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Interdependence: An Alternative Conceptualization

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Conceptualizations of interdependence offered by Thompson (1967) and McCann and Ferry (1979) fail to satisfy basic requirements for empirical or practical investigations of complex organizations. An alternative conceptualization based on interdependence theory (Kelley & Thibaut, 1978; Thibaut & Kelley, 1959) is presented here and used to explain the causes of interunit conflict and the effectiveness of coordination strategy. Hypotheses are presented, and future research is proposed.

Units within organizations remain to a greater or lesser degree interdependent as a necessary consequence of the division of labor. While the determinants of the division of labor have been extensively investigated, less attention has been paid to the consequences of that division. In particular, the effects of the interdependence between work units have not been adequately investigated (Jones, 1984; McCann & Galbraith, 1981). It is argued here that expanding our knowledge of interdependence requires a more fully developed interdependence *construct*. This paper critiques the development and operationalization of this construct and offers an alternative based on interdependence theory (Kelley & Thibaut, 1978; Thibaut & Kelley, 1959).

Lewin (1951) described constructs as tools used to solve problems. As a tool, the more developed the construct, the more effective it can be in problem solving. Such development entails first defining the basic conceptual elements of constructs. By so defining constructs, related constructs can be distinguished and instances of the same construct can be compared. In the case of interunit interdependence this construct should enable one to (a) compare the effects of different amounts of interdependence in organizations, and (b) distinguish between interdependence and other concomitant consequences of the division of labor. Neither of the constructs currently offered in the literature meet these minimum criteria.

Current Interdependence Constructs

Thompson's Construct

Thompson (1967) identified three patterns of work flow that can exist between units, each representing a different *intensity* or *degree of linkage* between units.

Pooled interdependence represents an absence of work flow between units. Each unit uses independent inputs and makes independent contributions to the organization. Serial interdependence represents a unidirectional exchange pattern where each unit's inputs are the outputs from another unit and similarly, each unit's outputs are another unit's inputs. Reciprocal interdependence represents a contingent pattern in the work flow where each unit's inputs are its

own outputs, recycled through other units. Thompson conceptualized interdependence as the extent to which the relationship between work units could be characterized by one of these types of interdependence.

McCann and Ferry's Construct

The second interdependence construct is based on an analysis of the *transactions* or *exchanges* between work units (McCann & Ferry, 1979). McCann and Ferry conceptualized interdependence in terms of the characteristics of the resources exchanged between work units. They operationalized interdependence as an additive function of number of resources exchanged, amount of each resource, frequency of transaction, amount of time before loss of resource has an impact on the unit, and the value of the resources to the unit.

Limitations of the Current Constructs

Each of these approaches has been used in organization theory. (For reviews of the empirical research on interdependence, see Fry, 1982, and McCann and Galbraith, 1981.) Nevertheless, it can be argued that neither construct meets Lewin's criteria. In particular, the constructs preclude an empirical assessment of *differing amounts* of interdependence.

For instance, while Thompson's construct suggests an operationalization of interdependence, it is at best an ordinal scale. Thompson proposed that the amount of interdependence in a pooled process is less than the amount of interdependence in a serial process. Further, both pooled and serial processes signify less interdependence than a reciprocal process, but *how much* more or less interdependence characterizes the differences between the processes is not specified. McCann and Galbraith (1981) challenged the utility of Thompson's construct by asking, "are three pooled interdependencies greater or less than one reciprocal interdependency?" (p. 64). This ambiguity in Thompson's development limits the effectiveness of his construct as a tool for solving problems in organizations.

While McCann and Ferry (1979) specified a less ambiguous metric in their work, they used only work flow exchange to develop their construct. They did not incorporate reciprocal interdependence into their metric of interdependence. For example, in addition to depending on a purchasing unit for raw materials, a production unit also may need materials delivered at specific times during production. A failure to coordinate shipping and receiving schedules might be as serious a problem for the production unit as a failure to deliver the materials at all. However, McCann and Ferry do not explicitly include a measure of such interdependence based on contingent or reciprocal requirements. As a result, their construct cannot accurately represent amounts of interdependence.

An Alternative Construct

Interdependence theory (Kelley & Thibaut, 1978; Thibaut & Kelley, 1959) provides an alternative framework for conceptualizing interdependence. Constructs developed from this framework can differentiate explicitly between levels of interdependence. Further, such constructs can permit precise distinctions between amounts of interdependence and other concomitant consequences of the division of labor. With constructs so derived, critical characteristics of the relations between work units can be compared and contrasted.

Interdependence Theory

Interdependence theory has provided one of the major theoretical frameworks for social psychology since its original formulation in 1959 (Allport, 1985). Since that time, interdependence theory has been applied to the study of a wide range of dyadic and intergroup phenomena including bargaining behavior (e.g., Kelley & Stahelski, 1970; Pruitt, 1970), conflict resolution (e.g., Deutsch, 1973), and the evolution of intergroup relationships (e.g., Insko et al., 1980, 1982). Applying interdependence theory to the study of organizational process was suggested by Weick (1979).

Interdependence theory proposes that the relationship between one work unit and another work unit(s) can be described in terms of three requirements for action: requirements for one's own actions, requirements for the actions of others, and requirements for joint action as dictated by the technological, environmental, organizational, and interpersonal determinants of work flow specified by the division and assignment of labor. From these types of requirements for action, a construct of interunit interdependence can be developed.

Framework for the Construct

The three requirements give interdependent units a specified degree of absolute and/or contingent control over their own and each other's performance. To the extent that Unit A requires an action by Unit B (e.g., delivery of materials, completion of a task), B can affect A's operations by either performing the required action or not. In this situation of simple exchange, interdependence theory asserts that B has fate control (FC) over A.

If A requires an action by B, contingent on A's own action (e.g., delivery of materials according to a production schedule, synchronized joint use of a machine), B again can affect A's performance by matching or not matching A's contingent response. Interdependence theory asserts that B has behavior control (BC) over A, because when B varies a behavior (action), it becomes preferable for A to vary a behavior.

Finally, to the extent that A can influence its own performance by taking a particular action (e.g., completing a task, stocking materials), it is described as having reflexive control (RC). From an interdependence theory perspective, any interunit relationship can be described in terms of A's fate and behavior control over B, B's fate and behavior control over A, and each unit's own reflexive control.

Like McCann and Ferry's (1979) approach, the unit of analysis is the work unit, represented by a manager and subordinates. The assumption is made that the outcomes of the work unit can be represented as outcome levels assessed by a manager. Such outcome levels are an operationalization of the complex factors affecting the subjective utility of any alternative. Factors such as goals (Bowen & Jones, 1986), exchange and coordination costs (Williamson, 1975), and political, strategic, and personal motivations (Jones, 1984; McClintock, 1972) may be incorporated in an assessment. How closely these outcomes correspond to the objective utility of such alternatives (Ford, 1979; Fry, 1982) remains an empirical question.

The work flow requirements of interdependent units can be represented through an interdependence matrix (see Figure 1). Each manager (A, B) has two possible actions (a1, a2, b1, b2) that would affect the performance of Unit A and the performance of Unit B. Although this theory permits explicit consideration of coalitions and other characteristics of multiple group behavior (e.g., Insko et al., 1982), only dyadic relationships are described here. Interdependence theory proposes that most of the fundamental processes of interdependence do not change as the number of interdependent parties or discrete actions are increased. Thus, the basic characteristics of interdependence can be represented in a relationship between two persons, each having two alternatives.

In Figure 1, the rows and columns of the matrix correspond to the actions of two units, A and

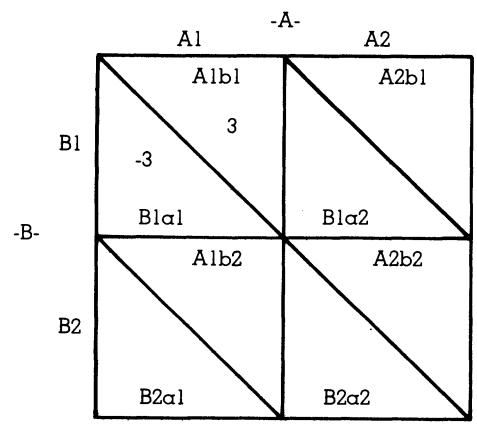

Figure 1. Example matrix.

B. The manager of A has two alternative actions, a1 or a2. The manager of B also has two alternative actions, b1 or b2. The matrix is divided into four cells, each representing one of the four possible action pairs (i.e., A1/B1, A1/B2, A2/B1, A2/B2). Each individual cell in the matrix is divided in half. Manager A's outcomes from a given pair of actions are represented in the top half of each cell, and Manager B's outcomes are represented in the bottom half of each cell. Manager A's outcomes from the pair of actions A1/B1 is represented in the area A1b1. Manager B's outcomes from the same pair of actions, A1/B1, is represented in the area B1a1.

The *numbers* entered in the matrix represent each manager's anticipated outcomes from each action pair. The magnitude of each number represents the relative outcome level (comparison level) for a given pair of actions, while the sign indicates the direction of the outcome. In Figure 1, Manager A's positive outcomes of 3 from the pair of actions A1/B1 is entered in the area A1b1, while Manager B's negative outcomes of 3 from the same pair of actions is entered in B1a1.

An Example of Interdependence Theory

A practical example is useful at this point. Consider the possible outcomes for a credit manager and a sales manager from each other's actions relative to an order from a *new* customer. The actions of the sales manager (Manager A) could be to approve (action a1) or disapprove (action a2) the order. The credit manager (Manager B) also either could approve (action b1) or disapprove (action b2) the order. If the new customer represents an unknown credit risk, an interdependence matrix can be used to graphically represent each manager's outcomes from his or her own actions and the actions of the other manager. If the sales manager is rewarded based on sales volume, he or she would prefer that the credit manager approve the order. The matrix in Figure 2 describes A as getting a positive outcome of 5 for B choosing action b1. This value appears in areas A1b1 *and* A2b1, because the outcome is not a condition of what the sales

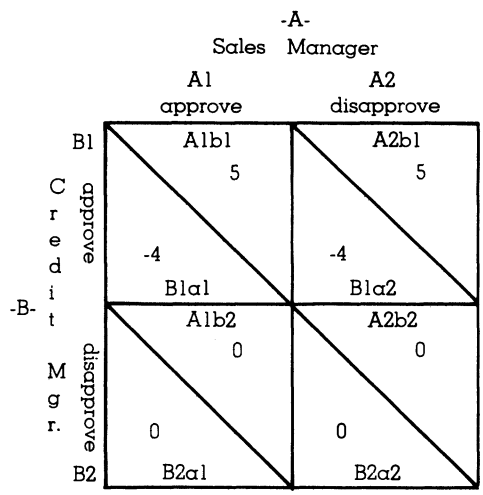

Figure 2. Example of fate and reflexive control.

manager does. From an interdependence theory perspective, A's outcomes from an action by B gives B fate control over A. Manager A's fate is controlled by whatever choice B makes.

If the credit manager wishes to keep bad debts to a minimum, a negative outcome of, say, 4 could result from approving the order (action b1) regardless of what the sales manager does. The matrix in Figure 2 portrays the credit manager as unconditionally receiving a -4 in areas B1a1 and B1a2. This gives B reflexive control, since B can provide positive outcomes by choosing B1 or can deny these outcomes by choosing B2. That is, by his/her own action or reflex, B controls his/her own outcomes.

As a third alternative, the credit manager might receive positive outcomes from coordinating actions with the sales manager. For instance, the credit manager might have assessed a positive outcome of 2 for approving orders which the sales manager approves and for disapproving orders that the sales manager disapproves. The outcomes from similar actions is represented by 2 entered in areas B1a1 and B2a2 in Figure 3. In this case, the outcomes received by the credit manager are contingent upon, but not determined by the actions of the sales manager. If the

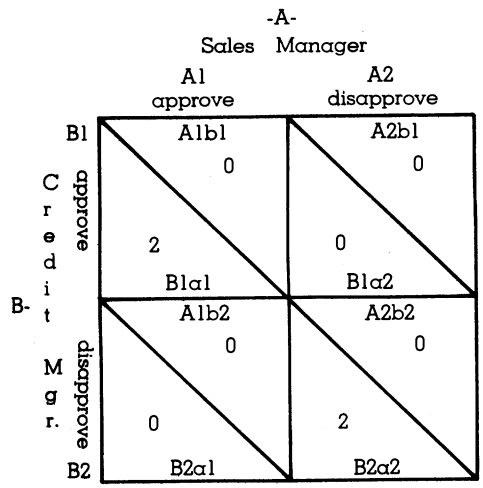

Figure 3. Example of behavior control.

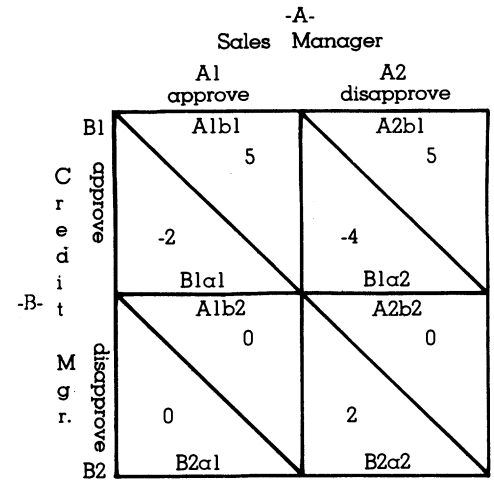

Figure 4. Example of resultant matrix.

sales manager approves the sales, in order to get positive outcomes the credit manager also must approve and vice versa. The contingent relationship between actions and outcomes represents the reciprocal nature of coordination requirements described by Thompson (1967). Within the interdependence theory framework, the contingent or reciprocal dependence of B's outcomes on the pair's joint action gives A behavior control over B. That is, since A chooses a1, this makes b1 preferable to B; by choosing a2, A makes b2 preferable to B.

A final or resultant matrix can be developed that represents all outcomes received by each manager from each pair of possible actions (see Figure 4). The resultant matrix contains the *sum* of all matrices that contain a particular type of outcome (i.e., outcomes from one's own, other's, and joint actions) for each manager. Assuming a manager will seek to maximize possible outcomes, his/her choice of action can be inferred from this matrix.

An Alternative Interdependence Construct

Within this theoretical framework, the amount of interunit interdependence is defined as *the extent to which a unit's outcomes are controlled directly by or are contingent upon the actions of another unit.* The degree of interdependence between any two units can be described by an index calculated from the components of the matrix. The index of dependence (ID) is calculated as the sum of the squares of a unit's outcomes *controlled* by another unit's actions (FC), and those outcomes *contingent* on the actions of another unit (BC); divided by the sum of the squares of all of a unit's outcomes (RC, BC, and FC). The formula for the index of dependence for Unit A is presented in Figure 5. As the amount of fate and behavior control increases, relative to the amount of reflexive control, the index increases from zero (completely independent) to 1.0 (completely dependent).

In the above example the index of dependence for the sales manager (A) is 1.0, indicating that his or her actions are completely dependent on those of the credit manager. In the example, she/he was described as subject only to fate control by the credit manager. The index is .33 (moderately independent) for the credit manager (B). In the example, the credit manager is described as having strong reflexive control and being subject to relatively weaker behavior control by the sales manager.

This construction of interdependence can be used to represent Thompson's typology. The lack of interaction between units in pooled interdependence can be represented as a matrix in

$$\text{A's Dependence} = \frac{(FC\alpha^2 + BC\alpha^2)}{(RC\alpha^2 + BC\alpha^2 + FC\alpha^2)}$$

Where:
RCα = A's reflexive control
BCα = Behavior control over A
FCα = Fate control over A

Figure 5. Formula for index of dependence.

which both units only have reflexive control. By adding fate controls to that matrix, the direct and noncontingent effects of unit action which distinguish serial interdependence can be represented. Finally, by adding behavior control, the contingent effects which distinguish reciprocal interdependence can be represented. Interdependence theory can readily capture the "Guttman scale" quality of Thompson's typology. It also offers an explicit metric for comparing levels of interdependence, which Thompson's typology lacks.

The elements used by McCann and Ferry can be incorporated as factors contributing to the magnitude of the utility of a given action. Frequency, amount, and criticality of resources exchanged are arguably central determinants of the importance of an action. Thus interdependence theory allows incorporation of the ideas of Thompson and McCann and Ferry without their limitations.

It has been demonstrated then that interdependence theory can describe different amounts of interunit interdependence. In so doing, the construct satisfies Lewin's first requirement. It must, however, be demonstrated that the proposed interdependence construct can satisfy Lewin's second requirement, that it can be differentiated from related constructs. One such related construct is interunit conflict. When labor is divided, the structure of the consequent relations between units creates some potential for interunit conflict (Jones, 1984; Lawrence & Lorsch, 1967; Thompson, 1967).

Applying the New Construct

Determinants of Interunit Conflict

Consider the credit and sales managers reviewing two orders—one from a reliable customer, the other from a questionable customer. In the case of the customer of questionable repute, the sales manager wants to approve the order, but the credit manager wants to disapprove it. The sales manager wants the credit manager to approve the order, and the credit manager wants the sales manager to disapprove it. The interdependence between the two managers is represented as matrix X in Figure 6. In matrix X both the sales manager (A) and the credit manager (B) are subject to fate control (3) and have reflexive control (6). In this case, the fate control and reflexive control are noncorrespondent. Each manager prefers that the other choose his or her own least preferred option. In this situation, there is a conflict between what each manager wants to do and what the other wishes him or her to do.

In the case of the reliable customer, both the credit and sales manager want to approve the order, and both would prefer that the other manager approve the order as well. The situation can be represented by matrix Y in Figure 6. As in matrix X, both Managers A and B also are subject to fate control (3) and have reflexive control (6). However, in this case, the fate control and reflexive control are correspondent. Each manager prefers to do what the other wants the manager to do. Thus, in this situation there is no conflict between the two managers, where there was such conflict in the first case.

It is at this point that the inadequacy of the current constructs becomes most apparent. Lewin (1951, p. 37) stated that related constructs should be derivable from distinct functions of common elements. Only constructs so derived can be distinguished *precisely* from one another and their effects compared. Both Thompson's, and McCann and Ferry's constructs fail to meet this requirement. Neither the pattern of work flow

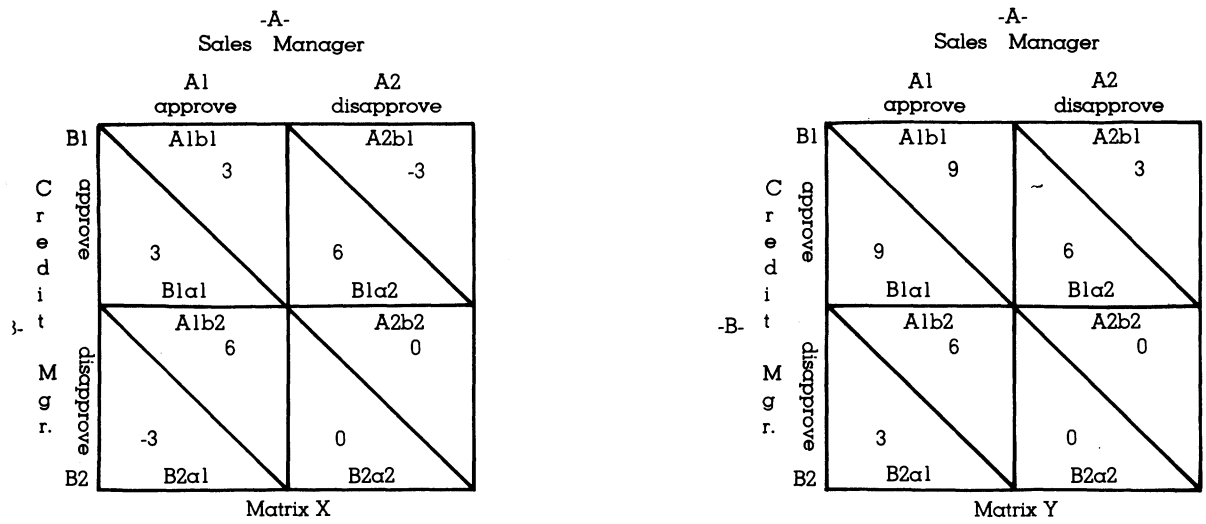

Figure 6. Examples (respectively) of noncorrespondence (matrix X) and correspondence (matrix Y).

nor the volume of transactions can be used to specify the amount of interunit conflict. Both Thompson and McCann and Ferry assumed that "the probability of conflict among positions or groups is directly proportional to their degree of interdependence" (Thompson, 1967, p. 60). While interdependence is a necessary condition for conflict to occur, the above example demonstrates that interdependence is not a sufficient condition.

With the new construct, the level of interunit conflict created by the division of labor can be determined from the pattern of outcomes represented in the matrix. The difference of interest between two parties can be measured by the *index of correspondence* developed by Kelley and Thibaut (1978). The index distinguishes between relationships in which the differences between units' outcomes are great (high conflict of interest) and relationships in which the sums of the outcomes for both units is great (high commonality of interest). The index of correspondence (IC) can be calculated for each matrix using the formula presented in Figure 7. Matrices become increasingly noncorrespondent as the index value moves from 0 to -1, and increasingly correspondent as the index moves from 0 to +1.

Using the above formula, the index of correspondence for matrix X is -.8, and for matrix Y it is +.8. In matrix X, the outcomes for the two managers are highly noncorrespondent, and conflict is likely, while in matrix Y the outcomes for the two managers are highly correspondent and such conflict is unlikely.

The elements used in calculating the index of correspondence are the ones used in calculating the index of dependence. Thus, the proposed constructs can be used to distinguish between the amount of interdependence and the amount of conflict between units as Lewin prescribed.

Interdependence theory offers a basis for reconceptualizing and operationalizing interunit interdependence in a way that satisfies both of Lewin's conditions: (a) The constructs can be used to compare instances of interdependence across settings, and (b) the related constructs of interdependence and conflict can be derived from common conceptual elements.

A final requirement of such conceptualizations, imposed by an applied discipline like organization theory, is that constructs are demonstrably useful in framing and investigating questions, "the answers to which matter" (J. S. Adams, personal communication, 1982). In recognition of this

$$\text{Correspondence} = \frac{2(RC_a * FC_b + RC_b * FC_a + BC_b * BC_a)}{(RC_a^2 + RC_b^2 + FC_a^2 + FC_b^2 + BC_a^2 + BC_b^2)}$$

Where:

RC_a	=	A's reflexive control
BC_a	=	Behavior control over A
FC_a	=	Fate control over A
RC_b	=	B's reflexive control
BC_b	=	Behavior control over B
FC_b	=	Fate control over B

Figure 7. Computational formula for index of correspondence.

requirement, the constructs derived above are applied here to a question posed by Thompson (1967, p. 57): What determines the effectiveness of particular coordination strategies?

Determinants of Effective Coordination Strategies

Organizations employ a variety of coordination or integration strategies to manage relations between units (e.g., rules, plans, lateral relations, bargaining, rewards, and job designs). McCann and Galbraith (1981) suggested that coordination strategies vary along three dimensions: formality, cooperativeness, and localization. Informal, decentralized, and cooperative strategies can be characterized as lateral or organic, while formal, centralized, and controlling strategies can be characterized as vertical or mechanistic (Burns & Stalker, 1961).

Interdependence and Coordination. Thompson (1967) proposed that pooled, serial, and reciprocal interdependence would be increasingly difficult to coordinate. He argued that a preferred mode of coordination should be associated with each type of interdependence. Using the terminology of McCann and Galbraith (1981) Thompson predicted that under norms of rationality, increasing interdependence should be coordinated by increasingly informal, localized, and cooperative strategies.

Thompson described increasing amounts of interdependence as posing increasing degrees of contingency to interdependent units. Such contingency represents increasing ambiguity and uncertainty in the coordination process (Jones, 1984). The degree of contingency posed by interdependence is described as affecting the frequency and volume of communication and decision making between units.

> With pooled interdependence, action can proceed without regard to action in other positions . . . . With sequential interdependence, however, each position in the set must be readjusted if any one of them acts improperly . . . . With reciprocal interdependence . . . the actions of each position in the set must be adjusted to the actions of one or more others in the set (Thompson, 1967, p. 58).

In response to the sheer volume of coordination requirements, Thompson recommended increasingly lateral, organic coordination strategies. As the amount of interdependence increases, "organizations seek to localize interaction and confine it to conditionally autonomous groups—to cluster positions and groups into the smallest possible inclusive units in order to minimize coordination costs" (Thompson, 1967, p. 60).

In general, empirical research supports Thompson's propositions. For example, the Aston studies indicated that work flow interdependence was positively related to the localization of authority and negatively related to the degree of formalization (Aldrich, 1972; Child, 1973, Hickson, Pugh, & Pheysey, 1969). In contrast, Mohr (1971) found no relationship between interdependence and participativeness of supervision. Hrebiniak (1974), using Mohr's measure, found a significant positive relationship between interdependence and

participativeness in decision making, and significant negative relationships between interdependence and both the use of rules and the closeness of supervision. Lynch (1974) also found that interdependence was positively related to the number of rules used in a unit.

Van de Ven, Delbecq, and Koenig (1976) found that amount of interdependence was positively associated with the use of lateral coordination strategies such as horizontal communication channels and unscheduled meetings. Amount of interdependence was found to be negatively related to the use of vertical coordination strategies such as rules, plans, and vertical communication channels.

Consistent with Thompson then, it is hypothesized that:

Hypothesis 1: Increases in the amount of interdependence created by the division of labor should be associated with the selection and effectiveness of increasingly lateral, organic coordination strategies.

Conflict and Coordination. The amount of interunit conflict also has been proposed as a determinate of the effectiveness of a coordination strategy. Organizations may use rules and guidelines to manage low levels of interunit conflict. According to March and Simon (1958), managers faced with interunit conflict prefer unilateral (e.g., rules, programs) rather than multilateral techniques (e.g., bargaining or confrontation) to resolve the conflict. As the amount of conflict increases, managers need to use mediated confrontation to help resolve disagreements between units (Lawrence & Lorsch, 1967; Nielson, 1972). At high levels of interunit conflict, organizations need to use even more assertive hierarchical or forcing methods to manage the relations between units. Lawrence and Lorsch (1967) noted that in the face of pure conflict "the usefulness of openness and confrontation is probably severely limited" (p. 205).

These propositions are consistent with the findings and theory on bargaining in organizations. In laboratory studies of bargaining dyads, increasing degrees of conflict have been associated with an increased preference for third party intervention (Rubin, 1980). This association may be due to interdependent parties recognizing that, in the face of increasing conflict of interest, they may not be able to settle their differences on their own (Rubin, 1980). Thus, increasing amounts of interdependence may be associated with increasingly lateral or organic strategies. Increasing amounts of conflict may require quite distinct responses. Therefore, it is further specified that:

Hypothesis 2: Increases in the noncorrespondence of outcomes created by the division of labor will be associated with the selection and effectiveness of increasingly vertical or mechanistic coordination strategies.

The joint effects of the division of labor on coordination strategy predicted in Hypotheses 1 and 2 are displayed in Figure 8. In contrast with the traditional unidimensional continuum used to describe the distinction between mechanistic and organic strategies, the dimensions are conceptualized as independent variables which together describe particular types of coordination strategies. In Figure 8, along the X axis is a continuum representing a progression from low levels to high levels of contingency management strategies. Along this continuum, Thompson's predictions fall. When the amount of interdependence is low, there is little contingency to be coordinated between units. Therefore, a minimal strategy is appropriate, such as "devising rules which apply to certain processes or categories of activity whenever and wherever these occur in the organization" (Thompson, 1967, p. 61). As the amount of interdependence increases, the amount of contingency to be managed increases. This culminates in the constant mutual adjustment between what Van de Ven, Delbecq, and Koenig (1976) called teams.

Along the Y axis is a continuum representing a progression from low to high levels of conflict management strategies. Along this axis, the predicted responses to noncorrespondence of outcomes fall. As the amount of noncorrespondence increases, conflict resolution requirements in-

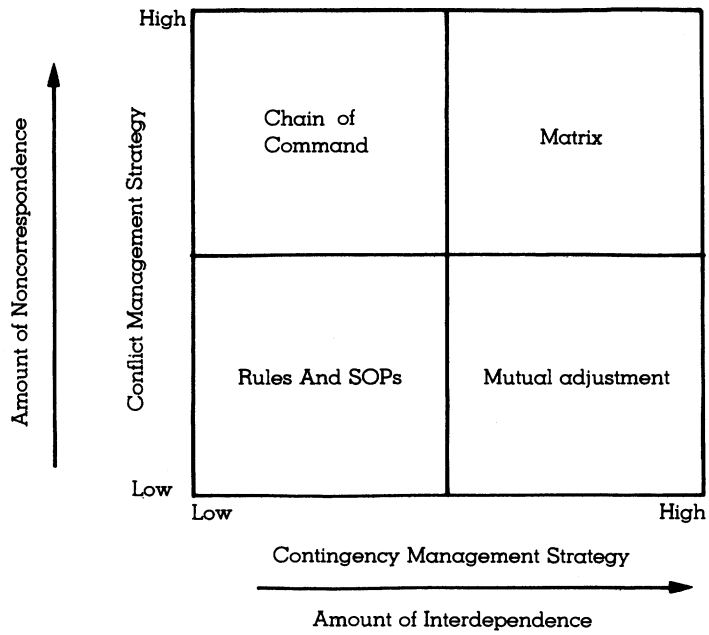

Figure 8. Model of coordination strategy selection and effectiveness.

crease. To resolve increasing amounts of conflict, more and more formalization, centralization, and control are needed. This continuum culminates in centralized, hierarchical coordinating strategies. Therefore, the optimal coordination strategy is described as an admixture of both contingency and conflict management elements, each in response to a concomitant characteristic of the division of labor.

The model in Figure 8 permits predictions regarding the selection and effectiveness of hybrid coordination strategies such as the matrix structure (Davis & Lawrence, 1977; Galbraith, 1973). Davis and Lawrence (1977) described the matrix as organic structures such as teams overlaid onto a mechanistic structure. They predicted that the matrix would be most effective when both requirements for contingency management are high and when the requirements for conflict resolution are high (due to the need to maintain a dual focus and to distribute scarce resources).

Implications

By employing the structural framework of interdependence theory, future studies can define more explicitly the possible determinants of the effectiveness of coordination strategy. However, one critical problem to be resolved is estimating the structural components of interdependence in the field. Although researchers of bargaining and other game theoretic applications of interdependence theory have manipulated component utilities in the laboratory, little field estimation of such utilities has been done.

One of the critical measurement issues is whether to estimate the constructs directly or to estimate the components first, and then calculate the indices. In studies of personal relationships, researchers have explored both strategies. For example, Walster, Walster, and Traupman (1978) calculated a net profit or correspondence of interdependence from self-reports of hetero-

sexual dyads. In a series of investigations of the structure of personal relationships, Kelley (1979) collected self-reports of component values from dyads in which a specific decision was made (e.g., choosing a movie to attend, cleaning an apartment).

While the studies of personal relationships have yielded useful data from field settings, an organizational setting has yielded mixed results. In a study of power and conflict between automobile dealers and distributors, Anderson and Narus (1984) constructed interdependence matrices representing major marketing decisions from self-reports of component values; serious reliability and validity problems with their data were reported. To date, there are no examples of studies that directly measure the construct indices in organizations.

Much of the challenge to successfully applying interdependence theory in organizations lies in measurement issues, yet objective sources of data on component utilities, and reliable and valid methods of component estimation from self-reports need to be developed. Nevertheless, constructs derived from interdependence theory do not pose very different measurement problems than other constructs, while they do offer distinct theoretical advantages.

Further Advantages

The advantages of this application of interdependence theory extend beyond its facility for analyzing the concomitant effects of interdependence and interunit conflict. This framework also can be applied to investigating other consequences of the division of labor. For example, the relative power between units in terms of magnitudes and asymmetries of dependence can be calculated from the matrix structure, and the propositions of resource dependence theory (Pfeffer & Salancik, 1978) can be modeled. In general, resource dependence theory proposes that coalitions (e.g., work units) attempt to change their relationship with the environment by either decreasing their dependence on others or increasing others' dependence on them (Ulrich & Barney, 1984). Both of these objectives can be modeled as changes in either the magnitude or symmetry of interdependence (again employing the basic conceptual elements described above).

Further, structural bases of power can be isolated to distinguish between exchange dependence (relative dependence on others' actions) and coordination dependence (relative dependence on joint actions). Thus, beyond the specific advantages of a more robust interdependence construct, the major implication of the argument presented here is the utility of interdependence theory as a framework for studying organizations.

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We dedicate this paper to the memory of John W. Thibaut.