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## A Strategic Contingencies' Theory of Intraorganizational Power

*A strategic contingencies' theory of intraorganizational power is presented in which it is hypothesized that organizations, being systems of interdependent sub-units, have a power distribution with its sources in the division of labor. The focus is shifted from the vertical-personalized concept of power in the literature to subunits as the units of analysis. The theory relates the power of a subunit to its coping with uncertainty, substitutability, and centrality, through the control of strategic contingencies for other dependent activities, the control resulting from a combination of these variables. Possible measures for these variables are suggested.*

Typically, research designs have treated power as the independent variable. Power has been used in community studies to explain decisions on community programs, on resource allocation, and on voting behavior: in small groups it has been used to explain decision making; and it has been used in studies of work organizations to explain morale and alienation. But within work organizations, power itself has not been explained. This paper sets forth a theoretical explanation of power as the dependent variable with the aim of developing empirically testable hypotheses that will explain differential power among subunits in complex work organizations.<sup>1</sup>

The problems of studying power are well known from the cogent reviews by March (1955, 1966) and Wrong (1968). These problems led March (1966: 70) to ask if power was just a term used to mask our ignorance, and to conclude pessimistically that the power of the concept of power "depends on the kind of system we are confronting."

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Part of March's (1966) pessimism can be attributed to the problems inherent in community studies. When the unit of analysis is the community, the governmental, political, economic, recreational, and other units which make up the community do not necessarily interact and may even be oriented outside the supposed boundaries of the community. However, the subunits of a work organization are mutually related in the interdependent activities of a single identifiable social system. The perspective of the present paper is due in particular to the encouraging studies of subunits by Lawrence and Lorsch (1967a, 1967b), and begins with their (1967a: 3) definition of an organization as "a system of interrelated behaviors of people who are performing a task that has been differentiated into several distinct subsystems."

Previous studies of power in work organizations have tended to focus on the individual and to neglect subunit or departmental power. This neglect led Perrow (1970: 84) to state: "Part of the problem, I suspect, stems from the persistent attempt to define power in terms of individuals and as a social-psychological phenomenon. . . . Even sociological studies tend to measure

power by asking about an individual. . . . I am not at all clear about the matter, but I think the term takes on different meanings when the unit, or power-holder, is a *formal group* in an *open system* with *multiple goals*, and the system is assumed to reflect a political-domination model of organization, rather than only a cooperative model. . . . The fact that after a cursory search I can find only a single study that asks survey questions regarding the power of functional *groups* strikes me as odd. Have we conceptualized power in such a way as to exclude this well-known phenomenon?"

The concept of power used here follows Emerson (1962) and takes power as a property of the social relationship, not of the actor. Since the context of the relationship is a formal organization, this approach moves away from an overpersonalized conceptualization and operationalization of power toward structural sources. Such an approach has been taken only briefly by Dubin (1963) in his discussion of power, and incidentally by Lawrence and Lorsch (1967b) when reporting power data. Most research has focused on the vertical superior-subordinate relationship, as in a multitude of leadership studies. This approach is exemplified by the extensive work of Tannenbaum (1968) and his colleagues, in which the distribution of perceived power was displayed on control graphs. The focus was on the vertical differentiation of perceived power, that is the exercise of power by managers who by changing their behavior could vary the distribution and the total amount of perceived power.

By contrast, when organizations are conceived as interdepartmental systems, the division of labor becomes the ultimate source of intraorganizational power, and power is explained by variables that are elements of each subunit's task, its functioning, and its links with the activities of other subunits. Insofar as this approach differs from previous studies by treating power as the dependent variable, by taking subunits of work organizations as the subjects of analysis, and by attempting a multivariate explanation, it may avoid some of the previous pitfalls.

## ELEMENTS OF A THEORY

Thompson (1967: 13) took from Cyert and March (1963) a viewpoint which he hailed as a newer tradition: "A newer tradition enables us to conceive of the organization as an open system, indeterminate and faced with uncertainty, but subject to criteria of rationality and hence needing certainty . . . we suggest that organizations cope with uncertainty by creating certain parts specifically to deal with it, specializing other parts in operating under conditions of certainty, or near certainty."

Thus organizations are conceived of as interdepartmental systems in which a major task element is coping with uncertainty. The task is divided and allotted to the subsystems, the division of labor creating an interdependency among them. Imbalance of this reciprocal interdependence (Thompson, 1967) among the parts gives rise to power relations. The essence of an organization is limitation of the autonomy of all its members or parts, since all are subject to power from the others; for subunits, unlike individuals, are not free to make a decision to participate, as March and Simon (1958) put it, nor to decide whether or not to come together in political relationships. They must. They exist to do so. Crozier (1964: 47) stressed in his discussion of power "the necessity for the members of the different groups to live together; the fact that each group's privileges depend to quite a large extent on the existence of other group's privileges." The groups use differential power to function within the system rather than to destroy it.

If dependency in a social relation is the reverse of power (Emerson, 1962), then the crucial unanswered question in organizations is: what factors function to vary dependency, and so to vary power? Emerson (1962: 32) proposed that "the dependence of actor A upon actor B is (1) directly proportional to A's motivational investment in goals mediated by B, and (2) inversely proportional to the availability of those goals to A outside of the A-B relation." In organizations, subunit B will have more power than other subunits to the extent that (1) B has the capacity to fulfill the requirements of the other subunits and (2) B monopolizes

this ability. If a central problem facing modern organizations is uncertainty, then B's power in the organization will be partially determined by the extent to which B copes with uncertainties for other subunits, and by the extent to which B's coping activities are available elsewhere.

Thus, intraorganizational dependency can be associated with two contributing variables: (1) the degree to which a subunit copes with uncertainty for other subunits, and (2) the extent to which a subunit's coping activities are substitutable. But if coping with uncertainty, and substitutability, are to be in some way related to power, there is a necessary assumption of some degree of task interconnection among subunits. By definition, organization requires a minimum link. Therefore, a third variable, centrality, refers to the varying degree above such a minimum with which the activities of a subunit are linked with those of other subunits.

Before these three variables can be combined in a theory of power, it is necessary to examine their definition and possible operationalization, and to define power in this context.

### Power

Hinings *et al.* (1967: 62) compared power to concepts such as bureaucracy or alienation or social class, which are difficult to understand because they tend to be treated as "large-scale unitary concepts." Their many meanings need disentangling. With the concept of power, this has not yet been accomplished (Cartwright, 1965), but two conceptualizations are commonly employed: (1) power as coercion, and (2) power as determination of behavior.

Power as coercive force was a comparatively early conceptualization among sociologists (Weber, 1947; Bierstedt, 1950). Later, Blau (1964) emphasized the imposition of will despite resistance.

However, coercion is only one among the several bases of power listed by French and Raven (1959) and applied across organizations by Etzioni (1961); that is, coercion is a means of power, but is not an adequate definition of power. If the direction of de-

pendence in a relationship is determined by an imbalance of power bases, power itself has to be defined separately from these bases. Adopting Dahl's (1957) concept of power, as many others have done (March, 1955; Bennis *et al.*, 1958; Emerson, 1962; Harsanyi, 1962; Van Doorn, 1962; Dahlstrom, 1966; Wrong, 1968; Tannenbaum, 1968; Luhmann, 1969), power is defined as the determination of the behavior of one social unit by another.

If power is the determination of A's behavior by B, irrespective of whether one, any, or all the types of bases are involved, then authority will here be regarded as that part of power which is legitimate or normatively expected by some selection of role definers. Authority may be either more or less than power. For subunits it might be represented by the formally specified range of activities they are officially required to undertake and, therefore, to decide upon.

Discrepancies between authority and power may reflect time lag. Perrow (1970) explored the discrepancy between respondent's perceptions of power and of what power should be. Perhaps views on a preferred power distribution precede changes in the exercise of power, which in turn precede changes in expectations of power, that is in its legitimate authority content. Perhaps today's authority hierarchy is partly a fossilized impression of yesterday's power ranking. However this may be, it is certainly desirable to include in any research not only data on perceived power and on preferred power, but also on positional power, or authority, and on participation, or exercised power (Clark [ed.], 1968).

Kaplan (1964) succinctly described three dimensions of power. The weight of power is defined in terms of the degree to which B affects the probability of A behaving in a certain way, that is, determination of behavior in the sense adopted here. The other dimensions are domain and scope. Domain is the number of A's, persons or collectivities, whose behavior is determined; scope is the range of behaviors of each A that are determined. For subunit power within an organization, domain might be the number of other subunits affected by the issues,

scope the range of decision issues affected, and weight the degree to which a given subunit affects the decision process on the issues. In published research such distinctions are rarely made. Power consists of the sweeping undifferentiated perceptions of respondents when asked to rank individuals or classes of persons, such as supervisors, on influence. Yet at the same time the complexity of power in organizations is recognized. If it is taken for granted that, say, marketing has most to do with sales matters, that accounting has most to do with finance matters, supervisors with supervisory matters, and so on, then the validity of forcing respondents to generalize single opinions across an unstated range of possibilities is questionable.

To avoid these generalized opinions, data collected over a range of decision topics or issues are desirable. Such issues should in principle include all recognized problem areas in the organization, in each of which more than one subunit is involved. Examples might be marketing strategies, obtaining equipment, personnel training, and capital budgeting.

Some suggested subvariables and indicators of power and of the independent variables are summarized in Table 1. These are

TABLE 1. VARIABLES AND OPERATIONALIZABLE SUBVARIABLES

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<i>Power</i> (weight, domain, scope)
Positional power (authority)
Participation power
Perceived power
Preferred power
<i>Uncertainty</i>
Variability of organizational inputs
Feedback on subunit performance;
Speed
Specificity
Structuring of subunit activities
<i>Coping with uncertainty</i> , classified as:
By prevention (forestalling uncertainty)
By information (forecasting)
By absorption (action after the event)
<i>Substitutability</i>
Availability of alternatives
Replaceability of personnel
<i>Centrality</i>
Pervasiveness of workflows
Immediacy of workflows

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intended to include both individual perceptions of power in the form of questionnaire responses and data of a somewhat less subjective kind on participation in decision processes and on formal position in the organization.

It is now possible to examine coping with uncertainty, substitutability and centrality.

### Uncertainty and Coping with Uncertainty

Uncertainty may be defined as a lack of information about future events, so that alternatives and their outcomes are unpredictable. Organizations deal with environmentally derived uncertainties in the sources and composition of inputs, with uncertainties in the processing of throughputs, and again with environmental uncertainties in the disposal of outputs. They must have means to deal with these uncertainties for adequate task performance. Such ability is here called coping.

In his study of the French tobacco manufacturing industry, Crozier (1964: 164) suggested that power is related to "the kind of uncertainty upon which depends the life of the organization." March and Simon (1958) had earlier made the same point, and Perrow (1961) had discussed the shifting domination of different groups in organizations following the shifting uncertainties of resources and the routinization of skills. From studies of industrial firms, Perrow (1970) tentatively thought that power might be due to uncertainty absorption, as March and Simon (1958) call it. Lawrence and Lorsch (1967b) found that marketing had more influence than production in both container-manufacturing and food-processing firms, apparently because of its involvement in (uncertain) innovation and with customers.

Crozier (1964) proposed a strategic model of organizations as systems in which groups strive for power, but his discussion did not clarify how uncertainty could relate positively to power. Uncertainty itself does not give power: coping gives power. If organizations allocate to their various subunits task areas that vary in uncertainty, then those subunits that cope most effectively with the most uncertainty should have most power within the organization,

since coping by a subunit reduces the impact of uncertainty on other activities in the organization, a shock absorber function. Coping may be by prevention, for example, a subunit prevents sales fluctuations by securing firm orders; or by information, for example, a subunit forecasts sales fluctuations; or by absorption, for example, a drop in sales is swiftly countered by novel selling methods (Table 1). By coping, the subunit provides pseudo certainty for the other subunits by controlling what are otherwise contingencies for other activities. This coping confers power through the dependencies created.

Thus organizations do not necessarily aim to avoid uncertainty nor to reduce its absolute level, as Cyert and March (1963) appear to have assumed, but to cope with it. If a subunit can cope, the level of uncertainty encountered can be increased by moving into fresh sectors of the environment, attempting fresh outputs, or utilizing fresh technologies.

Operationally, raw uncertainty and coping will be difficult to disentangle, though theoretically the distinctions are clear. For all units, uncertainty is in the raw situation which would exist without the activities of the other relevant subunits, for example, the uncertainty that would face production units if the sales subunit were not there to forecast and/or to obtain a smooth flow of orders. Uncertainty might be indicated by the variability of those inputs to the organization which are taken by the subunit. For instance, a production subunit may face variability in raw materials and engineering may face variability in equipment performance. Lawrence and Lorsch (1967a) attempted categorizations of this kind. In addition, they (1967a: 14) gave a lead with "the time span of definitive feedback from the environment." This time span might be treated as a secondary indicator of uncertainty, making the assumption that the less the feedback to a subunit on the results of what it is doing, and the less specific the feedback, the more likely the subunit is to be working in a vague, unknown, unpredictable task area. Both speed and specificity of feedback are suggested variables in Table 1.

Furthermore, the copious literature on bureaucratic or mechanistic structures versus more organic and less defined structures could be taken to imply that routinized or highly structured subunits, for example, as conceptualized and measured by Pugh *et al.* (1968), will have stable homogeneous activities and be less likely to face uncertainty. This assumption would require empirical testing before structuring of activities could be used as an indicator of uncertainty, but it is tentatively included in Table 1.

In principle, coping with uncertainty might be directly measured by the difference between the uncertainty of those inputs taken by a subunit and the certainty with which it performs its activities nonetheless. This would indicate the degree of shock absorption.

The relation of coping with uncertainty to power can be expressed by the following hypothesis:

*Hypothesis 1.* The more a subunit copes with uncertainty, the greater its power within the organization.

The hypothesis is in a form which ignores any effects of centrality and substitutability.

### Substitutability

Concepts relating to the availability of alternatives pervade the literature on power. In economics theory the degree of competition is taken as a measure of the extent to which alternatives are available from other organizations, it being implied that the power of an organization over other organizations and customers is a function of the amount of competition present. The same point was the second part of Emerson's (1962) power-dependency scheme in social relations, and the second requirement or determinant in Blau's (1964) model of a power relationship.

Yet only Mechanic (1962) and Dubin (1957, 1963) have discussed such concepts as explanations of organizational power. Mechanic's (1962: 358) hypothesis 4 stated: "Other factors remaining constant, a person difficult to replace will have greater power than a person easily replaceable." Dubin (1957) stressed the very similar notion of

exclusiveness, which as developed later (Dubin, 1963: 21), means that: "For any given level of functional importance in an organization, the power residing in a functionary is inversely proportional to the number of other functionaries in the organization capable of performing the function." Supporting this empirically, Lipset *et al.* (1956) suggested that oligarchy may occur in trade unions because of the official's monopoly of political and negotiating skills.

The concept being used is represented here by the term substitutability, which can, for subunits, be defined as the ability of the organization to obtain alternative performance for the activities of a subunit, and can be stated as a hypothesis for predicting the power of a subunit as follows:

*Hypothesis 2.* The lower the substitutability of the activities of a subunit, the greater its power within the organization. Thus a purchasing department would have its power reduced if all of its activities could be done by hired materials agents, as would a personnel department if it were partially substituted by selection consultants or by line managers finding their staff themselves. Similarly, a department may hold on to power by retaining information the release of which would enable others to do what it does.

The obvious problem in operationalization is establishing that alternative means of performing activities exist, and if they do, whether they could feasibly be used. Even if agents or consultants exist locally, or if corporation headquarters could provide services, would it really be practicable for the organization to dispense with its own subunit? Much easier to obtain are data on replaceability of subunit personnel such as length of training required for new recruits and ease of hiring, which can be regarded as secondary indicators of the substitutability of a subunit, as indicated in Table 1.

### Centrality

Given a view of organizations as systems of interdependent roles and activities, then the centrality of a subunit is the degree to which its activities are interlinked into the system. By definition, no subunit of an organization can score zero centrality. With-

out a minimum of centrality, coping with uncertainty and substitutability cannot affect power; above the minimum, additional increments of centrality further differentiate subunit power. It is the degree to which the subunit is an interdependent component, as Thompson (1967: 54) put it, distinguishing between pooled, sequential, and reciprocal interdependence patterns. Blau and Scott (1962) made an analogous distinction between parallel and interdependent specialization. Woodward (1965: 126) also introduced a concept of this kind into her discussion of the critical function in each of unit, large batch and mass, and process production: "there seemed to be one function that was central and critical in that it had the greatest effect on success and survival."

Within the overall concept of centrality, there are inconsistencies which indicate that more than one constitutive concept is being used. At the present stage of conceptualization their identification must be very tentative. First, there is the idea that the activities of a subunit are central if they are connected with many other activities in the organization. This workflow pervasiveness may be defined as the degree to which the workflows of a subunit connect with the workflows of other subunits. It describes the extent of task interactions between subunits, and for all subunits in an organization it would be operationalized as the flowchart of a complete systems analysis. For example, the integrative subsystems studied by Lawrence and Lorsch (1967a: 30), "whose members had the function of integrating the sales-research and the production-research subsystems" and which had structural and cultural characteristics intermediate between them, were presumably high on workflow pervasiveness because everything they did connected with the workflows of these several other subsystems. Research subsystems, however, may have been low on this variable if they fed work only to a single integrative, or production, subsystem.

Secondly, the activities of a subunit are central if they are essential in the sense that their cessation would quickly and substantially impede the primary workflow of the

organization. This workflow immediacy is defined as the speed and severity with which the workflows of a subunit affect the final outputs of the organization. Zald (1962) and Clark (1956) used a similar idea when they explained differential power among institution staff and education faculty by the close relation of their activities to organization goals.

The pervasiveness and immediacy of the workflows of a subunit are not necessarily closely related, and may empirically show a low correlation. A finance department may well have pervasive connections with all other subunits through the budgeting system, but if its activities ceased it would be some time before the effects were felt in, say, the production output of a factory; a production department controlling a stage midway in the sequence of an automated process, however, could have high workflow immediacy though not high pervasiveness.

The two main centrality hypotheses can therefore be stated as follows:

*Hypothesis 3a.* The higher the pervasiveness of the workflows of a subunit, the greater its power within the organization.

*Hypothesis 3b.* The higher the immediacy of the workflows of a subunit, the greater its power within the organization.

### CONTROL OF CONTINGENCIES

Hypotheses relating power to coping with uncertainty, substitutability, and the subvariables of centrality have been stated in a simple single-variable form. Yet it follows from the view of subunits as interdependent parts of organizational systems that the hypotheses in this form are misleading. While each hypothesis may be empirically upheld, it is also hypothesized that this cannot be so without some values of both the other main independent variables. For example, when a marketing department copes with a volatile market by forecasting and by switching sales staff around to ensure stable orders, it acquires power only because the forecast and the orders are linked to the workflow of production, which depends on them. But even then power would be limited by the availability of a successful local marketing agency which could be hired by the organization, and the fact that

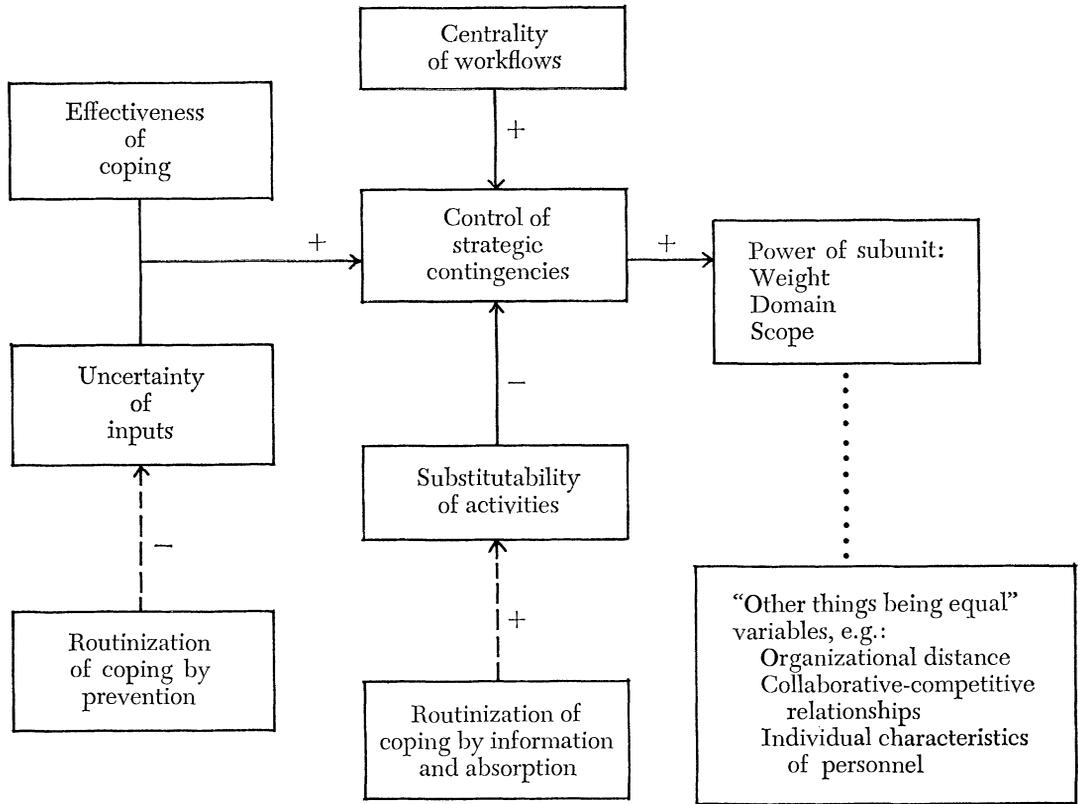
salesmen were low skilled and easily replaceable.

To explain this interrelationship, the concept of control of contingencies is introduced. It represents organizational interdependence; subunits control contingencies for one another's activities and draw power from the dependencies thereby created. As a hypothesis:

*Hypothesis 4.* The more contingencies are controlled by a subunit, the greater its power within the organization.

A contingency is a requirement of the activities of one subunit which is affected by the activities of another subunit. What makes such a contingency strategic, in the sense that it is related to power, can be deduced from the preceding hypotheses. The independent variables are each necessary but not sufficient conditions for control of strategic contingencies, but together they determine the variation in interdependence between subunits. Thus contingencies controlled by a subunit as a consequence of its coping with uncertainty do not become strategic, that is, affect power, in the organization without some (unknown) values of substitutability and centrality. A strategic contingencies theory of power is therefore proposed and is illustrated by the diagram in Figure 1.

In terms of exchange theory, as developed by Blau (1964), subunits can be seen to be exchanging control of strategic contingencies one for the other under the normative regulation of an encompassing social system, and acquiring power in the system through the exchange. The research task is to elucidate what combinations of values of the independent variables summarized in hypotheses 1-3 allow hypothesis 4 to hold. Ultimately and ideally the aim would be to discover not merely the weightings of each in the total effect upon power, but how these variables should be operationally interrelated to obtain the best predictions. More of one and less of another may leave the resulting power unchanged. Suppose an engineering subunit has power because it quickly absorbs uncertainty by repairing breakdowns which interfere with the different workflows for each of several organization outputs. It is moderately central and non-



—————→ Direct relationship with power; - - - - - indirect relationship with power; ..... relationship with power other than by control of contingencies.

FIGURE 1. THE STRATEGIC CONTINGENCIES THEORY AND ROUTINIZATION

substitutable. A change in organization policy bringing in a new technology with a single workflow leading to a single output would raise engineering's centrality, since a single breakdown would immediately stop everything, but simultaneously the uncertainty might be reduced by a maintenance program which all but eliminates the possibility of such an occurrence.

Though three main factors are hypothesized, which must change if power is to change, it is not assumed that all subunits will act in accord with the theory to increase their power. This has to be demonstrated. There is the obvious possibility of a cumulative reaction in which a subunit's power is used to preserve or increase the uncertainty it can cope with, or its centrality, or to prevent substitution, thereby increasing

its power, and so on. Nor is it argued that power or authority are intentionally allocated in terms of the theory, although the theory is open to such an inference.

**Routinization**

Most studies that refer to uncertainty contrast is with routinization, the prior prescription of recurrent task activities. Crozier (1964) held that the power of the maintenance personnel in the tobacco plants was due to all other tasks being routinized. A relative decline in the power of general medical personnel in hospitals during this century is thought to be due to the routinization of some tasks, which previously presented uncertainties which could be coped with only by a physician, and the transfer

of these tasks to relatively routinized subunits, such as inoculation programs, mass X-ray facilities, and so on (Perrow, 1965; Gordon and Becker, 1964). Crozier (1964: 165) crystallized the presumed effects of routinization; "But the expert's success is constantly self-defeating. The rationalization process gives him power, but the end results of rationalization curtail his power. As soon as a field is well covered, as soon as the first intuitions and innovations can be translated into rules and programs, the expert's power disappears."

The strategic contingencies' theory as developed in Figure 1 clarifies this. It suggests that research has been hampered by a confusion of two kinds of routinization, both of which are negatively related to power but in different ways. Routinization may be (*a*) of coping by prevention, which prevents the occurrence of uncertainty; and (*b*) of coping by information or absorption which define how the uncertainty which does occur shall be coped with.

Preventive routinization reduces or removes the uncertainty itself, for example, planned maintenance, which maintenance in Crozier's (1964) tobacco factories would have resisted; inoculation or X-ray programs; and long-term supply contracts, so that the sales staff no longer have to contend with unstable demand. Such routinization removes the opportunity for power, and it is this which is self-defeating (Crozier, 1964: 165) if the expert takes his techniques to a point when they begin not only to cope but to routinely diminish the uncertainty coped with. Thus reducing the uncertainty is not the same as reducing the impact of uncertainty. According to the hypothesis, a sales department which transmits steady orders despite a volatile market has high power; a sales department which reduces the uncertainty itself by long-term tied contracts has low power.

Routinization of coping by information and absorption is embodied in job descriptions and task instructions prescribing how to obtain information and to respond to uncertainty. For maintenance personnel, it lays down how to repair the machine; for physicians, it lays down a standard procedure for examining patients and sequences of reme-

dies for each diagnosis. How does this affect power, since it does not eliminate the uncertainty itself, as preventive routinization does? What it does is increase substitutability. The means of coping become more visible and possible substitutes more obvious, even if those substitutes are unskilled personnel from another subunit who can follow a standard procedure but could not have acquired the previously unexpressed skills.

There is probably some link between the two kinds of routinization. Once preventive routinization is accomplished, other coping routinization more easily follows, as indeed it follows any reduction of uncertainty.

### STUDIES OF SUBUNIT POWER

#### Testing of Hypotheses on Earlier Work

The utility of the strategic contingencies theory should be tested on published work, but it is difficult to do this adequately, since most studies stress only one possibility. For example, Crozier (1964) and Thompson (1967) stressed uncertainty, Dubin (1963) stressed exclusiveness of function, and Woodward (1965) spoke of the critical function.

The difficulty is also due to the lack of data. For example, among several studies in which inferences about environmental uncertainty are drawn, only Lawrence and Lorsch (1967b) presented data. They combine executive's questionnaire responses on departmental clarity of job requirements, time span of definitive feedback on departmental success in performance, and uncertainty of cause and effect in the department's functional area.

Lawrence and Lorsch (1967b: 127) found that in two food-processing organizations, research was most influential, then marketing, excluding the field selling unit, and then production. However, influence, or perceived power as it is called here, was rated on the single issue of product innovation and not across a range of issues as suggested earlier in this paper; validity therefore rests on the assumption of equal potential involvement of each function in this one issue. Would research still be most influential if the issues included equipment purchase, or capital budgeting, or personnel training? Even so, on influence over product

innovation, an uncertainty hypothesis could be said to fit neatly, since the subunits were ordered on perceived uncertainty of sub-environment exactly as they were on influence.

But uncertainty alone would not explain power in the other firms studied. Although in six plastics firms, coordinating sections or integrating units were perceived as having more influence than functional subunits because "integration itself was the most problematic job" (Lawrence and Lorsch 1967b: 62), it was also a central job in terms of workflow pervasiveness.

Furthermore, in two container manufacturing organizations, although the market subenvironment was seen as the least uncertain, the sales subunit was perceived as the most influential (Lawrence and Lorsch 1967b: 111). An explanation must be sought in the contingencies that the sales subunit controls for production and for research. In this industry, outputs must fit varying customer requirements for containers. Scheduling for production departments and design problems for research departments are therefore completely subject to the contingencies of orders brought in by the sales department. Sales has not only the opportunity to cope with such uncertainty as may exist over customer requirements, it is highly central; for its activities connect it directly to both the other departments—workflow pervasiveness—and if it ceased work production of containers would stop—workflow immediacy. The effects of centrality are probably bolstered by nonsubstitutability, since the sales subunit develops a necessary particularized knowledge of customer requirements. Production and research are, therefore, comparatively powerless in face of the strategic contingencies controlled by the sales subunit.

In short, only a sensitive balancing of all three factors can explain the patterns of contingencies from which power strategically flows.

This is plain also in Crozier's (1964) insightful study of small French tobacco-manufacturing plants. Crozier (1964: 109) had the impression that the maintenance engineers were powerful because "machine stoppages are the only major happenings that

cannot be predicted"; therefore the engineers had (Crozier, 1964: 154) "control over the last source of uncertainty remaining in a completely routinized organizational system." But this is not enough for power. Had it been possible to contract maintenance work to consulting engineers, for example, then programs of preventive maintenance might have been introduced, and preventive routinization would have removed much of the uncertainty. However, it is likely that union agreements ensured that the plant engineers were nonsubstitutable. In addition, in these small organizations without specialist control and service departments, the maintenance section's work linked it to all production subunits, that is, to almost every other subunit in the plant. So workflow pervasiveness was high, as was workflow immediacy, since cessation of maintenance activities would quickly have stopped tobacco outputs. The control of strategic contingencies which gave power to the engineers has to be explained on all counts and not by uncertainty alone.

Crozier's (1964) study is a warning against the facile inference that a power distribution fitting the strategic contingencies theory is necessarily efficient, or rational, or functional for an organization; for the power of the engineers to thwart the introduction of programmed maintenance was presumably neither efficient, rational, nor functional.

A challenge to the analysis made is presented by Goldner's (1970) description of a case where there was programmed maintenance and yet the maintenance section held power over production. Goldner (1970) attributed the power of the maintenance subunit to knowing how to install and operate such programs, to coping with breakdowns as in the Crozier (1964) cases, and to knowing how to cope with a critical problem of parts supplies. The strategic contingencies theory accords with his interpretation so long as knowing how to install a program takes effect as coping with uncertainty and not yet as preventive routinization which stops breakdowns. This is where an unknown time element enters to allow for changes in the variables specified and in any associated variables not yet defined. For

a time, knowing the answer to an uncertainty does confer power, but the analyses of routinization derived from the theory, as shown in Figure 1, suggests that if this becomes successful preventive routinization, it takes a negative effect upon power. The net result for power in Goldner's (1970) case would then be from the interplay of the opposed effects of activities some of which are preventively routinized, thus decreasing power, and some of which continue to be nonroutine, thus increasing power.

On the other hand, Goldner's (1970) description of the powerful industrial relations subunit in the same plant clearly supports the strategic contingencies theory by showing that coping with uncertainty, centrality, and substitutability had the effect predicted here. The industrial relations subunit exploited uncertainty over the supply and cost of personnel, which arose from possible strikes and pay increases, by (Goldner, 1970: 104) "use of the union as an outside threat." It coped effectively by its nonroutinized knowledge of union officials and of contract interpretation; and its activities were centrally linked to those of other subunits by the necessity for uniform practice on wages and employment. Industrial relations staff developed nonsubstitutable interpersonal and bargaining skills.

There are no means of assessing whether the univariate stress on uncertainty in the handful of other relevant studies is justified. Perrow (1970) explained the greater perceived power of sales as against production, finance, and research, in most of 12 industrial firms, by the concept of uncertainty absorption (March and Simon, 1958). Sales was strategic with respect to the environment. Is the one case where it came second to production the only case where it was also substitutable? Or not central?

White (1961) and Landsberger (1961) both suggested that power shifts over periods of time to follow the locus of uncertainty. Both studied engineering factories. From the histories of three firms, Landsberger (1961) deduced that when money was scarce and uncertain, accounting was powerful; when raw materials were short, purchasing was powerful; and, conversely, when demand was insatiable sales were

weakened. In the Tennessee Valley Authority, a nonmanufacturing organization, Selznick (1949) attributed the eventual power of the agricultural relations department to its ability to cope with the uncertain environmental threat represented by the Farm Bureau.

Yet while these earlier studies emphasized uncertainty in one way or another, others called attention to substitutability and probably also to centrality. Again the implication is that contingencies are not strategically controlled without some combination of all three basic variables. For example, the engineers described by Strauss (1962, 1964) appeared to have more power than purchasing agents because the latter were substitutable, that is, the engineers can set specifications for what was to be bought even though the purchasing agents considered this their own responsibility. Thompson (1956: 300) attributed variations in perceived power within and between two U.S. Air Force wings to the changing "technical requirements of operations," which may have indicated changing centralities and substitutabilities.

In the absence of data, consideration of further different kinds of organization must remain pure speculation, for example, the power of surgical units in hospitals, the power of buyers in stores, the power of science faculties in universities.

### Other Variables Affecting Power

In order that it can be testable, the strategic contingencies theory errs on the side of simplicity. Any theory must start with a finite number of variables and presume continual development by their alteration or deletion, or by the addition of new variables. As stated, the theory uses only those variables hypothesized to affect power by their contribution to the control of contingencies exercised by a subunit. Other possible explanations of power are not considered. This in itself is an assumption of the greater explanatory force of the theory. Blalock (1961: 8) put the problem clearly: "The dilemma of the scientist is to select models that are at the same time simple enough to permit him to think with the aid of the model but also sufficiently realistic that the simplifica-

tions required do not lead to predictions that are highly inaccurate."

In recognition of this, Figure 1 includes several "other things being equal" variables as they are called, that may affect power, but are assumed to do so in other ways than by control of contingencies. One such range of possible relevant variables is qualities of interdepartmental relationships, such as competitiveness versus collaborativeness (Dutton and Walton, 1966). Does the power exercised relate to the style of the relationship through which the power runs? Another possibility is pinpointed by Stymne (1968: 88): "A unit's influence has its roots partly in its strategical importance to the company and partly in nonfunctional circumstances such as tradition, or control over someone in top management through, for example, family relationship." The tradition is the status which may accrue to a particular function because chief executives have typically reached the top through it. Many case studies highlight the personal links of subunits with top personnel (Dalton, 1959; Gouldner, 1955). The notion might be entitled the organizational distance of the subunit, a variant of social distance.

Finally, but perhaps most important, individual differences must be accepted, that is, differences in the intelligence, skills, ages, sexes, or personality factors such as dominance, assertiveness, and risk-taking propensity, of personnel in the various subunits.

### CONCLUSION

The concept of work organizations as interdepartmental systems leads to a strategic contingencies theory explaining differential subunit power by dependence on contingencies ensuing from varying combinations of coping with uncertainty, substitutability, and centrality. It should be stressed that the theory is not in any sense static. As the goals, outputs, technologies, and markets of organizations change so, for each subunit, the values of the independent variables change, and patterns of power change.

Many problems are unresolved. For example, does the theory implicitly assume perfect knowledge by each subunit of the contingencies inherent for it in the activities of the others? Does a workflow of informa-

tion affect power differently to a workflow of things? But with the encouragement of the improved analysis given of the few existing studies, data can be collected and analyzed, hopefully in ways which will afford a direct test.

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