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#4

ORGANIZATIONAL CHANGE AND THE CONCEPT OF STRUCTURE

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This working paper is the outline developed in November 1968 for a
much longer manuscript being prepared for later publication. As
an outline, the paper does not contain the data in which the theo-
retical arguments are empircally grounded. Also, the later version
differs considerably in both format and emphasis. The two papers,
therefore, should be treated as distinctly separate products.

ABSTRACT

Organizational structure is proposed to be viewed best as task structure, i.e.,the patterned arrangements of task roles required in producing desired organizational outputs. The fundamental basis of task structure is underlying core technologies. Other structural properties, such as authority relationships, are thus best viewed as correlates of task structure. This perspective of basic organizational structure raises new questions which may lead to more productive analyses of organizational change.

In one sense all sociological inquiry may be viewed as an attempt to answer a set of fundamental questions about the nature of social organization. Certain issues of general concern frequently have developed into focal points for subareas of the larger discipline. The study of formal organizations, for example, is centered around a series of related questions: what accounts for repetitive patterns of interaction among organizational members? Why do these patterns differ from one organization to another? Why are there different patterns within the same organization? What accounts for the ways in which these patterns change?

There is general consensus among sociologists that the concept of structure be used to describe the stable patterns of interaction characteristic of all forms of organization. But scholars generally disagree over the underlying basis of organizational structure. Within the field of formal organization the list of suggested dimensions is as familiar as it is diverse: written rules, informal norms, formal authority, social power, negotiated agreements, communication responsibility, and so forth. Granted that all these concepts describe various kinds of structures, is there not one or perhaps a few concepts which are more fundamental to the notion of structure than others?
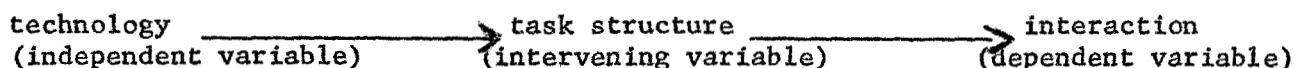
The context of disaster and other community-wide crises provides an unparalleled research setting for the exploration of such questions as these. Observing the behavior of organizations at a time when their activities are most urgently needed and/or when their capabilities are most severely taxed provides some insight into their most fundamental or basic components. With the object of learning more about such critical dimensions, the Disaster Research Center of The Ohio State University has conducted field studies of a wide variety of community organizations in over fifty natural disasters. This paper utilizes the findings of certain of these studies, in particular recent data gathered from general hospitals coping with the masses of victims produced in these catastrophes. Such hospitals are especially important when dealing with questions such as those posed above for three reasons. First, the patterns of interaction (i.e., structure) which characterize them differ from those found in other types of organizations. Secondly, a variety of different structures exist within each particular hospital. And thirdly, even from the most general perspective, numerous -- often drastic -- changes in interaction patterns may be observed in all hospitals responding to large-scale crises.

Numerous studies of general hospitals in disaster have shown rather definite patterns to the changes in interpersonal relationships from more "normal" periods. But neither the knowledge of prior formal nor informal structures has been sufficient to explain these adaptive relationships. Nor are hospital disaster plans (which specify in varying degrees of detail the formal relationships among personnel during periods of organizational crisis) better able to predict structured adaptations.

A reexamination of this discrepancy between research findings and the expectation generated by existing organization theory suggests that at fault is some basic conceptual ambiguity. For unless one is specifying a particular kind of structure (a communication structure, for example), the concept of organizational structure -- however it is explicitly defined -- is implicitly taken to mean formalized authority relationships. Thus the terms structure and authority structure are used synonymously and interchangeably. The result is a great deal of confusion when it is found that everyday patterns of authority in the hospital cannot account for interaction during disasters (for example, a nurse giving orders to a physician or a nursing supervisor taking orders from maintenance personnel).

There is no question as to the existence of a network of authority relationships among organizational members. But the assumption that these relationships are the most fundamental or primary determinants of structured interaction implies that the concept of authority determines all other structural properties. Oversimplified, this model assumes authority as its independent variable and interaction as dependent variable. If the concept of authority were treated as a dependent variable, however, the question immediately arises as to what independent variable(s) might be related to it.

In response to this question, Perrow has recently proposed the concept of technology -- processes necessary to produce a desired outcome in the raw material of organizations. To produce desired outcomes, the requirements for implementing technology allow for only a limited number of alternative interaction patterns. That is, for a given technology, the arrangement of task roles possible in the work process is fairly limited and standardized. These standardized arrangements of task roles form a task structure. Organizational structure is thus viewed fundamentally as patterned arrangements of tasks, and authority is viewed as a property differentially distributed among the various task roles. Like the structure of these tasks, the general principle guiding the distribution of authority is the requirement of full implementation of core technologies. Essentially, the proposed model is depicted by the following scheme:

technology ⎯⎯⎯⎯⎯⎯⎯⎯⟶ task structure ⎯⎯⎯⎯⎯⎯⎯⟶ interaction
(independent variable)   (intervening variable)   (dependent variable)

Elsewhere, Perrow has discussed the relationship between goals and technology and between technology and structure. Here concern is limited solely to the reexamination of field data from general hospitals in emergency situations. It is not suggested that the concept of task structure alone can account for all behavior in organizations. But it is proposed that this concept is of more value in explanation than any other single concept such as authority. Furthermore, the notion of task structure may be easily related to other types of interaction patterns, a topic discussed in more detail elsewhere.

Returning to the specific context of the disaster or emergency situation, we wish to reapply these new perpsectives to the research observations on hospitals. Seen in this light there are at base two broad categories of differences in patterned interaction between normal and emergency periods. The first type has been underscored recently by Kennedy who observed numerous shortcuts in formal hospital administrative procedures under conditions of stress. But the same phenomena may be found in medical as well as administrative activities. In crisis situations, output is urgently required, and the performance of medical tasks is of prime concern. Shortcuts may be followed in an effort to expedite the handling and treatment of multiple simultaneous casualties.

Such changes in hospital procedures, be they medical or administrative, essentially represent changes in tasks. In their extreme, these task changes may have one or both of the following effects on organizational structure. New task roles may be created. Most often these take the form of creating a number of separate task roles out of the multiple tasks previously contained in a single role. For example, in the normal procedure for handling a single emergency case, the emergency room staff nurse may perform both the task of filling out patient identification forms as well as assisting the examining physician in treatment activities. Under emergency conditions, the task of patient identification is often separated out into a new task role with another member of the hospital staff (often not even a nurse) devoting full time to placing disaster identification tags on incoming victims. The creation of this new task role frees the emergency room nurse to concentrate exclusively in assisting with the treatment of patients.

A second effect of changes in procedures (or tasks) may be the creation of new, relatively permanent (at least for the duration of the emergency period) relationships between task roles -- either normal or emergent ones. To illustrate, a frequent example of this type of change is found in hospitals which are affiliated with (or operate) schools of nursing. On a normal basis, the faculty of such nursing schools and the hospital staff interact in a patterned, though limited manner. During disasters, the nursing faculty is often used to augment the normal hospital staff in coping with the greatly increased patient load. Clearly, the relationship between the two is vastly altered due to the new tasks designated to the nursing school faculty.

Perhaps even more common -- and certainly more confusing heretofore --
has been a second, altogether different type of change in hospitals responding
to major disasters. Viewing organizational structure as patterned task
relationships, the two previous types of change discussed (i.e., the emergence
of new task roles and new relationships among task roles) both represent
forms of structural change. Furthermore, viewing such properties as authority,
decision-making responsibility, and so forth, as correlates of differing task
roles, focuses attention on these roles themselves rather than on the behavior
associated with these correlates. Thus the distinction between the role and
the behavior of the role incumbent is more clearly drawn. In this light,
much of what appears to be structural change in emergency situations is often
only changes in task role membership. That is, the arrangement of task roles
(i.e., structure) may remain the same as that existent under more normal
conditions but the roles themselves may now be carried out (i.e., tasks per-
formed) by new role incumbents.

Previously it was observed that the requirements for successful imple-
mentation of core technologies set rather narrow limits on the various struc-
tures possible to produce alterations in raw materials (in this case, the
restoration to health of disaster victims). It is proposed that the degree
of variation in these structures is less than the variation possible in the
types of persons who may fill task structure roles. To illustrate, the
implementation of triage procedures in emergency treatment requires at a
minimal level a limited number of differing task roles. To be effective, the
arrangement of these task roles can vary qualitatively only slightly. For
example, a key role in triage is that of traffic coordinator, that is, one
person who has overall charge of the direction of patient flow into the
hospital. To be effective, furthermore, this role requires the exercise of
a certain amount of authority over other positions in the triage task struc-
ture. In a recent disaster, a nursing supervisor was observed for a time to
be filling this role of traffic coordinator, in the process   giving orders
to the few physicians who had arrived in the emergency room at the time. Did
her behavior represent an instance of structural change? Clearly, the answer
to this question is seen in a different light when one separates the inter-
relationships of tasks from the behavior of those performing those activities.
Changes in role behavior do not automatically signal changes in the overall
structuring of roles.

For the moment, holding constant change in task structures in hospitals
during an emergency situation, is there then any way of predicting the direction
involved in changes in task role membership? Within broad limits, it appears
that the answer is yes. Two factors are particularly important. The first
are situational factors on which data have been examined elsewhere. The
second, considered here only briefly, is the notion of qualitative differences
in the skills and knowledge required for the performance of various organiza-
tional tasks. In a general way it should be possible to place all the diverse
tasks associated with the functioning of general hospitals into categories
according to the type and degree of skill and knowledge required for their
performance. Between some categories there would be "overlap" (that is, the
differences would be one of degree), such as the difference between surgery

and suturing. Other would differ in kind as well, for example the differences between surgical and clerical skills. It is argued that organizational personnel can fill new task roles only when there is sufficient degree of overlap between their regular tasks and their newly assumed ones. Thus, in the triage example cited earlier, the probability that a registered nurse (with a basic knowledge of symptom diagnosis) might assume the role of traffic coordinator is significantly greater than that of, say, maintenance personnel.

Not only are such changes in role membership more likely when there is overlap between one's old and new tasks but also the direction of such changes are more frequent in a downward direction (that is, to the performance of tasks which require a related but lesser degree of skill and knowledge). As in the case of the nursing supervisor coordinating triage activities, however (a change in an upward direction), situational factors become very important. For example, it is highly doubtful that administrative clerks could carry out the tasks normally the responsibility of a staff physician. But on the other hand, if more than enough doctors are present in the hospital than were needed to cope with the mass of disaster victims, it would not be impossible to find a physician performing vital clerical tasks, in the medical records office, for example. It is thus less of a surprise to note that two nursing supervisors in a recent disaster spent the entire emergency period preparing coffee and sandwiches for members of the hospital staff who had not eaten their evening meal, since a sufficient number of nurses were already on hand and cafeteria personnel were not.

This paper presents a slightly different perspective on the notion of organizational structure. It was felt that the current lack of adequate explanations of change phenomena was due to basic conceptual confusion regarding this concept. Viewing organizational structure as at base the patterned arrangement of tasks around core technologies allowed such critical concepts as authority relationships to be viewed as correlates of structure rather than its substance. Similarly, the distinction between the patterned arrangements of tasks (i.e., structure) and task performance should afford clearer conceptualization of the relationship of change in one to change in the other. It is hoped that the study of organizational change, particularly, that occurring in such situations as major community emergencies, will be further advanced.