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# INERTIA, ENVIRONMENTS, AND STRATEGIC CHOICE: A QUASI-EXPERIMENTAL DESIGN FOR COMPARATIVE-LONGITUDINAL RESEARCH\*

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This paper develops a research design for examining the relative influence of managers and environments on organizational activity over time. We outline three basic models of organization evolution: (1) an inertial model, which emphasizes constraints on evolution imposed by early patterns of exchange; (2) an external control model, which posits change in organizational activities that is guided by changes in environmental conditions over time; and (3) a strategic management model, which emphasizes the role of senior executives in choosing patterns and domains of competitive activity.

Using the general logic of experimental design, we outline methods for comparing longitudinal patterns in change and persistence that will distinguish between these alternative perspectives. Specifically, we describe procedures for operationalizing two basic parameters of research design: (1) the organization population cohort, which imposes systematic restrictions on sampling; and (2) a generalized version of the product class life cycle, which helps isolate changes in environmental conditions for comparing organizational activity patterns over time. Data from an ongoing study of firms in the minicomputer product class are presented to illustrate these concepts.

(ORGANIZATIONAL DESIGN; ENVIRONMENT; COMPARATIVE RESEARCH)

## Introduction

A central debate in organization theory revolves around the extent to which managers or environments exercise predominant influence over organizational outcomes. As discussed by Miles (1982), arguments pivot on differing assumptions of inertia and adaptation, and on differing beliefs about the relative influence of organizational history, environments, and strategic choice on activity patterns over time.

Three distinct theoretical positions have emerged. Natural selection theorists (Hannan and Freeman 1977, 1984; Aldrich 1979) argue that firms become enmeshed, early in their lives, in complex webs of commitment and interdependence that inhibit possibilities for later change. From this perspective, the origins of a firm's relationship to environments primarily determine activity patterns over time (Stinchcombe 1965). Resource dependence theorists (Pfeffer and Salancik 1978), on the other hand, posit that changes in the distribution and control of critical resources induce changes in organizational activity patterns. Here, environments predominantly shape the nature and direction of activity over time. Finally, strategic management theorists (Child 1972; Bourgeois 1984) also argue that organization-environment relationships change over time. This perspective, however, emphasizes the role of managerial choice in shaping domains and characteristics of competitive activity.

This paper argues that in order to separate out relative influences of history, environments, and strategic choice on organizational activity, systematic controls for these alternative, hypothesized influences must be established. We develop a quasi-

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experimental research design that specifies methods for (1) classifying organizations according to similarities of competence and origins so that effects of history on adaptive capacity can be controlled, and (2) characterizing differences in environmental states for comparing relative influences of strategic choice and contextual change. Within the limits of these controls, all manner of strategic and structural variations of firms may be investigated. We refer to "organizational activity patterns" as a general construct that comprises relationships among multiple dimensions of organizational activity: e.g. strategy, structure, political processes, norms.

The paper begins by outlining a series of research questions that frame the inertia-adaptation argument and that structure a quasi-experimental approach to research design. We then describe methods for operationalizing basic parameters of the design: (1) the organization population cohort, which imposes systematic restrictions on sampling; and (2) a generalized version of the product class life cycle, which helps isolate changes in environmental states. Data from an ongoing study of firms in the minicomputer product class are presented to illustrate these concepts. The paper concludes by considering some relationships between patterns and processes of organization adaptation as well as their relationship to performance.

### **A Quasi-Experimental Approach to Comparative-Longitudinal Research**

Three research questions structure debate about the relative effects of history, environments, and strategic choice on organizational activity patterns. They set the stage for systematic, comparative and longitudinal analysis of organization-environment relationships over time in a manner that controls for variation in these alternative influence sources. Longitudinal analysis of changes in organizational activity patterns forms the basis for empirical verification of competing theoretical perspectives on organization adaptation.

First, there is a fundamental question about whether organizations very often alter basic patterns in activity; about the extent to which they tend to persist in activity patterns even as environments change and/or as performance outcomes are low. In order to isolate influences of early activity patterns, attributes of organization that characterize initial relationships to environments must be specified. Examination of persistence and change patterns, longitudinally, will indicate the extent to which inertia accounts for patterns in activity over time.

Second, assuming that organizations do fundamentally alter their activity patterns from time to time, research must examine whether differences in contextual origins of firms lead to systematically different patterns in adaptation. If environments predominantly influence organizational activities, then firms founded or entering a context under different conditions should evidence commensurately different patterns in early activity. Differences in later adaptational patterns should be largely predictable from contextual origins and characteristics of change in environmental conditions.

Finally, assuming that patterns in change are not perfectly predicted by organizational origins, decisions and behaviors of managers can be compared. In order to rule out origins as explanation for differences in adaptive patterns and to control for effects of environments on the nature of adaptation, differences in strategic patterns must be compared for firms of similar origins as they contend with largely the same environmental constraints and opportunities. Conversely, comparison of differences in managerial choices, where origins and environments are systematically varied, sets the stage for examining the range of strategic options available to managers. In a controlled way, the relative effects of these multiple influence sources can be compared.

Figure 1 shows a simplified diagram of comparative and longitudinal relationships that are embedded in the above research questions. As shown, capital letters indicate

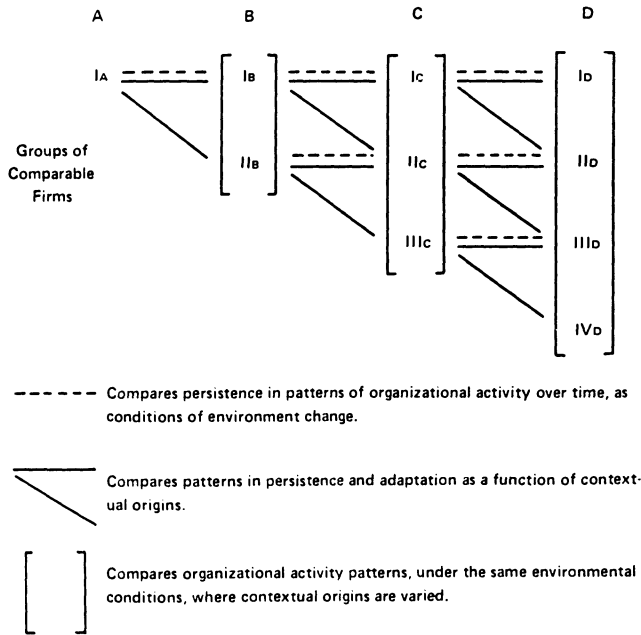


FIGURE 1. A Quasi-Experimental Design for Comparative-Longitudinal Research: Generic Status of Environment Over Time.

generic differences in environmental states over time. Roman numerals I through IV indicate contextual origins of groups of firms. Subscripts indicate characteristics of strategic and structural relationships of firms to different environmental states.

Comparative and longitudinal analyses indicated in Figure 1 require methods for (a) classifying organizations according to similarities of competence and contextual origins so that effects of history can be controlled, and (b) characterizing differences in environmental states against which environment and managerial influences on activity patterns can be compared. These controls are quasi-experimental in nature.

As discussed by Campbell and Stanley (1963), quasi-experimental research design substitutes the logic of experimentation where formal controls cannot be manipulated. In lieu of random assignment to treatment conditions, quasi-experimental designs exploit natural groupings on the basis of (1) point of exposure to changes in environmental conditions, and (2) characteristics of initial position with respect to these conditions. Discontinuous trends or events in environments are specified to compare before and after characteristics of groupings. Data scheduling procedures (i.e. the when and whom of measurement) are used to achieve something like experimental design where full control over the scheduling of stimuli (i.e. the when and whom of exposure) cannot be accomplished. The following sections describe data scheduling procedures for controlling influences of history, environments, and strategic choice on organizational activity patterns over time.

### Quasi-Experimental Groupings

Quasi-experimental control for the whom of data collection involves establishing a basic comparability of units or subjects on dimensions that may influence a unit's response to a stimulus. Where randomization is not possible, and where no control groups can be established, comparability helps ensure that stimulus effects can be isolated from pre-treatment tendencies or attributes.

Establishing a basis for comparing patterns in organization activity involves an understanding of organizational differences (Hattan 1979; McKelvey 1982; McKelvey and Aldrich 1983). Where organization adaptation is concerned, differences in firms' relationships to environments at the time of entry to a context constitute important, hypothesized influences on the nature and possibility of change. In order to understand whether and how managers may influence activity patterns, differences in firm-level strategies and contextual origins must be controlled. This section develops some basic ideas for classifying firms on the basis of competence and history similarities.

### *Competence Comparability*

The concept of organizational competence is complex. It encompasses the set of different pieces of knowledge and skill that comprise an organization's activity as well as their configuration (McKelvey 1982). The concept is multi-dimensional in nature. It refers to the full set of strategic and structural activities that characterize an organization's relationship to its environment. It defines, in a very basic way, what the organization is "good at" that permits the firm to compete and survive.

A great deal of work remains for developing a comprehensive scheme for classifying firms or business units according to similarities and differences of competence (McKelvey 1982). Theorists agree, however, that a useful first approximation of comparable knowledge and skill can be found in an initial, simple differentiation on the basis of product or service (Hannan and Freeman 1977; McKelvey and Aldrich 1983). Computer manufacturers, hospitals, and banks comprise very different sets of knowledge and skill. Regardless of the particular research question asked, this simple and intuitive classificatory procedure ensures that we know to what groups of organizations, and under what conditions, our findings relate (Hattan 1979; McKelvey and Aldrich 1983).

With respect to adaptation specifically, the procedure helps ensure that differences in adaptive capacities of organizations are not obscured by too much variation in core technologies. As discussed by Hannan and Freeman (1984), differences in required capital investments or in specialized training of personnel may differentially constrain firms' abilities to alter established activity patterns. Differences in institutionalized understandings of how business ought to be conducted in a context may also lead to different likelihoods of any change being considered (Tolbert and Zucker 1983; Tolbert 1985). Intuitively, we would expect these to vary significantly across product/service domains. Moreover we would expect these to vary within product/service domains as a function of differences in firms' prior experiences in a context.

Hattan, Schendel and Cooper's (1978) analysis of strategic differences across groups of firms in the U.S. brewing industry shows the degree of increased understanding that is gained by attention to dimensions of firm comparability. These researchers grouped firms empirically on several dimensions of manufacturing, financial, and marketing activities and found systematic differences in performance outcomes across the groupings. Others have employed theoretical constructs for classifying firms. Miles and Snow (1978) classify organizations as prospectors, defenders, analyzers, and reactors based on revealed organizational competences for identifying and exploiting new market opportunities. Population ecologists (Freeman and Hannan 1983; Carroll 1984) group organizations on dimensions of specialism and generalism using niche width as a basic dimension of environmental variation. Brittain and Freeman (1980) extend this perspective to consider how the proliferation and density of competitors in a context relate to the rise and exit of *r*- and *K*-strategists.

All of these typologies, whether empirically or theoretically derived, are operationalized with respect to specific attributes of specific organizations in specific product class environments. Detailed knowledge of environmental conditions that are critical to survival, and identification of variation in organizational patterns for exploiting these resources, means that "real" dimensions of competitive competence can be distinguished.

It is not our purpose in this paper to suggest one method or one classification scheme as best for understanding organizational competence. (See McKelvey 1982 for a discussion of the relative merits of different classificatory procedures.) Studies cited above indicate a greatly increased ability to understand variance in organizational performance outcomes, *whatever the measure of activity patterns*, given (1) restriction of sampling to firms in discrete product/service classes, and (2) identification of configurations of competitive activity within those classes. We argue here that research on adaptational patterns depends on the same identification of similarities and differences in patterns of organizational competence.

Adaptation can be considered in terms of (1) diversification away from the core or starting product class domain, and (2) fundamental reorientations in patterns of activity that seek to exploit resources in the same domain. Adaptational patterns of similarly-competent organizations, as they contend with largely the same environments, can be compared to investigate relative influences of environments and strategic choice on activity patterns. To the extent that classes of organizations tend to respond in the same manner to conditions of environments, the logic of external control will be supported. Conversely, variations in responses to environmental conditions will suggest an influence of strategic choice.

### *History Comparability*

Organization classification on the basis of competence similarity helps control for differences in patterns for exploiting resource environments. As discussed above, this allows us to examine relative influences of environments and strategic choice *across* groups of firms, under *given* conditions of environments. In order to gain a dynamic perspective on how differences in activity patterns come about in the first place, however, and in order to ensure that differences in adaptational patterns are not predicted primarily by differences of history, organizations must also be grouped to control for similarities of origin. As discussed by Miles (1982), characteristics of past organizational responses to environmental conditions constrain the nature and range of strategic choice that may be feasible.

We define an organization population cohort as a group of organizations entering a given product or service context at roughly the same time, which are also characterized by similar, pre-entry histories. For example, our research on firms in the minicomputer product class indicates three distinct waves of entry over the period 1960 to 1980. The first wave occurred during the early 1960's as markets were identified to support a smaller computer technology. The second wave entered during the late 1960's as technology became standardized, new market segments were opened, and demand for minicomputers began to increase at an average rate of over 40% annually. The final wave occurred in the mid-1970's, as growth began to slow and substitute products were introduced. (We will consider differences in these environmental periods in more detail in the following section.)

In order to investigate how these differences in origins affect subsequent adaptational patterns, firms must be grouped on the basis of entry period. By the logic of population ecology, any differences in organizational activity patterns that relate to these variations in contextual conditions should be expected to persist over time as environments vary. We can explain the long-range distribution of organizational forms

in a context on the basis of inertia, and birth and mortality rates of different forms. An external control perspective should indicate, by contrast, that adaptational patterns will vary systematically in accord with differences in contextual origins. The only way to identify precisely how contextual origins affect activity patterns over time is to track them from their outset.

Although we have several times referred to these classification procedures as pertaining to "firms or business units," it is important at this point to distinguish the two. Obviously, we cannot easily compare the resource environments of Data General, a minicomputer producer founded in 1968, and IBM's minicomputer unit (established in 1969). A second history-related restriction on classification is necessary. For each of the three entry waves in the minicomputer product class context, firms can be classified into one of three groupings: (1) new organizations founded to compete in minicomputers specifically; (2) old and large firms with an established competitive competence in computers in general; (3) old and large firms for which the minicomputer entry represents a fairly large diversification move. The classification scheme corresponds conceptually to Rumelt's (1974) dimension of related and unrelated diversification, with an additional category for new firms.

In simple terms, the organization population cohort, as a basic parameter of longitudinal-comparative research design, provides a basis for arguing that all members of the cohort have roughly the same *chance* at an optimal exploitation of environmental resources. That firms may capitalize on the chance differently, or that these differences may differentially constrain later possibilities for change, become empirical as opposed to theoretical issues. If inertia is a prevailing property of organization evolution, then organizations will be seen to retain basic attributes of early form. If change is a predominant attribute of organization evolution, then firms can be examined for the nature and direction of change, under both constant and changing conditions of environment.

The problem remains to characterize environments so that (1) the nature of initiating conditions is known, and (2) the timing and nature of environmental change can be specified; that is, so that the when of measurement can be established.

### Quasi-Experimental Stimuli

Controlling for the whom of data collection goes a fair distance in limiting and answering the question of when to collect data. Organization population cohorts are identified (1) on the basis of product class, which bounds the general set of resources that are critical to competition, and (2) on the basis of period of birth or entry, which attempts to ensure that contextual conditions at the outset of organization are constant. In order to examine how differences in contextual conditions over time affect differences in patterns of change, however, we need to devise a method for identifying changes in environments.

Two general approaches are possible. First, if we wish to examine how some particular change in an environmental context affects specific characteristics of organizational activity, then simply a measure of environmental variation on the dimension of interest and a measure of organizational activity can be identified. Several recent studies of organizational change patterns have adopted this approach. For example, Rowan (1982) examined how changes in the institutional environments of the California public school system affected the adoption and retention of particular administrative structures. As hypothesized, degrees of stability and crisis in the institutional domain predicted change or persistence of these "activities" of organizations. Tolbert and Zucker (1983) investigated the adoption of civil service reform by cities. Their findings indicate that differences in city characteristics predicted the adoption of evolution. The figure tracks these patterns for a single organization population cohort

reforms at the outset of the diffusion process, but not once the process was well underway. Pfeffer and Salancik (1978) report several studies that compare differences in firms dependencies on specific contextual resources to differences in firm responses to changes in the control of those resources.

Studies of this sort are useful for examining when and under what conditions firms may be likely to adapt to changes in environments, on certain dimensions. Additionally, they point up the value of classifying firms according to basic differences of product or service and differences in relationship to environments. Perhaps, we may infer that similar relational processes operate at all levels of organization.

In order to examine whether larger configurations of organizational activity patterns alter with respect to general changes in environmental conditions, a multi-dimensional view of environments (and environmental change) is needed. As discussed, competitive competence refers to the total complex of activity patterns established by firms to negotiate these multiple aspects of environment. In order to explore the extent to which firms persist in established activity patterns or to associate change with contextual or managerial influence, the full complement of environment dimensions must be known and measured. A generalized version of the product class life cycle constitutes a useful first organizing principle for characterizing environments complexly according to these multiple dimensions. Additionally, it provides a basis for identifying major shifts in environmental conditions against which persistence-adaptation phenomena of firms can be compared.

The product class life cycle concept was proposed originally in the marketing literature to characterize changes in demand over time (Wasson 1974; Day 1980). A general, staged progression of introduction, growth, maturity, and decline phases is described by an S-shaped curve that indicates levels of sales and degree of market saturation. These generic states of contextual conditions have been adopted and extended to encompass many other dimensions of environmental variation. Marketing researchers themselves have associated changes in consumer tastes, sophistication, and purchase patterns with differences in introduction, growth, maturity, and decline of a product (Howard and Moore 1982). Technology theorists (Rogers and Schoemaker 1971; Abernathy and Utterback 1978; Moore and Tushman 1982) have characterized rates of product and process innovations according to these stages and linked these developments to changes in demand and availability of resources for entering a context. Industrial organization economists (Porter 1980; Scherer 1980) have characterized basic changes in competitive structure in precisely these terms.

These perspectives on environments—along with many others (e.g. Hirsch 1976; DiMaggio and Powell 1983)—have been demonstrated, in a variety of product/service class settings, to capture an aspect of environmental conditions that relates to the appropriateness of different strategic and structural “organizations” by firms. Little work has been done to investigate the nature of interrelationship among the dimensions or to identify patterns in interrelationship that might yield a parsimonious typology of organization environments. At least on a conceptual basis, however, we may argue that these multiple resource and structural characteristics “organize” themselves according to some identifiable pattern. Environments may be “typed” according to general states of emergence, rapid growth, transition to maturity, maturity, and decline. Changes in environmental conditions that are relevant to the competitive survival of firms can be inferred.

Our research on changes and development in the minicomputer product class environment indicates three distinct, competitive periods in the United States for the period 1960 to 1980. Much of our analysis is qualitative and cannot be reported in detail here. However, Figures 2 through 5 chart changes in demand, demand growth, technology, and competitive structure to give a flavor of how conditions changed in



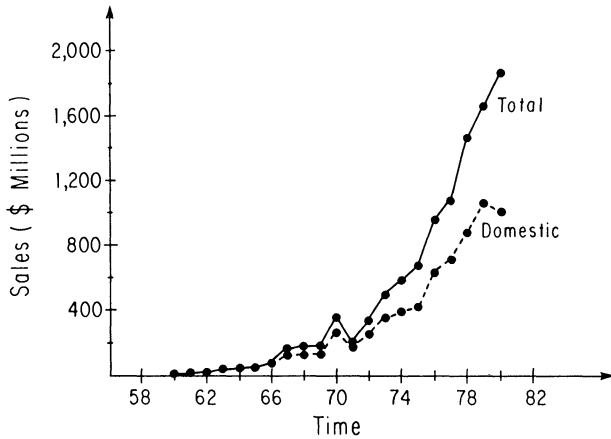


FIGURE 2. Minicomputer Revenues.

this context over time. As indicated on the charts, period 1, an emergent phase, extends from 1960, when the first minicomputer was installed, to about 1967, when minicomputers were legitimated as a viable competitive segment of the computer industry. The period is characterized by a low level of demand, slow growth, high concentration (due to the absence of competitors), and almost no technological standardization. Period 2, a rapid growth phase lasting from 1968 to about 1972, shows a precipitous drop in levels of concentration, a great increase in sales (sales more than double in several of the years), and a quick convergence on technological standardization. Period 3, a transition to maturity phase, while showing a continued steady growth in sales (average annual demand growth rate for the period, 24%), indicates also a developing stability of industry structure and technological progress.

Obviously, characterization of change in environmental conditions on these multiple and generally continuous dimensions is not nearly so “clean” as identifying discrete changes on single dimensions. Nevertheless, characteristics of demand, technology, and industrial organization do constitute real and important variations in environments. Firms compete and ultimately survive on the basis of their responses to these conditions. Moreover, with respect to conducting comparative-longitudinal research,

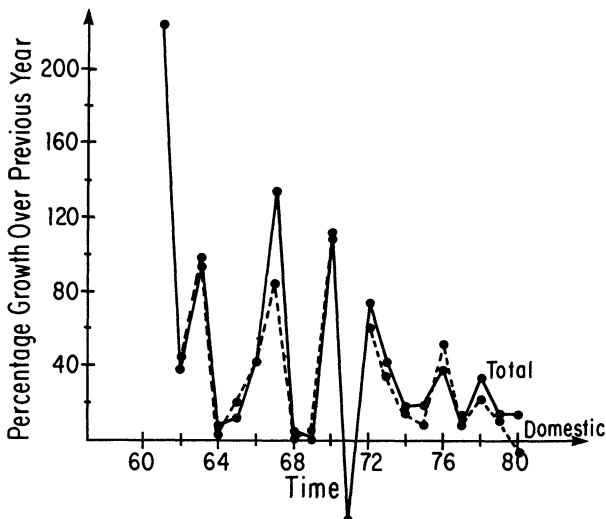


FIGURE 3. Growth in Dollar Sales.

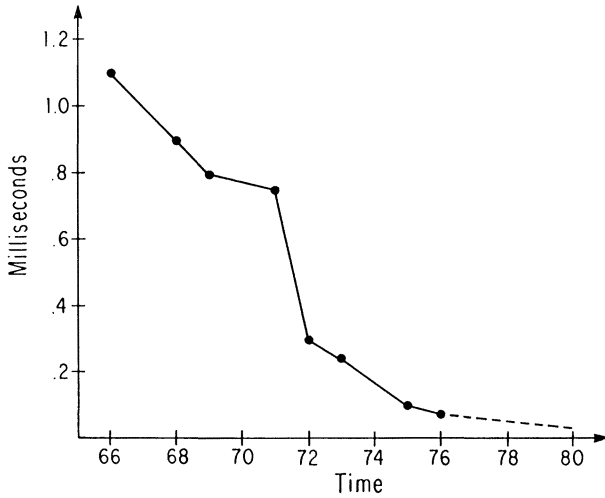


FIGURE 4. State-of-the-Art Central Unit Processor Time.

on persistence-adaptation phenomena, the concept is useful and attractive on two counts.

First, as suggested above, the concept captures a complex variety of environmental conditions that may influence organizational activities. Given adequate specification of complex environments, it should be possible to make statements about which dimensions of environment are more critical to track. We should assume, at the outset, that such distinctions will vary over different product/service contexts. In order to identify which dimensions are most critical in a context, all must be considered.

Second, the product life cycle concept provides a basis for inferring changes in states of environments against which changes in organizational activity patterns may be examined. Whether related to major disruptive events (e.g. regulatory interventions, a radical technological intervention), or simply emergent as a consequence of dynamic interplay among several dimensions, overall changes in patterns of inter-dimensional relationships can be identified. The strategic and structural activities of firms or business units can be tracked over time with respect to specific environmental conditions. Differences in patterns of activity over time for firms of different origins

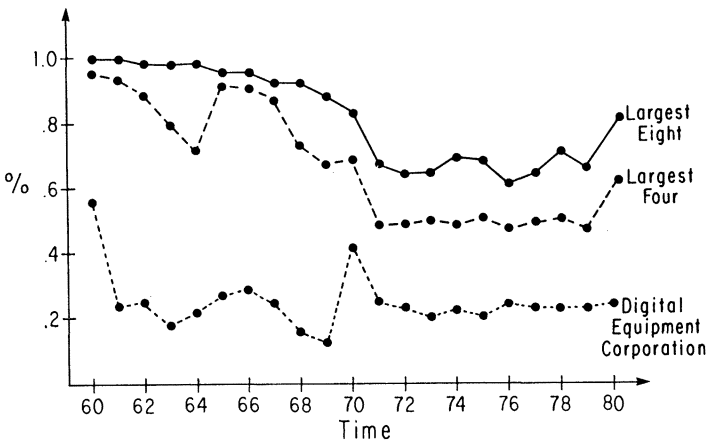


FIGURE 5. U.S. Dollar Sales Concentration.

can be identified. Decisions and behaviors of executives, as they seek to negotiate changes in environmental conditions can be compared for (1) differences in their substantive character, (2) the degree to which decisions are in fact realized organizationally, and (3) of those that are realized, which perform better or worse in the context.

**Regression-Discontinuity Analysis**

Control for the when and whom of data collection establishes basic, quasi-experimental controls for inferring the influence of stimuli on response patterns of experimental units. This paper has outlined methods for operationalizing such controls with respect to organizations and their relationship to environments. Throughout these discussions, we have tried to describe the series of comparative and longitudinal analyses that will help to isolate relative influences of history, environments, and strategic choice on organizational activity patterns over time. This section discusses several, more general issues related to the conduct of comparative-longitudinal research within a quasi-experimental framework.

In essence, the design we propose constitutes a regression-discontinuity analysis, as described in Campbell and Stanley (1963). The central question we ask is whether a change in environmental conditions spurs systematic response from comparable groups of firms. We want to know whether characteristics of firms that precede a change in environmental conditions systematically predict both response and the nature of response. Inertia and external control perspectives both posit this outcome, though the one emphasizes characteristics of organization almost exclusively while the other asserts relationships between organization characteristics and changes in environments. The strategic management perspective, on the other hand, proposes variation in organizational responses that may be constrained, but not wholly predicted by prior patterns in activity.

Figure 6 shows a general diagram of some hypothetical persistence-adaptational patterns that would indicate support for these alternative perspectives on organization

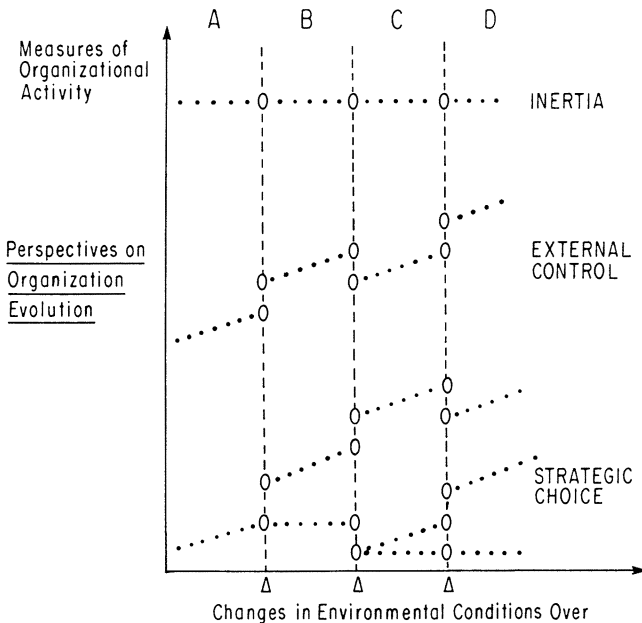


FIGURE 6. Regression-Discontinuity Analysis: Different Patterns in Organization Adaptation.

evolution. The figure tracks these patterns for a single organization population cohort whose members are similar in terms of their early responses to environments. We assume that some singular or indexed measure of organizational activity pattern can be identified.

As shown in the figure, under an assumption of inertia, no change in level or direction of activity occurs. From an external control perspective, either a level or directional change in activity occurs. All firms in the cohort tend to respond similarly. The strategic management perspective shows both level and directional changes as well. In this case, however, firms that were greatly similar at the outset of their relationship to an environment evidence highly diverse patterns of response to changing conditions over time.

As noted above, specific patterns shown in Figure 6 are hypothetical. Any of hundreds of patterns might characterize actual evolutionary patterns of organization population cohorts. Using these, however, we can describe how comparative and longitudinal analysis that controls for influences of history and environments leads to understanding of influences on patterns in organizational adaptation. For example, the external control perspective, for this hypothetical group of firms, indicates a general trend for change over time in the same direction. Changes in environments indicate clear responses in terms of level or specific type of activities. Over the long time frame, however, a general and persistent trend is indicated that is predicted by organizational origins. The strategic management perspective also indicates some general trends. In this case, differences in responses to the first change in environmental condition apparently influence patterns in change over several subsequent periods. Patterns in level and direction of change for the two groups of firms never again converge.

We explore these latter possibilities not to suggest any hypothesis that they will characterize actual patterns of adaptation, but rather to re-emphasize that inertia, environments, and strategic choice may interactively determine courses of organization evolution over time. In order to explore these *relative* influences, systematic controls for variation in the influences must be established.

Finally, patterns must be compared across cohorts of firms that are different in terms of contextual origin and that vary in terms of initial response to contextual conditions. It is certainly possible that a group of firms founded under one set of conditions may be so thoroughly constrained by contracts and interdependencies necessary to survival that no subsequent adaption will be possible. Another group of firms, founded under more hospitable conditions, even given similar initial patterns for exploiting resources, may be able to retain a larger degree of flexibility. Again, we would conclude for *relative* influences of history, environment and strategic choice.

We will not elaborate here extensively on the validity of this design for inferring patterns of influence on organizational adaptational patterns. Briefly, however, with respect to internal validity, the design controls for biases resulting from history, maturation, testing, statistical regression, selection, and selection-maturation interaction through careful and systematic classification of firms on the basis of competence and history comparability. Instrumentation poses a problem depending on how clear and repeatable a measure of organizational activity can be obtained. Experimental mortality is a problem only to the extent that biases exist in the sampling of firms for inclusion in population cohorts. Our design is necessarily *ex post facto* to the extent that examination of patterns in persistence and adaptation requires survival. This is not a serious problem, however, so long as firms are sampled on the basis of originating context and patterns of relationship to these context and *not* on the basis of later performance/survival patterns.

We have already discussed problems of external validity. Results obtained from this sort of analysis can only be argued to pertain to the specific populations and cohorts

sampled. As discussed by McKelvey and Aldrich (1983), however, as the number of studies that employ such controls mounts, a foundation may be laid for comparing and predicting cross-product domain relationships. Such comparisons may yield a more parsimonious classification of organizations and environments. In the long run, a "theory of the middle range" (Merton 1968) may be built from the bottom up.

### Conclusions

We have structured this paper to establish basic, quasi-experimental controls for investigation of relative influences of inertia, environments, and strategic choice of organizational activity patterns over time. We have described data scheduling procedures (i.e. the when and whom of measurement) to introduce something like experimental design where formal controls on exposure and treatment are impossible. Though a great deal of empirical work will have to be conducted to substantiate the feasibility and power of this approach, we believe that the controls outlined here constitute basic first steps toward understanding of when and how organizations alter patterns in activity. We conclude by briefly considering two other important issues related to the topic of organization adaptation.

First, in emphasizing influences of history, environments, and strategic choice on patterns in activity over time, we have intentionally ignored probable relationships between adaptive capacities of firms and performance outcomes over time. Intuitively, we would expect high and low performing firms to be differentially capable of altering established patterns in activity. As discussed by Lewin and Minton (in this issue), concerns for organizational effectiveness serves as a unifying theme for all manner of theories and perspectives on organizational design, structure, process, etc. It should pertain, as well, to adaptation and evolution. Two fundamentally different arguments suggest an influence of performance on adaptation.

First, we might consider that high performing firms possess more organizational slack (March and Simon 1958) for engaging in a diversification or reorientation attempt than low performing firms. [The issue of slack is also related to the issue of size, which may serve as yet another important moderator of adaptation (Aldrich and Auster, forthcoming).] For large firms, established patterns in activity may be protected and supported even as the firm attempts general change. Moreover, slack may create a large enough margin for error so that failure in an adaptation attempt causes no lasting decrement to effectiveness outcomes. High performing firms may be high performing precisely because they routinely engage in alteration of activity patterns that at least seek better alignments with environments. By these arguments, we would expect more adaptation to be observed for high performing firms. Low performing firms, if they do not adapt, would be expected to fail eventually, except insofar as the environment does not change to support existing activity patterns.

Second, by a different kind of argument, we might consider that high performing firms will so institutionalize established activity patterns that the likelihood of any alteration becomes remote. Carroll (1981) has discussed the relative inability of large, urban daily newspapers to respond effectively to reduced circulation caused by the proliferation local more specialist papers. Staw, Sandelands and Dutton (1981) have discussed how commitments of senior executives to established policies seem to preclude their even perceiving a need for change. Low performing organizations may not be able to escape recognition of a problem in their patterns of activity. Variation may be spurred even as a desperate measure for possible survival.

We cannot develop here a body of theory and hypothesis to structure investigation of this complex issue. We wish only to suggest that performance, as a possible moderator of adaptive capacities of firms, constitutes a critical variable for future research.

The second issue we wish to explore briefly has to do with processes of organization adaptation. The approach for studying adaptation that we have described in this paper constitutes what Mohr (1982) refers to as "variance analysis." We seek to compare patterns in organizational activity over time and across different organization population cohorts. We believe that this is an important first step to investigating process. As discussed, the different theoretical perspectives on patterns in adaptation are predicated on different assumptions of process.

Future research, however, must explore process directly. For example, processes of institutionalization can be researched to identify the development of beliefs in established activity patterns as objectively and externally valid, independent of changes in environments. As discussed by Zucker (1977), social organizations vary on a dimension of degrees of institutionalization. Investigation of processes that lead to high levels of institutionalization may help specify further when and which organizations will likely adapt to changes in environmental conditions.

To take another example, based in the external control perspective on evolution, we might examine how changes in internal distributions of power and control over resources relate to changes in environmental conditions. As different environmental resources become more or less critical to organizational survival, we may expect different subunits of organizations to assume greater control of internal resources (Pettigrew 1973). Previously powerful subunits cannot be expected to relinquish power easily. Conflict in organizations may be a critical process determinant of adaptation.

Finally, though we have argued that strategic choice as an influence on organization adaptation will be indicated by variation in activity patterns that is not predicted by contextual origins or environmental conditions, processes of strategic implementation remain to be explored. Some executives may be more or less able to effect an overall change in organizational activity patterns. Different kinds of behaviors and decisions may be more or less related to effective implementation. Different sequences of implementing change throughout organizations may be more or less efficacious.

Again, it is not our purpose in this paper to explore how these different processual mechanisms may influence adaptation in organizations. Systematic research on patterns in adaptation and the relative influences of history, environments, and strategic choice on those patterns should reveal some fruitful directions for investigating process.<sup>1</sup>

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