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The Persistence of Organizational Change:
Variance Theory and Process Theory Models

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T85-2 (68)

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Prepared for the Western Academy of Management Annual Meeting, 1985.

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ABSTRACT

A conceptual review of the literature on the persistence of planned organizational change is presented, based on Lawrence Mohr's distinction between variance theory models and process theory models of explanation. The available literature overwhelming emphasizes variance theory or hybrid models. More process theory research is advocated.

Organizational changes that are implemented today and gone tomorrow cannot be expected to provide enduring benefits for organizations or organizational members. Only the most cynical and mercenary interventionists can be unconcerned about the persistence of organizational changes that they help to implement. Interventionists who are indifferent to the long-term fate of their interventions can be compared to generals who devise strategies for winning battles but not wars, photographers who take pictures but do not develop their film, or chefs who are interested in the appearance but not the edibility of their creations.

Yet organizational changes often are not sustained. Reviews of the case study literature (Goodman, Bazerman, and Conlon, 1980) and multiple case studies (e.g., Goodman and Dean, 1982; Walton, 1975) demonstrate clearly that planned organizational changes often fail to persist, even when the changes seem to have been fully implemented and have generated apparent benefits to organizations, organizational members or both.

The organizational change literature is not very helpful in explaining why some organizational changes persist and others are abandoned. In part, this is the result of neglect. Almost no topic of equivalent theoretical and practical significance has received so little attention in the organizational change literature. There are more fundamental problems, however. The contention here is that existing perspectives on persistence are atheoretical, conceptually flawed, seriously incomplete, and/or inadequately supported by research. This suggests that pursuing previous lines of inquiry to the exclusion of others is not necessarily the most fruitful course.

This paper is a conceptual review of the literature on the persistence of organizational change. The prior literature is sampled, but not recited comprehensively. It is argued that more is likely to be learned about the persistence of organizational change by pursuing

a new theoretical direction--namely, the process theory approach--than by pursuing existing directions exclusively. Thus, the primary emphasis here is on conceptual development.

This paper begins with a discussion of Mohr's (1982) distinction between variance theories and process theories. This distinction provides a conceptual basis for considering the persistence literature. Next, prior theoretical models and research on the persistence of change are considered in light of the variance theory - process theory distinction. Several key deficiencies of prior approaches are considered. Finally, the strengths and weaknesses of a process theory perspective for research on persistence are suggested, and complementarities between variance theories and process theories are considered.

Variance Theories and Process Theories

Mohr (1982) concludes that two fundamentally different approaches to scientific explanation are found in the social sciences: variance theories and process theories. He argues that many of the problems with current organizational research may be traced to inappropriate and excessive reliance on the variance theory approach.

Mohr summarizes the difference between the two forms of theoretical explanation in the following way:

Variance theory, roughly, is the common sort of hypothesis or model, such as a regression model, whose orientation is toward explaining the variance in some dependent variable. Process theory represents a series of occurrences in a sequence over time so as to explain how some phenomenon comes about. (p. 9)

The key elements in variance theories are variables, while the key elements in process theories are events.

Variance theories are the predominant theoretical form in the social sciences. Such theories are based on a model that is compatible with experimental logic and that permits the use of statistical methods for testing hypotheses. Process theories are relatively rare; examples include the Darwinian theory of evolution, certain diffusion

theories, and the garbage can model of decision making (Cohen, March, and Olsen, 1972). Process theories tell a particular kind of story, in which the focal unit (e.g., an organization) passes through a sequence of events because of specified directional forces and probabilistic processes.

Variance Theories

More specifically, variance theories employ a type of causal explanation in which the set of precursor variables, X, is a necessary and sufficient condition for the outcome, Y. Hypotheses take the form "if X, then Y." Hence variance theories are concerned with efficient causes; X or a change in the level of X inevitably causes Y or a change in the level of Y. Mohr labels this a "push-type causality," since X "causes" Y to occur. Each precursor X is seen as having a separate impact on Y. Time order among precursor variables is usually irrelevant. These qualities explain why variance theory hypotheses can assume the form of a mathematical function and can be tested with statistical techniques.

Process Theories

Process theories are based on a very different model. The precursor is only a necessary condition of the outcome, rather than a necessary and sufficient condition. Hypotheses take the form of "if X, then Y (sometimes)" and "if not X, then not Y." This means that most statistical procedures are not relevant to process theories; a high correlation between X and Y is not assumed in the causal logic of such theories. The precursor usually is constituted of three elements: necessary conditions, necessary probabilistic processes, and external directional forces that move the focal unit (such as an organization) and the necessary conditions about, and sometimes move them into proximity. Outcomes in the process theories are a particular combination of the focal unit and the precursor. Process theories are concerned with final causes rather than efficient causes. The

existence of the outcome is dependent on the precursor, but the precursor alone cannot "cause" the outcome in the absence of specified probabilistic processes and external directional forces. Thus, process theories assume what Mohr terms a "pull-type" causality: Y invariably implies X, but the reverse is not true.

An Example: The Diffusion of Innovations

The difference between variance and process theories can be clarified by an example. Here, theories of the diffusion of organizational innovations will be used for this purpose. The examples are drawn from Mohr's discussion (1982, pp.8,48).

Variance theories treat the adoption of organizational innovations as an outcome variable. This means that some organizations adopt innovations more or less frequently than others; thus there is variance in the degree of innovation. Variance theories propose predictor variables that are thought to account for the variance in organizational innovation. Common predictor variables include relative organizational wealth, relative organizational size, and compatibility of existing organizational activities with the innovation. The predictor and outcome variables are operationalized and measured in quantitative terms. Hypotheses derived from the theory can be tested with statistical methods. To the extent that the predictors (separately and additively) account for significant portions of the variance in organizational innovation, the hypotheses are confirmed. Implicitly, the predictors are seen as necessary and sufficient conditions for the outcome, or at least for that part of the variance in the outcome accounted for by the predictors. Time ordering among the predictor variables makes no practical difference in hypothesis testing.

Process theories of organizational innovation proceed from very different premises. Again, the adoption of organizational innovations may be used as the outcome. However, the outcome is seen as an event, not a variable. Organizations either adopt or fail to adopt; there is

no scale of the degree of adoption. Moreover, the adoption outcome can be viewed as the combination of an innovation with an organization (the focal unit). The precursor in the process, which is the necessary condition for diffusion, is the existence of other organizations that have the innovation. The external directional force is contact between the focal organization and other organizations. Probabilistic processes may include contact between some organizations possessing the innovation and others not possessing the innovation; transfer of innovations between organizations; and retention of innovations by organizations.

The key elements in this type of theory are events (contact - transfer - adoption - retention). The precursor is a necessary condition, but not a sufficient condition for the outcome. There is no inevitability that an innovation will be diffused from organizations possessing the innovation to those without the innovation. Adoption depends on the external directional forces and probabilistic processes. Time-ordering among the events is critical to the theory; the adoption of the innovation indicates that contact and transfer have already occurred. Statistical tests are an irrelevant test of the theory, since the theory cannot be disconfirmed by either high or low correlations between events.

Mohr argues convincingly (1982, pp.61-70) that process and variance theories can coexist peacefully and may be mutually informative, but that the two kinds of theories need to be developed separately because of their competing requirements. Mixing elements of both in one theory is appropriate. Hybrid process - variance theories sometimes appear in the literature, but such theories are cumbersome and often are impossible to test.

Mohr's argument can be captured by considering two possible forms of hybrid theories. In Figure 1, each event in a process (A, B, C, D) is operationalized as an outcome variable (Y^1, Y^2, Y^3, Y^4), and a set

of precursors (X^1, X^2, X^3, X^4) is used to predict each outcome. This is an abstract version of the Zand and Sorenson (1975) model of innovation criticized by Mohr (pp.66-67). This model is not meaningful either as a process or variance theory. It lacks the probabilistic processes and directional forces that account for events. Because the outcomes are seen as a series of events, however, there also is no way to test the variance theory aspects of the model. Neither high nor low correlations between the variables (Y^1 and Y^4 or X^1 and Y^4 , for example) constitute confirmation of the relationship between events. At best, the theory makes possible tests of four separate variance models ($X^1 \rightarrow Y^2, X^2 \rightarrow Y^2$, etc.).

Alternatively, it may be recognized that a process theory may be more or less applicable under certain conditions. Figure 2 illustrates a hybrid model that attempts to overcome this problem. Figure 2 is an abstract representation of the diffusion of innovations model that is proposed by Hagerstrand (1968) and discussed by Mohr (pp.61-64). A full-blown process theory is presented and amended by the addition of a set of predictor variables (X) that influence the likelihood of the occurrence of the outcome (treated as a variable, Y). Essentially, this theory presents both a process and a variance model simultaneously. The major difficulty with this approach is that it can make the process model very complex and inelegant. Mohr suggests that a better alternative is careful specification of the conditions under which the process model applies uniformly. For example, the process model might apply only when X is high.

With the distinction between variance theory models and process theory models in mind, definitions of persistence and organizational change are considered next.

Definitions of Persistence and Organizational Change

Persistence has many synonyms in the literature. A change that endures over time has been called frozen, stabilized, accepted, sus-

tained, durable, persistent, maintained, and institutionalized, among other things. Only rarely are any of these terms explicitly defined.

Clearly, the choice of a variance theory or a process theory framework dictates the nature of any definition of an outcome such as persistence. In a process theory, persistence is an all-or-nothing event (or phase of related events). For example, Ledford (1984) defines persistence as a phase of events in the evolution of planned organizational change. The persistence phase begins when the planned change ceases to be modified, as in the cycles of events of previous phases (initiation - adoption - adaptation); the persistence phase continues as long as the cycles of behaviors associated with the change continue to be repeated in a stable fashion.

Most prior literature uses a variance theory model, either explicitly or implicitly. Persistence is treated as an outcome variable; the level of persistence is accounted for by sets of predictor variables. The best and most explicit example of this approach is the Goodman and Dean (1982) concept of institutionalization. Goodman and Dean analyze institutionalization in terms of "institutionalized acts," which are defined as behaviors that are performed by two or more individuals, that persist over time, and that exist as "social facts." The degree of institutionalization is assessed by measuring five component variables, arrayed in a Guttman scale: knowledge of the behavior, performance of the behavior, preference for the behavior, normative consensus about the appropriateness of the behavior, and social consensus on values relevant to the behavior. Normative consensus and/or social consensus must be present in some degree to demonstrate institutionalization. Sets of predictors are proposed to account for the degree of institutionalization of particular behaviors.

Organizational change is more easily defined. The concern here is with changes in organizational structures, which are repetitive,

interdependent cycles of events related to the transformation of inputs to outputs in a system (Katz and Kahn, 1978, pp.24-25). The primary concern is not with changes in individual, small group, or societal structures, although such changes may be associated with organizational-level changes.

Variance Theory Perspectives on Persistence

This section considers several categories of literature on organizational change: developmental phase models of change; longitudinal case studies of organizational change; comparative case studies; institutionalization studies; and the population ecology perspective. The first three belong to the planned organizational change tradition, and generally emphasize rational choice by organizational members as a force for organizational change and persistence. The institutionalization and population ecology perspectives are in the organization theory tradition, and emphasize organizational adaptation to the environment and arational explanations for change and persistence.

Developmental Phase Models

The most common approach to persistence involves proposing a developmental phase model that includes one or more stages relevant to persistence. In the organization development literature, Lewin's (1947) unfreezing - moving - freezing model of the change process has been the most popular. Many other models have been proposed, including those by Greiner (1967), French and Bell (1978), Spencer and Cullen (1978), and Perkins et al. (1983).

The vast innovation literature focuses primarily on the adoption and diffusion of innovations, and includes few studies on the persistence of innovations (Yin et al., 1978). However, a number of models of the adoption process have been proposed that include stages relevant to persistence (e.g., Berman and McLaughlin, 1974; Hage, 1980; Hage and Aiken, 1970; Mann and Williams, 1960; Miles and Lake,

1967; Zaltman, Duncan, and Holbeck, 1973).

There are, then, many developmental phase models available in the literature. However, none of the phase models is a theory. At best, these models are sets of stages or events with predictor variables attached to a persistence stage. Thus, the models are cumbersome hybrids similar to the one depicted in Figure 1. The phase models are not an appropriate basis for research in their current form. They lack either the external directional forces and probabilistic processes compelling movement from event to event, as in a process theory, or the necessary and sufficient determinants of a variance theory.

In light of these shortcomings, it is not surprising that phase models are rarely supported by research. Havelock's (1970) comment is still relevant:

. . . validity testing is almost non-existent. The literature is descriptive, with each author supplying his own model; virtually no attempt is made to relate the phases described in different studies. (p. 10-76)

The result is that the list of predictors is highly unstable from model to model, as indicated by Table 1. The nine models considered propose 27 different predictors of persistence. Only one factor, presence of evaluation or feedback processes, is mentioned in as many as four of the nine models. It is possible that the list could be condensed somewhat by combining relevant variables into broader concepts. Even so, the list would still be long, and the record suggests it would expand as new models are proposed.

Longitudinal Case Studies

There are relatively few longitudinal case studies of the persistence of planned organizational change, and indeed relatively few case studies are conducted over a long enough period of time to determine whether or not persistence occurs (Porras and Berg, 1978; Goodman, Bazerman, and Conlon, 1979). The best starting point for considering the available literature is the review by Goodman et al. (1979) on the

institutionalization of changes in approximately 18 case studies. The authors discovered nine major factors and 26 subfactors that were used to explain the persistence of change. Major factors include reward allocation, withdrawal of sponsorship, transmission of the change, group forces, feedback, commitment, diffusion, internal context, and external context.

This list of factors, while long, is not comprehensive. For example, Seashore and Bowers (1970) and Walton (1975) suggest that adopting a complex set of changes with mutually reinforcing elements may make it difficult to abandon the changes. Walton (1980) suggests that such additional factors as value clarity, an evolutionary view of structure, mechanisms for legitimizing new changes, optimism, and the pace at which the meaning of the change is established are all related to persistence. Rogers (1983) suggests that the degree to which an innovation is "re-invented" to fit unique local conditions, and early versus late adoption of an innovation help determine continuance.

The growing list of predictors illustrates a basic difficulty with variance theory research in the social sciences. To pursue a necessary and sufficient list of causes for the phenomenon of persistence is to seek an indefinitely expandable set of variables. The addition of another 26 variables to the list by Goodman et al. probably would not exhaust the possibilities. This would not be so disturbing if researchers could hope to reduce the number of predictors through cumulative empirical research. The record of the social sciences in this respect is not encouraging, however. For example, after literally thousands of studies of innovation adoption, we are no closer to identifying a limited, stable, theoretically coherent set of variables accounting for adoption (Mohr, 1982). The lack of cumulative findings in many areas of organizational research has often been noted. Would hundreds of persistence studies have any greater payoff?

Mohr (1982) argues that instability in research findings is

endemic in the social sciences for two main reasons: interaction and inconsistency. Interaction problems arise because hypotheses are valid only under particular conditions that are difficult to identify or are highly restrictive. Interaction problems arise from the lack of constant meaning of variables, incompleteness of theoretical models, the "ugliness" or complexity of theories, and reliance on problematic motives for explanation. Components of the inconsistency problem include inappropriate dependent variables, faddishness in research, and the tendency to confuse process and variance theories. The result is that additional studies tend to muddy, rather than clear, the waters obscuring the causal forces responsible for a phenomenon.

Comparative Case Studies

It may be argued that investigating predictors of persistence in single case studies is the real difficulty. Perhaps the empirical investigation of more complete theoretical models offers more hope than investigating two or three predictors at a time in one case study after another (see Porras and Berg, 1978). Two comparative case studies of persistence are available. The first, by Yin (1978) is concerned with the routinization of new service practices associated with technological innovations. The research is useful for its retrospective case descriptions of a number of specific changes, and in its finding that many planned changes do persist. Yin's underlying model, however, is a confusing mixture of variance and process theories. Attention here will be devoted to the comparative study by Goodman and Dean (1982), which represents the most thorough study of institutionalization (or persistence) yet available.

Goodman and Dean (1982) propose a theoretical model of institutionalization derived from earlier work by Goodman, Bazerman, and Conlon (1979). The Goodman-Dean definition of institutionalization (behavior that is performed by two or more individuals, persists over time, and exists as a social fact) and their five criteria of institu-

tionalization (knowledge, performance, preference, normative consensus, and value consensus) have already been discussed. The main independent variables are five "processes": socialization, commitment, reward allocation, diffusion, and sensing and recalibration. Each of these processes, in turn, is constituted of several component variables. For example, commitment is a function of the explicitness or deniability of the behavior, the revocability of the behavior, whether the behavior was adopted by personal choice as opposed to external constraint, and the extent to which the behavior is known by others. Two other sets of variables, the structure of the change and organizational characteristics, are seen as moderators of the change process. Structural aspects of the change included in the model are the goals of the change; critical roles (such as sponsor, consultant, and internal support system); the degree of programming of the change effort; and the extent to which the change was targeted at the entire system as opposed to a subsystem. Organizational characteristics considered include congruence between the change effort on the one hand and management philosophy and structure, and employee values and skills, on the other; stability of the environment and organizational technology; and the presence or absence of unions.

The Goodman-Dean model is even more complex than is implied by this recitation of variables. They also consider patterns of change at the individual and group levels of analysis. At both levels, the change process proceeds through four stages: introduction, adoption, continuation, and maintenance/decline. At different stages, different criteria (facets) and process variables become salient, and the process variables take different forms. Although the individual and collective processes are related, there are differences between the two as well.

Goodman and Dean explore their model with interviews concerning a major organizational change in each of nine organizations. In each

organization, the change effort had survived for at least four years, although five of the specific changes considered had been abandoned. The data were collected as a hypothesis-generating rather than as a hypothesis-testing exercise; the research is not rigorous enough to support firm conclusions. However, the results are in the expected direction for many relationships, and mixed support is available for other hypothesized relationships.

The Goodman-Dean model is primarily a variance theory model, although there is a concern with "processes" as well. The five "processes" that are the primary predictors in this model are sets of variables, not sets of events. In addition, the stages of change at the individual and group levels are discussed as process of change. These "processes" do not take the form of a process theory. Each stage is predicted by a different constellation of variables; hence, the underlying model is a hybrid form similar to Figure 1. Moreover, the stages of change are not essential to the basic Goodman-Dean framework. The processes help explain how the variables in the model become more or less important and take different forms over time, but the basic framework can be tested independently of the process stages. Indeed, Goodman and Dean's exploratory research makes no use of the stage framework. Clearly, the basic model is a variance theory, depicted in Figure 3.

The Goodman-Dean research illustrates the limitations of comparative studies for testing complex models. The Goodman and Dean hypothesis-generation study was based on data about one key innovation from each of nine organizations. Nine organizations is an unusually large number for comparative studies of planned change, yet here the number of variables exceeds the number of cases by a factor of two to one. With such a ratio of variables to cases and with such a small number of cases, only univariate tests with esoteric statistics are possible, even if rigorous quantitative data are available for hypothe-

sis testing. A full test of the underlying multivariate model is simply not possible with the available data.

The research by Goodman and Dean is the best comparative case study available on the persistence of planned organizational change. However, their research demonstrates that comparative studies are not necessarily a solution to the weaknesses of the variance theory approach. The underlying theoretical model cannot be tested adequately with their data using variance theory methods. Given the practical difficulties of comparative studies, it seems unlikely that a study with an adequate number of cases will be forthcoming. The chances for obtaining longitudinal comparative data adequate for a test of the model seem even more remote.

Institutionalization Perspectives

Some sociological studies have been conducted on the institutionalization of organizational change. The concept of institutionalization is derived from earlier work by sociologists (e.g., Parsons, 1956; Selznick, 1957) concerned with the societal level of analysis. For example, Selznick (1957) referred to institutionalization as a process by which an organization could be transformed from a rationally engineered tool for meeting narrow goals to a value-laden, adaptive social organism symbolizing societal aspirations. Some studies continue to be concerned with the process by which organizations become social institutions.

Most recent work on institutionalization uses the term in one of two different ways, both of which are consistent with Meyer and Rowan's definition of institutionalization as the process by which "social processes, obligations, or actualities come to take a rule-like status in social thought and action" (1977, p.341). First, authors in the planned organizational change tradition often treat institutionalization as an intra-organizational variable reflecting the degree to which behaviors are enduring aspects of social reality. A variety of

factors are usually proposed to account for persistence. This work was considered in prior sections because it has more in common with the planned organizational tradition than with the sociological studies considered next. Institutionalization, for most of these authors, is usually just another synonym for persistence.

The recent sociological stream of research on institutionalization stresses the importance of environmental legitimation as a force encouraging the adoption and persistence of planned organizational changes (e.g., Meyer and Rowan, 1977). This perspective contends that organizations maintain certain structural forms viewed as legitimate by the institutional environment, in order to continue receiving vital inputs needed for organizational survival. Certain organizational forms, such as bureaucracy, may acquire a mythic status in the institutional environment, and organizations may adopt such forms regardless of the implications for technical efficiency in order to maintain their legitimacy.

A number of studies have been conducted that demonstrate the importance of environmental sanction for the persistence of changes. These include studies by Meyer et al. (1978) on the use of bureaucratic methods of administration in school systems, Zucker (1981a) on the use of school evaluation units, Rowan (1982) on the history of three administrative service positions in California schools over a 40-year period, Tolbert and Zucker (1983) on civil service reforms by city governments from 1880-1935, and Cole (1982) on the diffusion of participatory work structures in Japan, Sweden, and the U.S.

Most of the best empirical work relevant to persistence is found in the handful of institutionalization studies. The research demonstrates that some organizational changes persist or are abandoned in response to environmental demands, especially in organizations (such as schools) for which uncertainties surrounding the core technology render utilitarian factors less important.

There are two major weaknesses of the sociological studies of institutionalization. First, the exclusive focus on congruence between organizational changes and demands of the institutional environment omits consideration of other forces encouraging or discouraging persistence. In most studies, the majority of the variance in persistence is not accounted for by environmental demands. This is not necessarily a serious problem when the theoretical focus is on institutionalization, but it is a major weakness when the focus is on persistence. Second, it is difficult to apply the findings in practice. Organizations cannot easily influence the institutional environment. For example, the practitioner attempting to sustain a job redesign effort in a particular organization is likely to find scant comfort in the advice that a change in societal beliefs about the nature of good jobs is required.

The Population Ecology Perspective

The population ecology perspective (Hannan and Freeman, 1977; Aldrich, 1979) offers a very different view of the persistence of organizational changes. It makes use of such concepts as variation, selection, and retention in explaining why certain organizational "genotypes" arise and either survive or die. The focus is on populations of organizations, not single organizations, and on very fundamental changes in organizational genotype, not less fundamental changes such as job redesign or a new reward system in a particular plant. This perspective emphasizes that organizational forms persist because of powerful internal and external inertial forces. Differential selection by the organizational environment of populations of organizations, rather than managerial choice, determines whether organizational forms will arise and will be sustained or will die out.

The population ecology model is borrowed from neo-Darwinian theory of evolution, which is the best known process theory. Population ecology theory contains considerable process model thinking--that

is, consideration of causal forces responsible for particular sequences of events, such as organizational births, adaptation, and deaths. Yet population ecology research appears to rely mostly on variance theory methods. As a result, research on this perspective does not really test the basic model; it studies more limited, derivative issues which are capable of being captured by variance theory methods.

For example, Pennings (1982) studied the degree to which certain predictors account for birth frequencies in three industries; Carroll and Delacroix studied organization deaths (Carroll and Delacroix, 1982) and births (Delacroix and Carroll, 1983) in the newspaper industries of two countries; Hannan and Freeman (1978) studied differences in political processes in conditions of organizational growth and decline. These studies are piecemeal investigations of a process theory model using variance theory methods, rather than a test of the overall process theory model that suggests the variance theory hypotheses. No available research examines the whole sequence of events and hypothesized causal forces specified in the full population ecology model.

This condition is not necessarily unreasonable. It is impossible to imagine process theory research that would provide convincing confirmation of the underlying process theory model when the level of analysis is a population of organizations. Too many cases are involved to make effective use of the qualitative data characteristic of process theory research. Interestingly, the contrast between process theory models and variance research testing is also found in research on Darwinian and neo-Darwinian evolutionary theory. Evolutionary theory offers important insights that help explain a great deal of data, and is a bedrock of modern biology. However, Darwinian theory as a whole is essentially untestable (von Bertalanffy, 1969).

A shortcoming of the population ecology model is that it is too deterministic and too global to use in practice. It offers little

hope to decision makers attempting to increase the adaptability of their organization. The changes that count to the population ecologists are changes in the most basic organizational forms, and existing organizations are too locked into existing forms to influence their fate. Factories cannot become churches, and vice versa. Fundamental changes take place slowly, over decades or centuries, and result from forces that the organization cannot control. Changes in single organizations, and changes that may have important local effects on organizational performance and member attitudes, simply are outside the scope of the theory.

Variance Theory Approaches in Perspective

Most of the prior literature on persistence is based on variance theory or hybrid models, explicitly or implicitly. The developmental phase models are, in general, a crude atheoretical approach containing the events of a process model and some proposed variance theory predictors of the separate phases. The longitudinal case studies and comparative case studies in the planned change tradition suggest a broad array of factors responsible for the persistence of change. In general, these approaches emphasize factors that practitioners can attempt to influence in order to increase persistence. However, it is difficult to know which factors are the most important and which are irrelevant, and the record suggests that future research will not resolve these issues. The institutionalization perspective, as advanced by sociologists, is concerned primarily with the single causal factor of environmental legitimacy. The concern is not with rational choice, but with reflexive adherence to the dictates of the institutional environment. The population ecology perspective proposes environmental adaptation as the determinant of persistence. This approach is based on a process theory model, but for practical reasons research takes a variance theory form. Rational choice plays no significant role in the theory.

The variance theory approaches to persistence share a common limitation that is rooted in variance methods. These approaches inadvertently treat both organizational changes and organizations as static entities. A change that persists or fails to persist is assumed to be the same one that was initially adopted; the organization as a whole usually is assumed to be unchanged by the adoption of the innovation. These assumptions are necessary for statistical hypotheses testing. These assumptions are not valid if the innovation and the organization engage in a continual, dynamic process of mutual adjustment and transformation.

Yet, major organizational changes are often extremely fluid and dynamic (Lawler, 1982; Tichy, 1983). This is true for any number of reasons. The lessons of experience (Cyert and March, 1963), emergent political dynamics (Nadler, 1982), shifting environmental and organizational conditions (Hedberg et al., 1976), and other factors may lead to modifications of the change, the organization, or both during the process of change. Under such conditions, it is not useful to find that changes initially adopted do not persist. It is more useful to ask how the changes evolve, and how evolutionary patterns affect the persistence of change.

There is good reason to question whether variance theory approaches can ever adequately capture the dynamics of organizational change. In basic ways, the processes of change fail to meet the requirements of experimental and quasi-experimental designs, statistical hypothesis testing, and other tools of rigorous variance-based approaches. As Kahn (1982, p.428) suggested:

The suns of organizational change do not revolve around the small domain of the researcher, nor are their large movement defined by the experimenter's small forces. . . (W)e will learn most about the process of organizational change by studying full-scale manifestations of that process rather than by reducing it to the size of our experimental powers.

In general, the strongest research designs in variance theory research

are those in which the researcher is able to control the field situations in ways that simulate laboratory conditions as closely as possible. Variance theory methods are best suited for studying linear relationships between simple changes and outcomes, under relatively static, controlled conditions. As the researcher relaxes control over such conditions as the nature, scope, introduction, and diffusion of the intervention, as well as the measurement of change, threats to the validity of research findings become progressively more serious.

Unfortunately, the degree of researcher control needed in strong experimental and quasi-experimental designs may be fatal for the phenomena of organizational change. Organizational change efforts that survive over a long period of time typically involve shifting discontinuous patterns of activity, surprising events, novel interventions or combinations of interventions, and unintended consequences. Such patterns are perhaps the most interesting aspects of organizational change. Yet these patterns are threats to the validity of rigorous research designs, and thus are to be avoided, ignored, tolerated, or explained away rather than studied systematically.

The recent fascination of organizational researchers with qualitative methods reflects an increased awareness of the limitations of variance theory approaches. Qualitative methods, however, remain a primitive alternative to more rigorous quantitative methods. There are few guidelines for the collection, analysis, and interpretation of qualitative data (Van Maanen, 1982); such data remain an "attractive nuisance" (Miles, 1979). One difficulty is that qualitative methods remain second-best as a way of testing variance theories. Such methods tend to produce a series of interesting but non-cumulative and perhaps ungeneralizable case descriptions.

The criticisms of variance theory approaches leveled here are not intended to imply that these methods that nothing has been learned about persistence as a result of using these methods, or that better

research using rigorous methods is impossible. The point is that these methods have certain inherent limitations for the study of persistence, and do not necessarily deserve preeminent status as the only way to understand the phenomena of organizational change.

A Process Theory Perspective on Persistence

Mohr's (1982) call for the development of process theory models of organizations generally has been ignored. An exception is the process theory model of the persistence of organizational change proposed by Ledford (1984). This model (see Figure 4) indicates that a planned organizational change moves in sequence through up to four phases of events: initiation, adoption, adaptation, and persistence. The events of each phase are described in terms of the typical participants, choice opportunities, problems and solutions, themes in action and meaning, and patterns of organizational response associated with the phase. Following the process theory form, probabilistic processes and a directional force are proposed as the causal agents determining whether a change will reach the persistence phase.

Four probabilistic processes are hypothesized as the forces determining whether a given change will be abandoned at a particular phase, or will move to the next phase. These are congruence of the change with the organization, congruence of the change with other changes initiated at the time, congruence of the change with environmental demands, and the level of organizational slack. These forces are treated as probabilistic processes rather than variance theory predictors because the levels and consequences of the probabilistic processes cannot be known before the change develops. The probabilistic processes are not treated as static variables; their impact can change unpredictably, and is discovered unsystematically and in retrospect as the change process unfolds. A preference by organizational members for the reduction of uncertainty associated with the change is suggested as the external directional force compelling movement of the

change from either one phase to the next or to abandonment.

The model was explored with retrospective case study data about thirteen changes adopted over a period of years in a work humanization experiment. General support for the model was found. The specified phases of events were identified for most changes. Some changes reached the persistence phase, while others were abandoned at other phases prior to persistence. The pattern of probabilistic processes seemed to account for the continuance or abandonment of the changes. An interesting finding was that the key change adopted was transformed considerably over the lifetime of the project, and the change and the organization engaged in a dynamic process of mutual adjustment. This change, a modification in the reward system, became a dominant force that influenced the persistence of every other change initiated through the project.

The same model is being used in the study of a number of design features adopted in a new high involvement plant. If the project continues, this research should permit a much stronger investigation of the process theory model. It will allow longitudinal investigation using measures developed specifically to test the model. The research also will allow direct comparison of competing variance theory and process theory models of persistence.

Because so little research using process theory models has been conducted, any discussion of strengths and weaknesses of the approach is preliminary. It appears that one major advantage of the process theory model of persistence is that it is well suited to explaining dynamics of the change process, such as the transformation of organizational changes over time, that are not captured well by variance theory methods. The particular model described here also integrates elements of several different variance theory approaches, and reworks them in a novel way in the form of probabilistic processes.

On the other hand, there are weaknesses to the process theory

model. The phases of events in the model are not single, distinctive, dichotomous all-or-nothing events as in such biological process theories as the evolution of species and the transmission of malaria by mosquitoes. The adoption or persistence phase of a change is different than the mating of organisms with different genotypes or the bites of mosquitoes carrying the malarial parasite. It is more difficult to identify organizational events, as opposed to events that involve a few organizational members. In addition, the outcome of persistence in the process model is not as obvious as the creation of a new species or the contraction of malaria. The outcome of the persistence model, the persistence phase, is undramatic; it begins when the transformations of the adaptation phase cease. Finally, the role of the probabilistic processes and external direction force in the process theory model of persistence are not as easily conceptualized and so obviously relevant as the probability that some people will be bitten by mosquitoes carrying a malarial parasite or the tendency of mosquitoes to bite people. For all of these reasons, the process theory model of persistence, and perhaps organizational process theories in general, are likely to be less clear-cut and compelling than process theories in the biological or physical sciences. Of course, variance theories suffer from an analogous problem; there is no counterpart to $E = mc^2$ in the organizational sciences.

Another problem is that so little work on organizational process theories has been conducted that it is difficult to specify the procedures for evaluating and testing process theory models. The usual quantitative tools are not relevant, except in demonstrating construct validity and in supporting certain qualitative observations. Ledford (1984) considers some standards for theory testing, but much work in this area remains to be done.

Complementarities of Process Theories and Variance Theories

Process theories and variance theories have different and

complementary natures. There are complementarities in purposes, methods, and uses.

The explanatory purposes of the two types of theories are distinct; one is concerned with variables, the other with events. Both are important in understanding the persistence of organizational change. Variance theories are concerned with factors predicting changes in the level of persistence, conceived of as a variable; process theories are concerned with factors that explain a chain of events leading to persistence, a phase of events. Persistence is better understood if solid research is available on both types of theories of persistence.

Both types of theories can have important implications for practice. Both suggest things to be done in order to increase persistence or the likelihood of persistence. Variance theories suggest variables to manipulate in order to increase the degree of persistence, while process theories suggest probabilistic processes that can be influenced to increase the likelihood that the persistence phase will be reached. Variance approaches are better suited to examining the relationship between persistence and other outcome variables. This is important in determining whether persistence represents a desirable stability and consolidation of gains or excessive, dysfunctional rigidity. On the other hand, process approaches are better able to help practitioners anticipate the kinds of events they are likely to experience as the change process unfolds.

The two types of approaches also use complementary kinds of data. Variance theories require quantitative tests; process theories can rest on qualitative data. It is possible to conduct longitudinal field investigations of organizational changes that collect data relevant to both types of models. Investigations of process theory may help focus collection and analysis of qualitative data in such studies, which in itself would be no small accomplishment. Quantitative

data collected for purposes of testing variance theory models may aid in establishing operationalizations of some of the constituent elements of process theory models.

Process theories may make better use than variance theories of data from single case studies, as well as data about rare or unique events that are difficult to sample properly for variance theory purposes. As Mohr suggests (1982, p.216):

The essence of variance theory, especially in the developmental stages, lies in matching up of different pockets of variety, which always means looking at a broad array of instances. Variance parameters can be established only by examining variance. . . The process theory style is radically different in this regard. Although a backdrop of variety and some amount of contrast may be helpful or even necessary, the systematic collection of comparative observations is quite distant from the essence of this approach. What it often takes to develop a process theory is to begin to see the phenomenon just one time in the proper conceptual clothes. Additional observations are primarily for corroboration and new ideas, not for establishing parameters.

Studying persistence requires following organizational changes over a period of years. The limited number of adequate longitudinal case studies of organizational change available suggests that it is desirable to have available tools for making do with a more limited number of cases than is necessary from the standpoint of variance theory. The Goodman and Dean (1982) research illustrates the point. By the standards of planned organizational change research, the comparative study of nine organizations is Herculean. Yet their model cannot be tested adequately with the data because the number of variables exceeds the number of cases by a wide margin.

Conclusion

Relatively little empirical research on the persistence of organizational change has been conducted. Existing frameworks overwhelmingly emphasize variance theory or hybrid variance theory - process theory models. Several major weaknesses of variance theory research reside in the mismatch between the nature of variance theories and the nature of the phenomena of interest. This suggests that the exclusive atten-

tion by theorists of persistence to variance theory models is inappropriate. Process theory models have potential as an alternative means of explaining persistence, although little research based on process theory models has been conducted. Process theory models and variance theory models have complementary strengths and weaknesses, and it is desirable to develop both types of theories of persistence.

Obviously, this discussion of variance theories and process theories has relevance for the study of organizational phenomena other than persistence. Current emphases in the literature on qualitative description and understanding dynamic processes are justified in light of the weaknesses of rigorous methods for studying organizations and organizational change. What has been lacking, however, is a means of appropriately conceptualizing and testing theories of process. Process theory models can be a useful way of addressing these issues. This paper does not advocate abandoning variance theory approaches in favor of process theory approaches, which have their own shortcomings. It does suggest that the two are complementary, and that both are needed.

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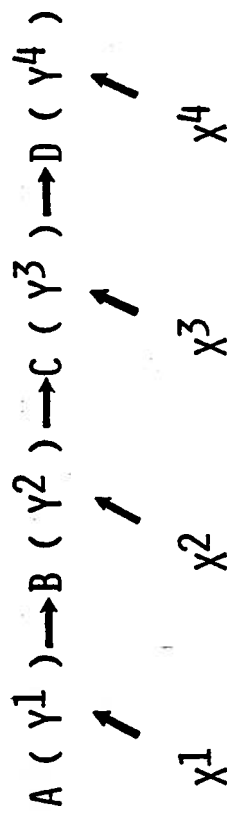


FIGURE 1
Hybrid Theory Model 1

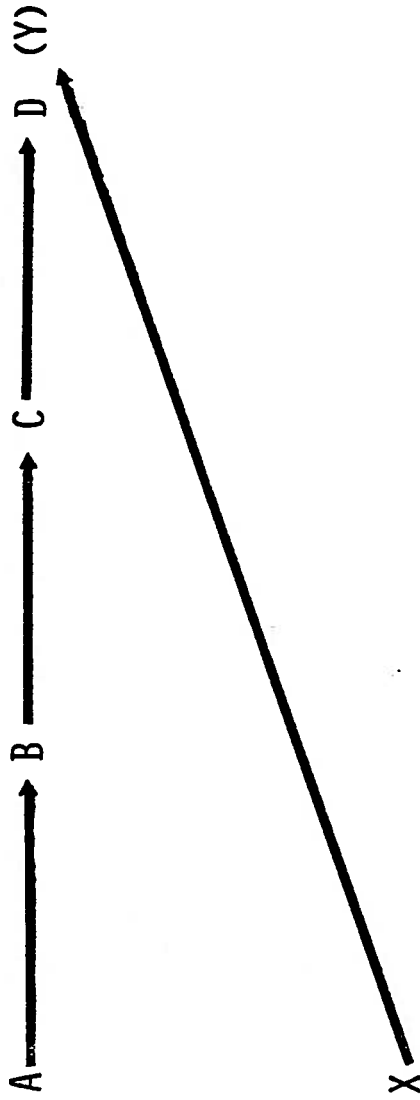


FIGURE 2
Hybrid Theory Model 2
External Forces and Probabilistic Processes

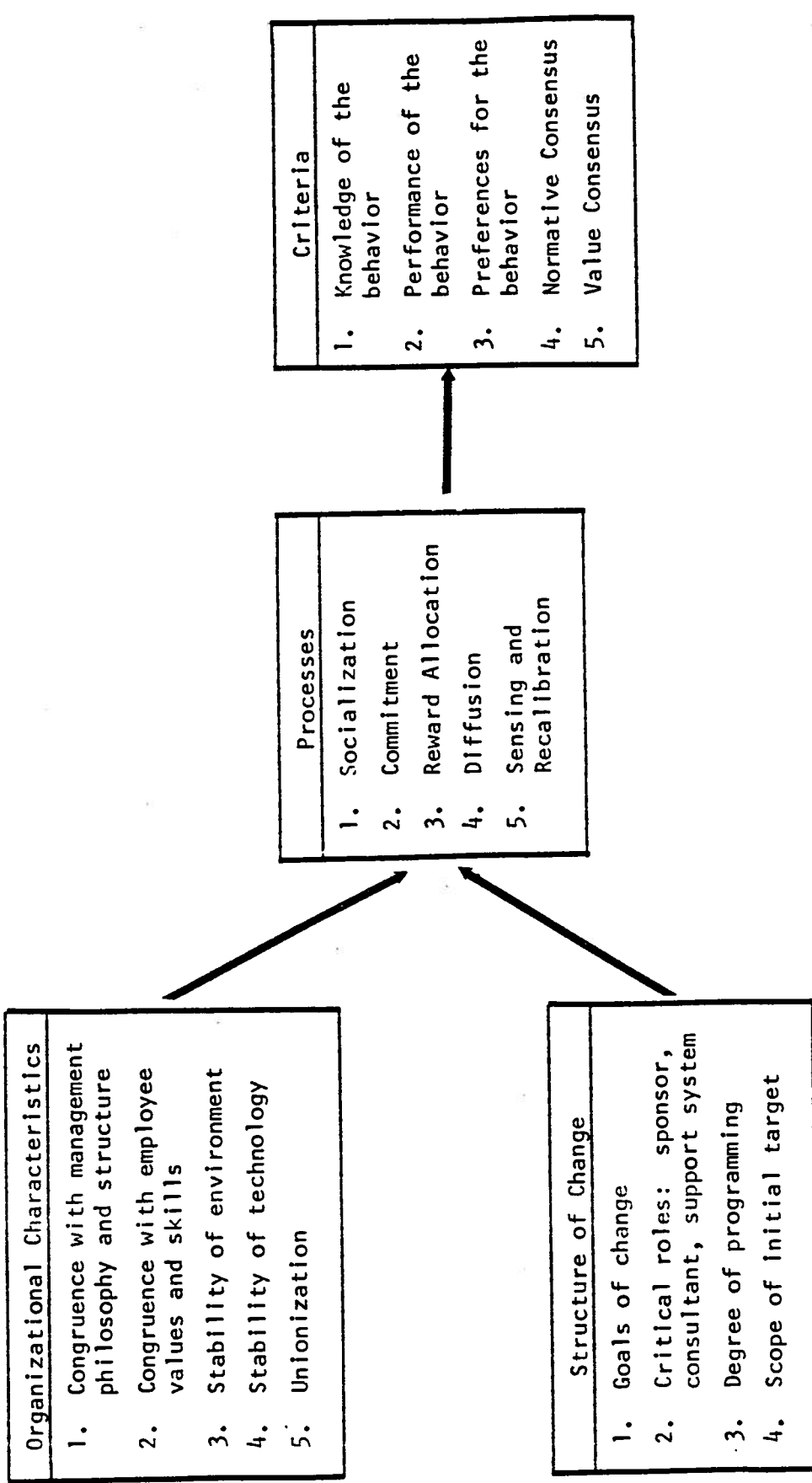


FIGURE 3
 The Goodman-Dean Model of Institutionalization
 (Based on Goodman and Dean, 1982)

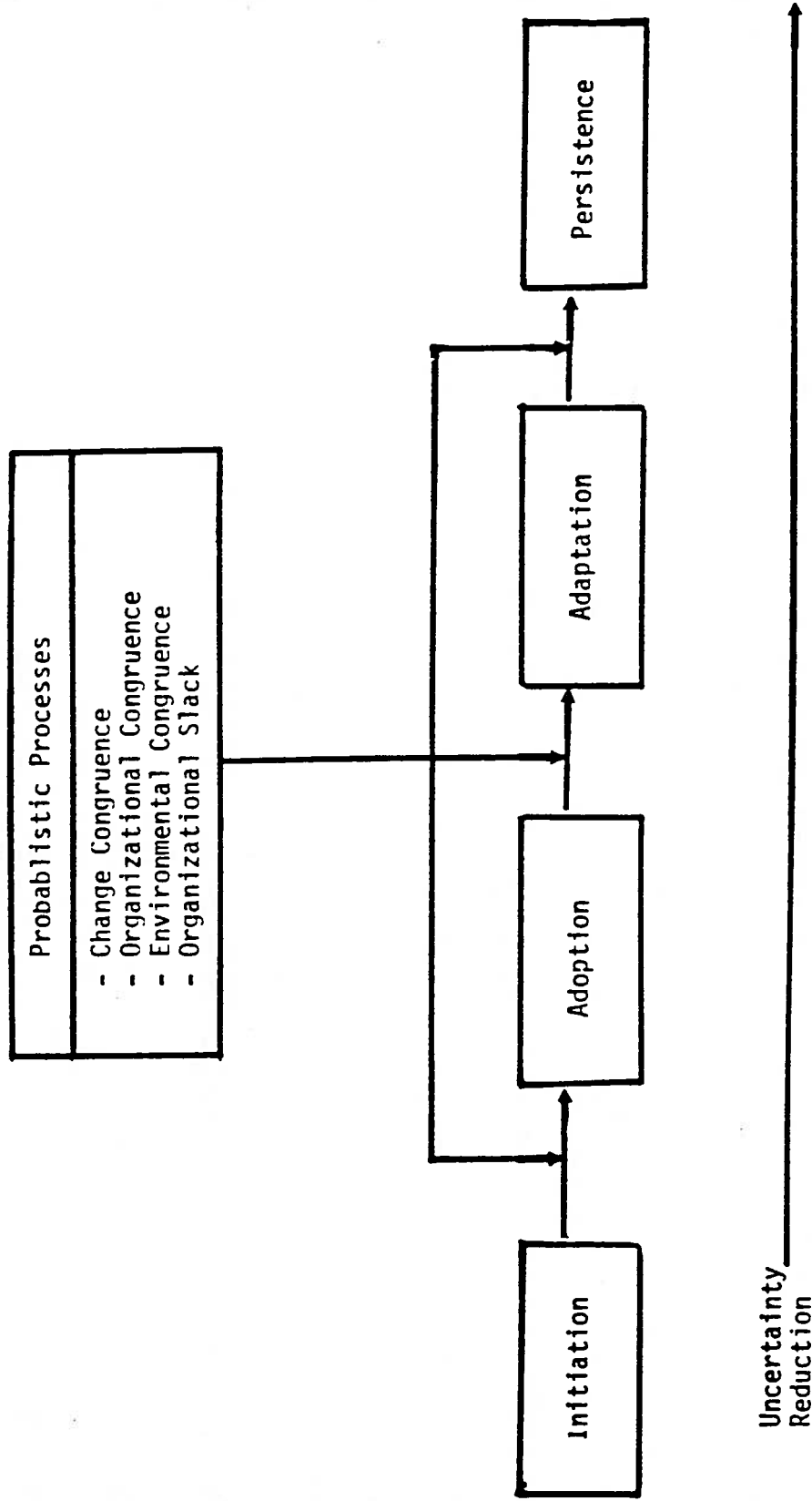


Figure 4
A Process Model of Persistence