basis of the form of benefit exchanged with the organization. The same two subsets, customers and employees, differ in their relation to a focal organization along another important dimension. That dimension may be called "degree of contact," and its two subdimensions are intensity and extensity of contact. Intensity is the energy and concentration in a contact or relationship brought there by a perceived stake in it. Extensity is the length of organization contact time and number of organization related activities carried out by an individual. Intensity and extensity of contact are related to Etzioni's (1964) organization pervasiveness and scope respectively.⁷

The customer has less extensive contact with an organization than does the employee. Because of his less extensive contact and because of his lower dependency upon

⁷Organization pervasiveness is the proportion of organization related activities which the organization attempts to control. Organization scope is defined by Etzioni as the number of activities carried out jointly by the organization participants.

the organization, the customer's contact is also usually less intensive.

The amount and kind of contact by each organization set with the organization can now be related to the two kinds of benefit each organization set derives. Process benefit is, by definition, benefit received from the process of interaction or contact with the organization, organizational tasks, or organization membership. Product benefit is unrelated to that contact. That is, product benefit would be unaffected if the product were received by mail or any other means. This analysis leads to the proposition that process benefit, as a proportion of total benefit, is of greater concern to the recipient when degree of contact is higher. This would suggest that process benefit plays a more important part in employees' exchange benefit from an organization than in customers' benefit from the organization. Thus a testable hypothesis may be stated as follows:

Hypothesis 3--The ratio of the concern with product benefits from contact with the focal organization to concern with the process benefits from contact with the focal organization is lower among employees than among customers.⁸

⁸If the above hypothesis is true, the effect of this differential emphasis would be to decrease (economic) competition in the labor (employee) market relative to that in the goods and services markets. That is, if "product" is less important, relative to "process" in the labor market than in the goods and services markets then a larger differential

In the vein of hypothesis 2.1, it is proposed that sales employees will be between non-sales employees and customers on the product/process ratio. Stated explicitly:

Hypothesis 3.1--The median ratio of concern with product/process benefit by sales employees lies between that for non-sales employees and that for customers.

The implication, relative to change in benefit, of the above statements is that the organization should give relatively more attention to interaction factors when dealing with employees and relatively more attention to product factors when dealing with customers.

The Field Research Setting

Two supermarket chains participated in the data-gathering phase of the study. Forty stores were selected so that a wide range of revenue change would be present. An executive in each company delivered needed sales information about each organization (store) to the researcher. Percentage change in revenues over the past two-year period of twenty organizations from which questionnaires were

between product satisfaction offered by the focal organization and a competing organization would be required in the former market. Hypothetically a \$1 interorganizational differential in perceived value of a good or service might induce a customer to switch organizations, while \$1.50 would be required in the labor market to induce a switch. Thus a kind of "labor immobility" would be partially accounted for by this product/process factor.

returned in the first company and of sixteen organizations from which questionnaires were returned in the second company were used. These percentages ranged from -11.8 per cent to +54.9 per cent, with eight organizations incurring decreases over the two-year period and twenty-eight showing increases (see Appendix C Table 3). Percentage change in revenue for the most recent one-year was also obtained. These ranged from -13.0 per cent to 44.0 per cent with 12 organizations showing declines and 24 showing increases. Only the two-year figures are used to establish rankings used in rank correlations with other variables. Rank correlations between changing sales and other variables that were subsequently run are all in the same direction and are comparable in magnitude whether one-year change figures or two-year change figures are used.

To measure organization benefit four employee questionnaires and eight customer questionnaires were sent by a company executive to each of the participating stores. More questionnaires were sent to customers than to employees because it was felt that the response rate would be lower for customers. Each store manager was asked to give two employee questionnaires to high ranking employees and two questionnaires to low ranking employees. The store manager could be one of the high ranking employee respondents. The company executive also asked each store manager to distribute

the customer questionnaires. These were to be distributed randomly by store managers. Eighty-four returns were received from employees and 125 from customers.

Field Research Findings

Of a possible range on the product questions of -20 to +20 per person, the actual employee range was from -12 to +20 with a median of +7. On the process portion, having the same possible range, the actual range was from -16 to +19 with a median of +5. Customer ranges were -15 to +20 and -14 to +20 with medians of +7 and +11. Combining the product and process questions gives a possible range of -40 to +40. Actual ranges were -24 to 40 for customers and -19 to 39 for employees. Medians were 20 for customers and 11 for employees. This information is in tabulated form in Appendix E, Tables 4 and 5.

Averaging the values of responses from customers and employees within each organization shows that the predicted variation of organizational benefit is present. Perceived product plus process benefit to customers ranged from 2.0 to 34.0, and to employees the range of perceived benefit was from -16.0 to 35. The gross category, product plus process benefit, to customers plus employees ranged from -19 to 30. This 49 point actual range of perceived benefit is over 60 per cent of the possible range of 80 (-40 to +40). Thus a

wide range on each of the two dimensions, maintenance and benefit, was found in the 36 organizations studied.

Comments written on the questionnaires also indicate a range of perceived benefit from the organizations. The following comments by an employee of an organization low in perceived employee benefit indicate high product benefit, low process benefit, an interaction between different organization sets, and a recognition of the relation of revenue and benefit:

...an old manager has been replaced by a gung-ho & greedy middle-age manager (32). Customer services are being neglected as a means to curb labor hours and boost manager's bonus. A "clique" is quite evident and one is either "in" or "out"...Everyone is at everyone else's throat...

Salary/wage wise the pay is almost tops. However...only make \$.75 - \$1.00 more than a greenhorn because we're tops on pay scale and beginners receive 5 - 10% hourly raise each six months of full-time work...

Cranky, bitchy, persnickety, disrespectful, lying, cheating, stealing customers (not all but increasing seemingly) but without them no sales, no store, no jobs.

The following comment from a customer of an organization high in perceived customer benefit indicates high product and process benefit: "I am very happy with managers, in all departments, clerks, and products sold."

Other comments by customers verify the high statistical correlation found between product and process benefit perceived by each set. For example: "Employees could be

friendlier. Smaller packaging--smaller canned foods--I resent the two to four cent raises from day to day."

A customer who checked maximum perceived product and process benefit verifies the product-process correlation and also emphasizes the "halo effect" of one part of the organization:

I have nothing but the highest regard and esteem for Manager _____. I have shopped other supermarkets before _____ opened at this location, and no manager can begin to compare with Mr. _____. He is very considerate, cooperative and a gentleman at all times. I cannot recommend him high enough in his capacity as Manager of _____.

Signed _____

Lack of organizational adaptation to one segment of customers is illustrated by the following comments: "Dislike trading stamps. Dislike mailer with its coupons. Dislike specials with coupons from newspapers. If you have no coupon you pay regular prices. I feel this is unfair."

The holistic nature of perceived organizational benefit is shown by the following statement by a husband and wife: "We think this organization as it is is a real asset to the territory, beating most competitors in reference to quality of products and relationship to customers.

Signed, _____ and _____."

Findings concerning the hypotheses about correlations between different variables will now be presented.

Hypothesis 1, that there is a positive correlation between

changes in organizational maintenance and organizational benefit, is not accepted. This decision is based on a Spearman Rank Correlation of $-.062$ between the two variables with $N=200$ (Appendix F, Table 6).⁹

The correlation would have to be as large as $.139$ to merit a $.95$ level of confidence. This is a correlation of gross categories and as will be seen, the low correlation is partially accounted for by opposite sign correlations of component categories. Nevertheless, it is significant that no correlation exists between these two indicators of input and output. One can infer, from this finding, that changing organizational maintenance in the form of revenue, is not accompanied by changes in either direction of organizational benefit per person to customers plus employees. The hypothesis only considers benefit per person. Apparently only the number of persons associated with the organization varies with the level of maintenance. Such an interpretation is compatible with the exchange argument as well as with the input-output concept. It appears doubtful that the norm of reciprocity is a factor in individuals' relations with formal organizations. Nor does it appear that "good managers" achieve high levels of benefit (per

⁹The computer program used to compute rank correlations only handles 200 cases. Nine were pulled at random from the data deck which was originally 209.

person) and maintenance while poor managers achieve neither. What does appear to happen will be discussed as more findings are presented.

Hypothesis 1.1, that changes in maintenance correlate positively with changes in customer benefit, is not accepted. This decision is based on a Spearman Rank Correlation of .057 with $N=125$ (Appendix F, Table 7). This correlation would have to be .176 or greater to be significant at .05. Thus it cannot be inferred that changes in organizational maintenance directly accompany changes in organizational benefit to individual customers.

Existence of a positive correlation between per customer benefit and sales is not yet ruled out. The lack of such a finding in the present study is attributed to the many factors that influence sales besides benefit to present customers. Primary among the other factors are changes (including added stores) by competing stores and population changes. If these factors could be held constant and additionally if the product demand were more elastic then the positive correlation would still be predicted.

The four hypotheses 1.2.1 through 1.2.4 all are constructed around positive correlations existing between maintenance and employee benefit. No correlations were computed between total employee benefit and maintenance as it was felt that meaningful analysis necessarily focused on

certain specific categories of employees, as well as certain sub-categories of organizations. None of the four hypotheses relating employee benefit to sales were accepted, but the findings are interesting.

The correlation between the benefit of the 59 surveyed employees working in organizations with increasing maintenance and that maintenance is $-.362$ (Appendix F, Table 8). This is significant at the .99 confidence level. Product benefit correlates with sales $-.238$ and process benefit with sales $-.454$, the latter being significant at .001. Focusing on the 46 strategic employees in all organizations the correlation for product benefit and sales is $-.056$; for process benefit and sales, $-.320$. The process benefit figure is significant at .05.

The negative correlations between sales and employee benefit suggest that organizations adapt to one segment of their relevant environment at a time. This differs from the original conception of organizational adaptation which was that organizations could be characterized as adapting, not adapting, or possessing a certain degree of adaptability. The data suggests that at a given point in time the organization meets the requirements of one (or more) organization set(s) and does so at a cost to other organization sets. Adopting the Cyert and March term "coalition" in place of Evan's (1966) "organization set" we see that the organization

attends to one coalition at a time. Cyert and March suggest that the organization attends to that coalition exerting the most pressure at a given point in time. In organizations with increasing sales there appears to be attention given to owners and top company management (and perhaps customers). These organizations' relatively low performance on employee benefit suggests that owner-management attention and rewards are at the expense of attention to employees. Conversely in organizations experiencing relatively poor sales and higher employee benefit, that employee benefit appears to be the expense of revenues, from which company executives and owners would first benefit.

Observation and reason suggest that the act of producing increased maintenance to the organization would entail a cost to the producing set. Discussions with store employees about the negative correlations reveal an interpretation of which William of Occam (Occam's razor) would be proud. The typical employee says something to the effect that, "Sure I have to work harder when sales are high, and I don't care for hard work." A similar line of reasoning suggests that less work, and more benefit, are associated with declining revenue.

March and Simon (1958) state that the difference in levels of aspiration and achievement are a major source of individual conflict in organizations. Particularly, when

aspiration level is greater than achievement level for the individual he will experience conflict. They state that this difference is expected to be generated by certain environmental conditions. Primarily, when the munificence of the environment changes negatively, as in a business recession, achievement level will decline relative to aspiration level. Similarly, when the rate of increase in the organization's economic well-being drops, aspiration levels of members will increase relative to achievement levels resulting in conflict. Absence of March and Simon's individual conflict should be manifest as positive benefit in the present study. Their propositions suggest that changes in benefit and maintenance vary together. The reason suggested is that past performance is the primary reference of the employee. However, if other organization set members are the primary reference, a different relationship between changes in maintenance and benefit is predicted.

The concepts achievement and aspiration, coupled with the tendency of individuals to compare themselves to important others lead to the following supporting explanation of the present empirical findings. When sales decline employees know that one or more of the organization sets will be hurt. Owners, suppliers, creditors, and employees are all candidates for decreased product benefits. Suppliers' sales must drop and it is likely that profits to owners drop. The

primary effect on employees will be a reduction in their number. Thus those employees remaining, which constitute the employee sample in this study, will perceive themselves well-off by comparison. It is suggested that they lower their aspiration level after surveying the (economic) scene and that their new lower aspirations are more easily achieved, resulting in higher perceived benefit. Thus the tendency for employees in those organizations with declining sales to perceive relatively high benefit.

The social-psychological concept "cohesion" also appears to help explain the negative correlations between sales and employee benefit. Declining revenue would be viewed by an organization set (employees in this instance) as an external threat and could lead to an increase in cohesiveness within that set. Ceteris paribus, increased cohesion would show up on the questionnaire as increased benefit.

Conversely, the tendency for employees in those organizations with increasing sales to perceive relatively low benefit is explained. Increasing sales increases employee confidence (but not pay) relative to their job, resulting in less group attraction or cohesion. Also when sales increase and employees realize their economic reward is not increasing commensurably, aspiration level becomes higher than achievement level with resultant perceived benefit

declining. This line of analysis suggests that generally, when those in organization set A see that some referent organization set B's members experience high (low) benefit the former perceive their benefit to be low (high) by comparison. This is documented where the referent set is organizational or professional colleagues (Cudd, 1969). That rewards to management, owners, and suppliers influence a person's benefit perception has only intuitive appeal.

In organizations comprising the present study the level of economic benefit to employees is not significantly affected by changes in sales. In organizations in which the level of (objective) product benefit to set A does not vary positively with the level to an important (to them) set B then the level of (subjective) perceived benefit to A would vary negatively with the level of product benefit to B. This would happen because when A perceives that B's product benefit is increasing and A's is not, that is sufficient cause for A's subjective process benefit to decrease. Note that the higher negative correlations found are between the process part of benefit and sales.

In organization sets for which product benefit varies positively with organization maintenance or if in general the benefit to set A varies positively with the benefit to set B then the "consistency model," predicted at first, with positive correlations between benefit and maintenance

is likely. For example, such a relationship would be expected between supplier benefit and sales or between benefit to employees on a commission and sales.

The problem of organization definition is perhaps clarified by the finding of a negative correlation between maintenance and employee benefit. The concept of the organization as a non-entity (page 13 above) is supported by the finding that increases in maintenance to the organization are offset by decreases in benefit to an organization set. This finding suggests that the organization is not a reservoir into which environmental munificence flows and is stored, creating slack (Cyert and March, 1963) until increased payments to coalitions is required.

The concept of organization maintenance remains, but using revenue as its indicator creates problems, as revenue varies directly with benefit to some organization set and inversely with benefit to another set. This suggests that organization maintenance is immediately controlled by and first benefits some particular organization set. Thus the notion of organization maintenance fills not one but two roles in economic organizations. While it is by definition the means of organization resource acquisition, maintenance immediately benefits one organization set more than others and can be channeled to one set at the expense of others.

Hypothesis 2, that there is a positive correlation between changes in customer benefit and changes in benefit to employees, is accepted after modification in the direction of hypothesis 2.1. First a rank correlation of only .040 was found in 28 organizations in which both customers and employees returned questionnaires. This was based on the average benefit of all surveyed employees and all surveyed customers in those organizations. The arguments leading to the hypothesis suggest that the positive correlation would most surely exist between benefit to those employees whose work brings them in contact with customers, and the customers. When returns from those employees in contact with customers are selected the within-organization correlation between employee and customer benefit is .343 (significant at .05 with $N=24$).¹⁰

Offsetting factors appear to be affecting the correlation of customer and employee benefit. The factors causing employee benefit to vary inversely with maintenance are, amount of work exerted, reference group influence on expectations, and affect of sales on employee cohesion. Other things being equal increased customer benefit is associated

¹⁰In selecting employees with customer contact, seven store managers were asked to rank the positions in order of the amount of customer contact each entailed. From a composite of these rankings those employees holding the top ranked positions were selected. Four organizations were excluded by this selection process, bringing N from 28 to 24.

with increased sales. Thus sales can still be thought of as an intervening variable between employee and customer benefit as when the hypothesis was first formulated. But the negative correlation between employee benefit and sales would by itself lead to a negative correlation between employee benefit and customer benefit--the opposite of that hypothesized.

The above negative tendency is offset by positive interaction benefit and benefit contagion, between customers and employees (Friedlander and Pickle, page 81 above). The findings suggest that in situations of low employee-customer contact the two sets of opposing influences tend to balance out. In situations characterized by more customer--employee contact the positive correlation forces dominate.

Hypothesis 3 is about the separation of benefit into process and product categories. Before discussing the hypothesis and findings, an analysis of the instrument for detection of those two categories of benefit is needed.

Part I of the questionnaires (Appendix D is composed of ten questions about product benefit and Part II is composed of ten questions about process benefit. Factor analysis of the returned questionnaires indicates that product and process distinctions were detected. Findings from the factor analysis are detailed below.

Five factors account for 75.5 per cent of the total variance in response to the 20 questions. Part II of the

customer questionnaire held together on one factor quite well. This strongest factor is identified as "interaction benefit." Eight questions in Part II (1-4, 6-9) loaded higher on factor one than on any other factor, this first factor accounting for 52 per cent of total variance. These loadings ranged from .84 to .62. (Two questions--5 and 10--from Part II loaded highest on factor four, but loaded .44 and .47 respectively on factor one.) The analysis shows that question 9 in Part I should have been in Part II, as it loaded .70 on factor one and only .40 on the next factor.

The second customer benefit factor, explains an additional 10 per cent of total variance. This factor includes Part I questions 1, loading .85; 3, loading .78; and 4, loading .74. These questions are about amount of product for the cost, economic benefit, and value of product relative to money paid. Customer factor two can be called "economic benefit."

The third customer factor, explaining 6 per cent of total variance, includes Part I questions 6, loading .87; 5, loading .79; and 10, loading .64. These questions are all about the organization's product(s)--not their cost. This factor can be labeled "product benefit," if the use of the term is kept distinct from its use earlier in the paper.

Factors four and five, explaining 4 per cent and $2\frac{1}{2}$ per cent of total variance, are not readily labeled. Factor

four includes Part I question 8, loading .67; Part II question 5, loading .67; and question 10, loading .54. (As stated, 5 and 10 also load on factor one well.) These questions were about satisfaction with purchases, convenience, and organization as a source of pride. This factor is not identifiable to the writer. Factor five includes Part I questions 7, loading .66; and 2, loading .58. These questions are about recommendation of the organization to a friend and product received compared to that received by others. This factor is also not labeled.

Five factors account for 76.4 per cent of total variance in employee responses to the 20 questions. Part I of the employee questionnaire held together on one factor, accounting for 45 per cent of total variance. Nine questions in Part I (1-4, 6-10) loaded higher--from .64 to .89--on factor one than any other factor. (Question 5 loaded highest on factor five but also loaded .48 on factor one.) Additionally, factor one is limited to Part I as no question in Part II loaded highest on that factor. Factor one, called "economic benefit," subsumes customer factors two and three, economic benefit and product benefit.

The second employee factor accounts for 17 per cent of total variance and includes Part II question 10, loading .83; 1, loading .79; 9, loading .77; 8, loading .60; and 4, loading .55. These are the only Part II questions mentioning

"the organization." Key organization related ideas in the question were communication, frustration, important, understanding my needs, and source of pride. This factor is called "organization interaction benefit" and is subsumed under customer factor one, interaction benefit.

Employee factor three, accounting for 5 per cent of the variance includes Part II questions 2, loading .86; and 3, loading .83. These questions were about the work itself and person-to-person interaction, thus is labeled "work-person interaction benefit." This employee factor is, like factor two, subsumed under customer factor one, interaction.

Employee factor four is not meaningful, as it covers (Part II questions 5,6, and 7) convenience, overall satisfaction and supervision (17). Question 6 loads next (.44) on factor two and 7 loads next (.20) on factor three. Factor five consists of Part I question 5, about the organization's efforts to improve its pay. Question 5's second highest loading is on factor one, economic benefit. Thus it may be considered a part of the economic benefit factor.

Summarizing factor analysis findings from customer and employee responses, the notion of interaction (process) benefit held up well with customers while employees broke it into two parts, organization interaction and work-person interaction. Economic (product) benefit held up well with

employees but customers broke it into two parts, economic (product/cost) and product.

Figure 6, on the following page, illustrates the primary components of benefit as measured by the questionnaire.

In Part III respondents weighted the two original types of organizational benefit by distributing 100 per cent over the two parts in whatever ratio they chose. The chi-square test was used to determine if there were significant differences in percentage distributions made by employees and those made by customers.

Hypothesis 3, that the ratio of concern with product benefit to process benefit is higher among customers than employees, is not accepted. The chi-square is .33 with 2 degrees of freedom and $N=209$ (Appendix G, Table 11). It would have to be 5.99 to be significant at the .05 level.

Employees have more intensive and more extensive organization contact. Respondents' comments suggested that this contact is associated with more employee than customer concern with both product and process benefit. The employee is more concerned with product benefit than is the customer because the former spends a larger portion of his resources with the employer organization than the latter with that organization. Further, the employee is considerably less mobile insofar as switching organizations than is the

Original Factors in Customer and Employee Benefit:

Product (Economic); Questionnaire Part I	Process--Interaction with Work, Persons, Organization; Questionnaire Part II
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Measured Factors in Customer Benefit:

Economic (Factor 2) Product (Factor 3)	Process--Interaction with Work, Persons, Organization (Factor 1)
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Measured Factors in Employee Benefit:

Economic (Factor 1)	Interaction with Organization (Factor 2) Interaction with Work, Persons (Factor 3)
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Fig. 6.--Original and Measured Factors in Customer and Employee Benefit

customer. Both these factors point to a higher economic stake in the contact and greater economic dependency by the employee than the customer, thus a higher concern with product benefit. This high product dependency offsets the tendency of the employee's more extensive and intensive contact to lead to more relative concern with process than product benefit.

Referring again to Etzioni's (1964) organization pervasiveness and scope (page 82 above) it appears that the surveyed organizations are more pervasive and have a larger scope with respect to employees than customers. A larger part of the employee's organization related activities are controlled by the organization than are those of the customer, partially because of the employee's greater dependency. Also, more of the employee's activities are carried out jointly with other organization participants than are those of the customer.

Hypothesis 3.1, that the median ratio of concern with product/process benefit by sales employees lies between that for non-sales employees and that for customers, is rendered meaningless by the finding regarding hypothesis 3 and by the analysis of that finding.

Parenthetically, when strategic employees are contrasted with non-strategic on this response the differences are significant. The chi-square is 7.50 with $N=86$

which, with two degrees of freedom, is significant at .05 (Appendix G, Table 14). Top ranking employees indicated a greater concern with the product components of organizational benefit relative to process than did lower ranking employees. From the organization's standpoint this suggests that for maximum utilization of resources, the optimal mix of "payments" varies with different organization subsets.

In chapter five the typology is developed. The research effort is then summarized, and suggestions for further research are presented.

CHAPTER V

THE TYPOLOGY, SUMMARY, EVALUATION, AND NEEDED FURTHER RESEARCH

The Typology

Findings about the studied organizations' changes in maintenance and benefit to customers and employees are presented graphically in Figure 7. Figure 8 shows how any group of formal organizations can be typed according to these two primary dimensions of organization adaptation. These figures precede a discussion of each of four "ideal types" of organizations resulting from a dichotomy of each of the two dimensions. The discussion first proceeds on the assumption that benefits to all organization sets combined range from "high" to "low." The study to this point will then be summarized. In keeping with the promise in chapter one the adaptation-based typology will be evaluated. Finally suggestions for further research will be given.

Using revenue change as a surrogate for maintenance change and employees' and customers' responses as the indication of organizational benefit, each organization's position on those two dimensions is plotted in Figure 7.

Fig. 7.--Observations of Organization Types
Using Maintenance and Benefit

Fig. 8.--Primary Organization Types

These types will now be discussed more fully, against the background of the defining attributes measure.

The typology is generalized to all formal organizations in Figure 8. Appropriate measures of maintenance and perceived benefit yield four "ideal types," Types I, II, III, and IV in Figures 7 and 8.

Type I--High Benefit, High Maintenance

This organization is in the "better" position in terms of both maintenance and benefit to customers and employees. It is maintained because its necessary and sufficient condition for survival, increasing maintenance, is being achieved. Thus it is not being "used up" by providing benefit without being maintained in return. It is socially productive because its relevant environment perceives it as providing adequate value. This organization can be said to be (have adapted in a way) beneficial to its relevant environment and to experience the necessary and sufficient condition for its own maintenance.

Type II--Low Benefit, High Maintenance

This organization is a social parasite in the eyes of customers and employees in that it does not provide value for value received. Its ability to achieve maintenance capacity is perhaps the result of an advantageous exchange position it occupies which, from the standpoint of those in its relevant environment, it should lose to a productive organization. Examples would be an economic organization

that enjoys a monopolistic position and is not producing adequately or a public organization that is being funded or otherwise is holding on despite sentiments that it is nonproductive.

This condition in the originally predicted model, in which benefit to each organization set varied together, is similar to what Cyert and March (1963) refer to as organization slack--a condition wherein organization resources are greater than payments. They interpret this condition as a result of improvement in the environment occurring at a faster rate than increases in the aspiration level and hence demands of coalition members.¹

Types II and IV, substantiate the propositions by March and Simon (1958) and Cyert and March (1963) that organization goals are attended to sequentially. Thus there would not be a positive relation between maintenance and benefit at a given point and time. Friedlander and Pickle (1968) attribute the low correlations found between customer and employee satisfaction to this sequential attention to goals.

¹The exchange process discussed in this paper is comparable to the results of the bargaining process discussed by Cyert and March. Exchange is an extra-organizational process whereas bargaining and the resultant balance is viewed by its conceptualizers as an intraorganizational process. There is no conflict, however. In fact the two concepts are quite complementary when it is realized that Cyert and March define an organization to include workers, owners, suppliers, customers, and others.

Bales' (1951) "phase movement" hypothesis is relevant to this data, although the hypothesis has been substantiated only in small group settings. That hypothesis is that a group concentrates on task activity until the task is substantially achieved, after which time it emphasizes social-emotional activity. Negative social-emotional reactions increase in frequency as the task is accomplished, after which they level off and positive reactions increase. Hare's (1962, p. 74) statement of a tentative conclusion on the point is, "With the problems of the task settled for the time being by the decision, the group apparently turns its attention to the emotional states of the individuals and their social relationships." The present finding that formal organizations with large increases in revenue experience low employee benefit suggests that "phase movement" may be occurring. Revenue change is viewed as an indicator of task accomplishment and perceived benefit an indicator of social-emotional state.

Type III--Low Benefit, Low Maintenance

This organization shares the low benefit status of the Type II organization. Unlike the previous organization, however, this one enjoys no advantage of position from which it can achieve a needed maintenance status. Its survival problems are particularly acute in that it must achieve a viable productivity status (or a position of advantage)--a

difficult feat in itself--while achieving increasing maintenance in the process. That is, this organization must adapt to its relevant environment and achieve a relation favorable to its own maintenance.

Type IV--High Benefit, Low Maintenance

This organization type shares the socially productive status of Type I, but does so only by allowing itself to deteriorate in the process of providing high perceived benefit. This type may be compared to organizations in a position of negative slack brought about by environmental changes in the direction of resource scarcity discussed by Cyert and March (1963).

The task facing this organization is to renegotiate its relationship with its customers, clients, members, or other served environment; achieving an improved maintenance capacity and holding its productive status.

As noted at the beginning of this chapter the validity of the four organizational types discussed depends on benefits to all organization sets combined varying over some significant range from low to high. It was hypothesized that benefit to two major sets, customers and employees would vary together and that total benefit would vary with maintenance. Had this been true, the assumption would have been made that benefit to all organization sets (excepting regulators) varies together thus allowing an organization

to be characterized as highly beneficial or only minimally beneficial. The former condition would mean the organization is well adapted and the latter condition would mean the organization is not well adapted.

The finding that customer and employee benefit do not vary together, coupled with the finding that revenue varies inversely with employee benefit, suggest a completely different concept of the organization and of organization adaptation. Organization benefit appears to vary inversely between certain sets and to vary directly between others, as discussed in chapter four. Maintenance is under more direct control of certain sets than others and thus varies directly with benefit to those organization sets and inversely with benefit to other sets. This interpretation is consistent with the coalition concept of Cyert and March (1963).

Summary

The research to this point is now briefly summarized. The concept formal organization is defined by a number of writers. The formal organization is defined as a cooperative system of role incumbents' decisions and actions. The persons in non-organization roles give the organization its purpose--to produce benefit for them. These persons individually and collectively constitute the organization's relevant environment or organization sets. Organization

benefit is exchanged for organization resources which in turn are used as role incumbent inducements. The formal organization is characterized chiefly by its relations to its relevant environment or organization sets. By the process of adaptation the organization achieves a "better" relation with that environment. Thus its benefit to that environment and its maintenance by that environment are the two dimensions of adaptation.

The socio-economic environment of the organization was described. This macro environment is seen as setting limits on the operations of the organization and on its relation with its relevant environment. The socio-economic environment also influences the perception of organizational value.

The general uses of organization typologies was stated to be the comparison and contrasting of organizations along some dimension(s). The importance of adaptation as a typology dimension was shown. Organization adaptation consists of providing benefit to the organization's relevant environment while the organization is maintained. Adaptation to the organization sets is manifest in the change in levels of benefit perceived by those sets and in the change in levels of maintenance received from those sets. Adaptation is distinguished from change and innovation by the fact that the former connotes the value of a relationship, especially as one party in the relationship changes.

Similar instruments were developed to measure change in benefit to customers and to employees. These consist of questionnaires which were returned by appropriate individuals in the relevant environments of 36 organizations. Revenue is a substitute for the concept organization maintenance. Thus change in revenue was measured for the 36 organizations. Significant variation among the organizations was found on each of the two adaptation dimensions.

With organization maintenance viewed as something separate from benefit to any organization set, a typology was constructed by placing benefit and maintenance on perpendicular axes and dichotomizing each axis. An implication is that an organization low on either or both axes is in a precarious position. The organization which is low on the benefit axis has resources but their ineffective use portends withdrawal of organization participants. The organization low on the maintenance axis has a resource problem and can anticipate participant withdrawal due to lack of inducement capability if the decline in resources continues.

Conclusions

Evaluative comments will now be made about the typology. Four criteria are suggested as follows:

1. The primary typology dimension should be a dimension that is crucial to the purpose of the organization. As the general purpose of all formal organizations is to

provide value or perceived benefit to some person(s), a dimension should be either the nature of that value or the method of its provision.

2. The typology should further the understanding of the nature of that value or the method of its provision.

3. The typology should have operational validity. That is, the organizations analyzed by the typologist should fit the constructed types.

4. The typology should have general applicability. Organizations other than the ones analyzed and typed by the typology author should be easily typed.

On the first criterion, "Is the dimension crucial to the purpose of the organization?" the adaptation-based typology scores high. The reason for choosing adaptation as the primary typology dimension was that adaptation is inherent in formal organizations--it is by definition that they are to be adaptive to their relevant environment. The formal organization has no raison d'etre except to produce perceived benefit for its relevant environment. To do this it must be maintained. The combination of benefit and maintenance constitute adaptation. Thus the cruciality to organization purpose of adaptation.

Criterion two, furthering understanding of adaptation, is not clearly met. The typology does not show the consistency that gives confidence of understanding. In fact the negative correlations between employee benefit and revenues lead to serious questions about the concept organization maintenance. The negative correlation suggests that "the organization" is simply a "state of organization," with

maintenance being simply benefit to a controlling organization set. Thus "the organization" is a complex of relationships and as such is maintained at some level but is incapable of "receiving maintenance."

The data gathered in this research indicate that criterion number three, "organizations fit constructed types," is satisfied. By basing the placement of organizations on field research findings there is assurance that organizations will fit proposed types. Only if the research instruments did not distinguish among organizations on the variables of interest would this criterion fail to be met.

It should be noted that wide latitude exists in the placement of the boundaries separating the four types. In Figure 8 the median level of each variable value was chosen for that boundary, thus assuring an equal number of each of the four organization types. Even if zero had been used as the bisecting point on each variable, there would still be no empty types.

How well the typology meets criterion four, generalizability, is largely unknown. This criterion should be no problem with other economic organizations. But "means of support" or maintenance is difficult to determine for non-economic organizations.

Critique And Suggested Further Research

The final paragraphs of the study are devoted to a combination of critical comments about this paper and suggestions for further research which derive from those comments. The first comment has to do with the scope of the typology. As stated at the outset, this is perceived as an intermediate level construction of types. Thus whereas Parsons focuses on the social role of the organization, this typology focuses on the relation of the organization to its relevant environment. The work done at this level has been by economists, including labor economists, organization sociologists, and students of marketing, and personnel. It was difficult in this paper to tie this work together and arrive at an integrated, intermediate level concept. There is a need for further analysis of the level, and use of organization typologies.

The material on the socio-economic environment is sketchy. This seems a necessity, as the alternatives were to write volumes or to single out some specific aspect of that environment, such as minority groups. Related to this criticism is another, that the ways this environment impinge upon the formal organization are left unclear. Aside from the influences exerted by customers, employees, financiers, suppliers, and governments, which are in the relevant environment of economic organizations, little is known about the

effect on the organization of its environment. Comparative studies of organizations in different socio-economic environments are being used to advantage.

A major criticism is that the processes of adaptation are not clarified. The conceptualization as well as the measurement of adaptation focus on effects, leaving causes unexplored. What causes one organization to be more responsive to the needs in its relevant environment? The question, "How does the organization achieve and maintain a Type I status?" is answered only in the negative. That is, how it does not adapt was learned (no positive correlation between maintenance and benefit).

One line of inquiry which would clarify the "how" of organization adaptation would be to look at the differential effect of different changes in the organization. For example, Knight (1967) divides organization innovations into 1) goods and services, 2) production process, 3) organizational structure, and 4) people. Evan (1968, p. 121) states as a testable proposition that, "Technical innovations, because they are manifested in the products or services of an organization, are more likely to generate faster changes in the external organizational climate than administrative innovations."

Another criticism of the present study is that the role of information in organization adaptation is virtually ignored. Information received by management as well as that

received by the organization set obviously affects the organization's response to organization set needs and perceived benefit by the organization set.

The instruments for measuring benefit and maintenance are obviously crude. The measurement of organizational benefit is a monumental task and one that engenders much disagreement. Particularly do the "economic man" proponents and the "humanistic man" proponents disagree. The notion of product and process benefit is little more than the recognition of this problem. Before one can have confidence in the measurement of organization maintenance there must be more assurance that there is such a thing. This brings up the question, is it more useful to think of "the organization" or to think of organization when considering the fundamental problem of "its" benefit and adaptation to its relevant environment. The reluctance of March and Simon to define "the organization" is now comprehended.

Finally, and with respect to the first typology criticism above, work should be done on development of widely acceptable criteria for organization typologies, particularly as to their level of application and their heuristic value. This should be supplemented by the approach suggested by Hall, Haas, and Johnson (1967) whereby empirical relationships among organizational variables are established then, using other typologies, additional variables can be

added. Widely acceptable criteria must first be formulated; however, so that if other variables do not vary well with the criteria variables, the researcher will know which to retain as the bases variables. This criteria selection seems to be necessarily and desirably linked to the researchers' comprehension of the essential nature of formal organizations.

APPENDIX A

WORK SHEET FOR ENTERING INFORMATION
ON TWENTY-TWO ADAPTATIONS

	Column 1 Is the Adaptation Present?		Column 2 Year of Intro- duction	Column 3 Point Value
	Yes	No		
1. <u>A remedial reading teacher is employed by the school.</u>				
2. Diagnostic tests in arithmetic are frequently used to discover areas in which additional study and practice are needed.				
3. <u>Pupils study their own community</u> through trips to factories, offices, newspapers, banks, and farms.				
4. <u>The course of study, worked out cooperatively by the teachers,</u> has been printed or mimeographed for local use.				
5. <u>There are school clubs,</u> in science, photography, social service or sports.				
6. <u>Individual psychological tests</u> are used whenever necessary to supplement group intelligence tests.				

	Column 1 Is the Adaptation Present?		Column 2 Year of Intro- duction	Column 3 Point Value
	Yes	No		
7. Work benches and tools are available for all pupils in the elementary school.				
8. Cooking and sewing have been introduced as part of the curriculum in elementary school.				
9. Exploratory courses are included in the school curriculum which are designed to enable the pupils to explore given areas of knowledge. (For example, there may be a course that includes a taste of three or four languages, or an exploratory business course touching letter writing, business vocabulary, personality traits and a review of stenography.)				

Source: Ross, 1951

APPENDIX B

The following is the text of a letter mailed to an executive in each of three companies expressing a willingness to participate in the study. Two of those companies participated. The executives asked that no identification be printed.

Dear Mr. :

The environment in which we live is complex and ever changing. Business organizations receive criticism for not adapting to that changing environment and praise (and benefit) when they do adapt.

As part of a doctoral dissertation study by Mr. Lawrence Finley a short questionnaire has been prepared to gain knowledge in the area of organization adaptation. Two main components of adaptation are benefit produced by the organization (products, purchasing power), and benefit (revenue) received by it. A number of business organizations are being asked to participate in this study by permitting members of their staff to administer a questionnaire on these items to a sample of employees and customers.

All responses would be anonymous as totals and categories are of interest--not individual persons nor individual business organizations. A summary of the study would be made available to you if you so desire.

Mr. Finley has already talked to you about the study. He would like to arrange a convenient time to mail the questionnaire.

Thank you for your consideration of this study.

Sincerely,

James P. McNaul

APPENDIX C

TABLE 3.--Summary Ordinal Statistics on Changes in Revenue of
36 Organizations

Revenue Statistics	Revenue Period	
	1968-1970	1969-1970
Median (Per cent change in revenue)	11.1	3.4
First Quartile (Per cent change in revenue)	2.3	-1.0
Third Quartile (Per cent change in revenue)	25.1	14.5
Third-First Quartile (Per cent change in revenue)	22.8	15.5
Extreme Low (Per cent change in revenue)	-11.8	-13.0
Extreme High (Per cent change in revenue)	54.9	44.0
Range	66.7	57.0
Number of Organizations with Increasing Sales	28	24
Number of Organizations with Decreasing Sales	8	12

PART IV--Demographic Data (Please check one blank by each of the following questions)

1. How long have you been a customer of this organization?

Less than 2 years_____ More than 2 years_____

2. Do you consider yourself a regular customer of this organization or do you frequently buy the same goods or services at other organizations?

Regular customer_____ Buy at other places_____

3. If all the customers of this organization were ranked according to the amount they buy from it, in which half do you think you would be?

Top half_____ Bottom half_____

PERCEIVED CHANGES IN BENEFIT OF THIS ORGANIZATION (STORE) TO EMPLOYEE (To be sent directly to the O.S.U. researcher in attached envelope--will not be seen by anyone except the researcher.)

Consider your employment at this organization for approximately the past two years. By reacting to each of the following statements in a space provided, rate the organization's present benefit to you compared to that benefit approximately two years ago. Thus you may feel that benefit may now be better, the same, or worse than two years back.

PART I--PAY

	Better +2	+1	Same 0	-1	Worse -2
1. Amount of pay for my effort.					
2. Concerning pay, my recommendation of the organization to a friend would be					
3. Economic benefit of this organization to me					
4. Amount of pay compared to my services.					
5. Adequacy of the organization's efforts to always improve its pay.					
6. Overall rating of the level of my pay.					
7. My pay compared to the pay of others.					
8. Satisfaction with my pay . .					
9. Fairness of this organization's pay to me					
10. Overall evaluation of this organization's pay					

PART II--NON-PAY

1. Communications with the organization.
2. The work itself is interesting.
3. Person-to-person interaction is satisfying
4. Absence of frustration with the organization.
5. Convenience, considering both hours and location . .
6. Overall satisfaction with the work I do
7. Like working with my supervisor.
8. The organization makes me feel important.
9. Understanding in the organization of my needs.
10. The organization as a source of pride

Better		Same	Worse	
+2	+1	0	-1	-2

PART III--Weights of Parts I and II

Part I of this questionnaire was concerned with one kind of benefit which employees derive from organizations and Part II was concerned with another. Please weight the two previous parts of this questionnaire as to the importance you attach to the matters in each part. This weighting may be done by distributing 100% between Parts I and II. Any distribution is permissible, so long as the sum equals 100.

Part I ____%

Part II ____%

Total 100%

PART IV--Demographic Data (Please check one blank for each question)

1. Are you primarily in sales
(or marketing) or not? Sales_____ Non-Sales_____
2. Approximately what is the
level of your monthly wage
or salary? Under \$570_____ Over \$570_____
3. Below are listed alphabetically all the jobs in this
organization. Please indicate the job you hold.

____Apprentice
____Cashier
____Co-Manager
____Department Head
____Grocery Clerk
____Journeyman
____Manager
____Produce Clerk

APPENDIX E

TABLE 4.--Summary Ordinal Statistics on Changes in Organization Benefit to Customers and Employees

Benefit	Organization Set		
	Customers	Employees	Total
<u>Product</u>			
Median	7.0	7.0	7.0
First Quartile	3.0	0.5	2.0
Third Quartile	12.0	11.0	11.5
Third-First Quartile	9.0	10.5	9.5
Extreme Low	-15.0	-12.0	-15.0
Extreme High	20.0	20.0	20.0
Range	35.0	32.0	35.0
<u>Process</u>			
Median	11.0	5.0	9.0
First Quartile	5.0	1.5	3.0
Third Quartile	18.0	10.0	15.0
Third-First Quartile	13.0	8.5	12.0
Extreme Low	-14.0	-16.0	-16.0
Extreme High	20.0	19.0	20.0
Range	34.0	35.0	36.0
<u>Product Plus Process</u>			
Median	20.0	11.0	16.0
First Quartile	8.0	1.5	7.0
Third Quartile	28.0	21.0	26.0
Third-First Quartile	20.0	19.5	19.0
Extreme Low	-24.0	-19.0	-24.0
Extreme High	40.0	39.0	40.0
Range	64.0	58.0	64.0

Source: Questionnaires returned from 125 customers and 84 employees.

TABLE 5.--Summary Ordinal Statistics on Average Changes in
Organization Benefit to Customers and
Employees of 36 Organizations

Benefit	Organization Set		
	Customers	Employees	Total
<u>Product</u>			
Median	7.4	5.3	6.8
First Quartile	4.2	4.2	3.9
Third Quartile	9.4	10.5	8.6
Third-First Quartile	5.2	6.3	4.7
Extreme Low	-1.5	-12.0	-10.0
Extreme High	14.0	20.0	12.3
Range	15.5	32.0	22.3
<u>Process</u>			
Median	11.8	4.7	8.9
First Quartile	8.6	2.0	5.2
Third Quartile	13.8	8.3	10.8
Third-First Quartile	5.2	6.3	5.6
Extreme Low	0.5	-9.0	-9.0
Extreme High	20.0	15.5	20.7
Range	19.5	24.5	29.7
<u>Product Plus Process</u>			
Median	17.8	12.3	14.3
First Quartile	12.8	5.5	8.9
Third Quartile	22.5	19.0	19.9
Third-First Quartile	9.7	14.0	11.0
Extreme Low	2.0	-16.0	-19.0
Extreme High	34.0	35.0	30.0
Range	32.0	51.0	49.0

Source: Questionnaires returned from 125 customers and
84 employees.

APPENDIX F

TABLE 6.--Rank Correlations Between Changes in Organization
Benefit to Customers Plus Employees and
Changes in Revenue^a

Benefit	Revenue Periods	
	1968-1970 ^b	1969-1970
Product Benefit	-0.085 ^c	-0.102
Process Benefit	-0.030	0.001
Product and Process Benefit	-0.062	-0.055

^aN=200 customers plus employees.

^bThe most recent 24 month and 12 month periods were used, thus they do not coincide exactly with calendar years.

^c.139 is significant at .05 for all correlations.

TABLE 7.--Rank Correlations Between Changes in Organization
Benefit to Customers and Changes in Revenue^a

Benefit	Revenue Periods	
	1968-1970	1969-1970
Product Benefit	-.004 ^b	-.050
Process Benefit	.094	.028
Product and Process Benefit	.057	.002

^aN=125 customers.

^b.176 is significant at .05 for all correlations.

TABLE 8.--Rank Correlations Between Changes in Organization Benefit to Employees and Changes in Revenue, in Organizations with Increasing Revenue

Benefit	Revenue Period	
	1968-1970	1968-1970
Strategic Employees ^a		
Product Benefit	-.106 ^b	-.177
Process Benefit	-.441	-.440
Product and Process Benefit	-.300	-.359
Non-strategic Employees ^c		
Product Benefit	-.282 ^d	-.322
Process Benefit	-.366	-.378
Product and Process Benefit	-.310	-.327
All Employees ^e		
Product Benefit	-.238 ^f	-.237
Process Benefit	-.454	-.417
Product and Process Benefit	-.362	-.336

^aN=35 strategic employees.

^b.336 is significant at .05 for correlations on strategic employees.

^cN=24 non-strategic employees.

^d.343 is significant at .05 for correlations on non-strategic employees.

^eN=59 strategic and non-strategic employees.

^f.260 is significant at .05 for correlations on all employees.

TABLE 9.--Rank Correlations between Changes in Organization Benefit to Employees and Changes in Revenue, in Organizations with Declining Revenue

Benefit	Revenue Period	
	1968-1970	1968-1970
Strategic Employees ^a		
Product Benefit	.267 ^b	.274
Process Benefit	-.092	.245
Product and Process Benefit	.217	.028
Non-strategic Employees ^c		
Product Benefit	-.078 ^d	.278
Process Benefit	-.075	.009
Product and Process Benefit	.067	-.087
All Employees ^e		
Product Benefit	.084 ^f	.328
Process Benefit	-.029	.123
Product and Process Benefit	.154	.088

^aN=10 strategic employees.

^b.564 is significant at .05 for correlations on strategic employees.

^cN=14 non-strategic employees.

^d.456 is significant at .05 for correlations on non-strategic employees.

^eN=24 strategic and non-strategic employees.

^f.343 is significant at .05 for correlations on all employees.

TABLE 10.--Rank Correlations between Changes in Customer Benefit and Changes in Employee Benefit^a

Employee Benefit	Customer Benefit	
	Product	Process
Product	.033 ^b	-.154
Process	.147	.040

^aN=28 organizations. Questionnaires from both customers and employees of the same organization were received from only 28 organizations. One-hundred and two customers and 80 employees from those 28 organizations participated. Response values for each organization were averaged. Though averaging of non-parametric data is not permissible, this is the only way customer-employee correlations are obtainable.

^b.317 is significant at .05 for all correlations.

APPENDIX G

TABLE 11.--Frequencies, (Percentage Distributions), and Chi-Square of Customers' and Employees Weights of Concern with Product and Process Benefit

Organization Set	Weight Given to Product Benefit ^a			
	Below One-Half	One-Half	Above One-Half	Total
Customers	48 (23)	38 (18)	39 (19)	125 (60)
Employees	32 (15)	23 (11)	29 (14)	84 (40)
Total	80 (32)	61 (29)	68 (33)	209 (100)

Chi-Square=.329^b

^aThe weight given to process benefit are in each case the complement of that given to product benefit. For example, 48 customers weighting product benefit below one-half also means that 48 customers weights process benefit above one-half.

^bThe observed chi-square of .329 may be expected to occur under H_0 on approximately 85% of such tests.

TABLE 12--Frequencies, (Percentage Distributions), and
Chi-Square of Sales and Non-Sales Employees'
Weights of Concern with Product and
Process Benefit

Organization Set	Weight Given to Product Benefit ^a			
	Below One-Half	One-Half	Above One-Half	Total
Sales Employees	29 (35)	22 (26)	24 (29)	75 (90)
Non-Sales Employees	3 (4)	2 (2)	3 (4)	8 (10)
Total	32 (39)	24 (29) ^b	27 (33)	83 (100)

Chi-Square=.117^c

^aThe weight given to process benefit is the complement of that given to product benefit.

^bFigures do not add because of rounding.

^cThe observed chi-square of .117 may be expected to occur under H_0 on approximately 94% of such tests.

TABLE 13.--Frequencies, (Percentage Distributions), and
Chi-Square of Sales Employees' and Customers'
Weights of Concern With Product and
Process Benefit

Organization Set	Weight Given to Product Benefit ^a			
	Below One-Half	One-Half	Above One-Half	Total
Customers	48 (24)	38 (19)	39 (20)	125 (63)
Sales Employees	29 (15)	22 (11)	23 (11)	74 (37)
Total	78 (39)	60 (30)	62 (31)	200 (100)

Chi-square=.004^b

^aThe weight given to process benefit is the complement of the weight given to product benefit.

^bThe observed chi-square of .004 may be expected to occur under H_0 on approximately 95% of such tests.

TABLE 14.--Frequencies, (Percentage Distributions), and Chi-Square of Strategic and Non-Strategic Employees' Weights of Concern With Product and Process Benefit

Organization Set	Weights Given to Product Benefit ^a			
	Below One-Half	One-Half	Above One-Half	Total
Strategic Employees	13 (15)	13 (15)	22 (26)	48 (56)
Non-Strategic Employees	18 (21)	13 (15)	7 (8)	38 (44)
Total	31 (36)	26 (30)	29 (34)	86 (100)

Chi-square=7.50 ^b

^aThe weight given to process benefit is the complement of that given to product benefit.

^bThe observed chi-square of 7.50 may be expected to occur under H_0 on approximately 3% of such tests.

APPENDIX H

TABLE 15.--Customer and Employee Factor Analysis

Load	Var. #	Load	Var. #	Load	Var. #	Load	Var. #	Load	Var. #
Customer Benefit									
Factor 1 Interaction benefit		Factor 2 Economic benefit		Factor 3 Product Benefit		Factor 4 Unnamed		Factor 5 Unnamed	
.84	II3	.85	I1	.87	I6	.67	I8	.66	I7
.82	III1	.78	I3	.79	I5	.67	II5	.58	I2
.76	II2	.74	I4	.64	II10	.54	II10		
.75	II4								
.72	II7								
.70	II8								
.70	I9								
.63	II6								
.62	II9								
Employee Benefit									
Factor 1 Economic benefit		Factor 2 Org. interact. benefit		Factor 3 Work- Person Interact. benefit		Factor 4		Factor 5	
.89	I1	.83	II10	.86	II2	.81	II7	.63	I5
.87	I4	.79	II1	.83	II3	.72	II6		
.87	I9	.77	II9			.58	II5		
.87	II0	.60	II8						
.86	I6	.55	II4						
.85	I8								
.77	I3								
.75	I2								
.64	I7								

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