



The Evolution of New Organizational Forms

Elaine Romanelli

Annual Review of Sociology, Volume 17 (1991), 79-103.

Stable URL:

<http://links.jstor.org/sici?sici=0360-0572%281991%2917%3C79%3ATEONOF%3E2.0.CO%3B2-M>

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/about/terms.html>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

Annual Review of Sociology is published by Annual Reviews. Please contact the publisher for further permissions regarding the use of this work. Publisher contact information may be obtained at <http://www.jstor.org/journals/annrevs.html>.

Annual Review of Sociology
©1991 Annual Reviews

JSTOR and the JSTOR logo are trademarks of JSTOR, and are Registered in the U.S. Patent and Trademark Office. For more information on JSTOR contact jstor-info@umich.edu.

©2002 JSTOR

THE EVOLUTION OF NEW ORGANIZATIONAL FORMS

Elaine Romanelli

The Fuqua School of Business and Department of Sociology, Duke University, Durham, North Carolina 27706

KEY WORDS: organizational forms, organizational evolution, organizational ecology

Abstract

Rather quietly over the last decade, a large body of literature has emerged to consider how new forms of organization arise and become established in the organizational community. The literature represents a very wide array of theoretical perspectives, and no emerging consensus or dominant theme can plausibly be identified. No long stream of research has been produced to validate the arguments of any perspective. What we find instead is a disparate group of mostly nascent theories from organizational ecology, economics, institutional sociology, strategic management, and others, all seeking to explicate the nature of contexts and processes that may generate new organizational forms. This review organizes this literature according to assumptions about how variations are generated in the organizational community. Three perspectives appear to capture most of the arguments: an organizational genetics view, which emphasizes random variation; an environmental conditioning view, which considers variation to be contextually constrained; and an emergent social systems view, which considers variations in organizational forms to be the products of embedded social-organizational interactions. Theories associated with each of the perspectives are explicated, and their practical implications for future research are examined. The review concludes with a brief consideration of the theory of the evolution of new organizational forms as itself an evolution of a new and important field of study.

INTRODUCTION

Over the past decade, a chorus of critics and commentators (e.g. Aldrich & Mueller 1982, Astley 1985, Fombrun 1988, Hawley 1988, Romanelli 1989a, Meyer 1990) have emphasized the origins of new organizational forms as one of the critical unaddressed issues in organizational sociology. Interest in the question stems back at least to Stinchcombe (1965a), who proposed that the array of organizational forms existing at any point in time is a product of innovative organizational responses to environmental conditions earlier in history. Organizational ecologists (Hannan & Freeman 1977, 1989, Aldrich 1979) underscored the importance of origins when they emphasized variation as a key theoretical construct for explaining the evolution of organizational populations. Others (e.g. DiMaggio 1983, 1988, Nelson & Winter 1982, Van de Ven & Garud 1989) have described important policy implications of new organizational forms for both government agencies and corporate managers. Hannan & Freeman (1989:3) offered perhaps the strongest rationale for investigating the evolution of new organizational forms when they stated: "the ability of a society as a whole to respond to changing conditions depends on the responsiveness of its constituent organizations and on the diversity of its organizational populations." Organizational diversity sets the limit on the range of alternative solutions that are available in the environment. In the long run, in a changing environment, diversity can only be maintained or increased by the introduction of new organizational forms.

Even more than theoretical arguments, however, recent empirical work on the competitive and institutional dynamics of organizational populations identifies a need for investigation of the origins of organizational forms. Studies of age dependence in organizational mortality (e.g. Carroll & Delacroix 1982, Freeman et al 1983) demonstrate that younger organizations face a greater likelihood of failure than older firms. Presumably, new organizational forms are similarly vulnerable to what Stinchcombe (1965a) termed a liability of newness. Studies of populations that compete in overlapping resource spaces (e.g. Hannan & Freeman 1987, Barnett & Carroll 1987, 1990, McPherson & Smith-Lovin, 1988, Barnett 1990) also reveal rather strong limits on the number of organizational forms that can coexist. Finally, from a different line of argument, studies from institutional sociology (e.g. Rowan 1982, Tolbert & Zucker 1983, Fligstein 1985) show how institutionalizing processes in organizational fields (DiMaggio & Powell 1983) engender widespread structural conformity across organizations that offer similar products and services. In other words, while organizational diversity may be crucial to sustained economic and social well being, strong forces of competition and institutionalization work to reduce the diversity of organizational forms.

Despite the evident need for theory and research on the evolution of new organizational forms, organization theorists have only recently begun considering how new forms might arise and become established. No theoretical consensus exists regarding an approach to the problem. In fact, in the absence of much empirical work to support the claims of any approach, the conceptual perspectives are diverging. Rather than indicating an occasion for synthesis or integration, however, this theoretical diversity, like organizational diversity, may provide a fruitful ground for conceptual and empirical innovation.

The purpose of this review is to draw together and organize this diverse body of literature on the evolution of new organizational forms. I begin with a brief examination of the concept of organizational form and its implications for the study of organizational form evolution. The body of the review organizes perspectives on evolution according to their understandings about the contexts and processes that tend to generate organizational form variations. Three views are examined: (a) An organizational genetics view (e.g. McKelvey 1982, McKelvey & Aldrich 1983, Nelson & Winter 1982) focuses attention on characteristic traits of organizations; this view considers variations to be random events arising from the ongoing exchanges of everyday activity. (b) An environmental conditioning view (e.g. Stinchcombe 1965a, b, Brittain & Freeman 1980, 1986, Hannan & Freeman 1989, Romanelli 1989a, Aldrich & Waldinger 1990) emphasizes that environments are more or less conducive to organizational form variations and constraining of the types of variations that can be invented. (c) Finally, an emergent social systems view (e.g. Van de Ven & Garud 1989, Rappa 1989) considers organizational form variations to be the products of embedded social-organizational interactions. Research implications of each perspective are discussed along the way. I conclude with an argument that these many different emerging theories on the evolution of new organization forms are themselves part and parcel of a new organizational theory.

THE CONCEPT OF ORGANIZATIONAL FORM

To speak of the evolution of new organizational forms implies that the concept of organizational form is relatively unambiguous. If we want to know how something comes into being, it seems reasonable that we should be able to identify the thing when it appears. Certainly, understandings of the concept should span various theories of organizational form evolution. While none of these objectives is easily obtained in the current state of organization theory, I argue that the mere imputation of a concept of form serves to organize and advance investigation of changes in organizational diversity.

Most broadly, the concept of organizational form refers to those character-

istics of an organization that identify it as a distinct entity and, at the same time, classify it as a member of a group of similar organizations. For example, in a community, we can distinguish the pizza place from the gas station down the street based on differences in the organizations' products, services, equipment, physical layout, and so on. We can further differentiate among pizza places themselves based on varieties of pizza offered, whether they deliver, and whether they offer food other than pizza. We can also consider pizza places simply as restaurants, which are distinctively different from mining companies. All of these ways of categorizing pizza places represent legitimate distinctions among organizational forms.

Despite the ease with which we may identify meaningful groupings of organizations, no commonly accepted classification scheme has been developed. Theorists debate the usefulness of a general scheme. At one end of the argument, McKelvey (1982) emphasized the need for a taxonomy of organizational forms, i.e. for theory and methods that can classify organizations according to their differences and similarities. The clear objective of taxonomic research is development of a relatively stable classification scheme. Such a scheme would improve our confidence regarding the generalizability of research findings. To the extent that the scheme represented the complete set of existing organizational forms, new forms could be easily identified. Unfortunately, no organizational taxonomy has been developed.

At the other end of the debate, Hannan & Freeman (1977, 1989) explicitly refrained from proposing any fixed rules or typology for identifying organizational forms. They argued that form may be generally inferred from an organization's formal structure or normative order, and that the classification of an organization as one form or another may be specified according to the interests of the investigator. For example, Freeman & Hannan (1983) described how 13 distinct forms of restaurants in California could be collapsed to two categories of specialism and generalism (Hannan & Freeman 1977) because that was most useful to the purposes of their study. Brittain & Freeman (1980) and Romanelli (1989b) also distinguished organizational forms on the basis of organizational strategies—e.g. specialists versus generalists, *r*- versus *K*-strategists. Other studies have usefully classified organizations on the basis of differences between product/service classes; e.g. Carroll & Hannan's (1989) study of density delay in mortality rates for five populations—American labor unions, Argentinean newspapers, Irish newspapers, newspaper publishers in the San Francisco region, and American brewers. Finally, some researchers have defined organizational forms on very broad and inclusive dimensions. Fligstein's (1985) study of the multidivisional organizational form and a series of studies by Singh and his colleagues (e.g. Singh et al 1986, Tucker et al 1990) on voluntary service

organizations in Toronto are good examples of this approach. The principal benefit of this more flexible approach to classifying organizations lies in its recognition that organizations do not fall neatly into a few, perhaps hierarchically ordered, categories. Research can proceed on the basis of intuitive, descriptive distinctions. The main drawback is that it is not easy to know how findings may generalize to other forms of organization. As an increasing number of studies employ this approach, however, the basis for empirically identifying dimensions of generalizability will expand.

Between these two extremes lies a large number of proposals for classifying organizations that are neither fixed in the theory of a taxonomy nor as generally flexible as the approach advocated by Hannan & Freeman. Some investigators have emphasized dimensions of variation in organizational form without specifying particular types. For example, Aldrich & Mueller (1982) described organizational form variations over the general dimensions of technology (the set of processes for accomplishing tasks), coordination (the organization of activities toward a common goal), and control (the maintenance of an organizational boundary). Using these dimensions, they were able to trace the origins of several major organizational forms (e.g. factory production, monopolistic control) over the course of industrial history in the United States. Tushman & Romanelli (1985) described organizational culture, strategy, structure, power distributions, and control systems as useful dimensions for examining organizational form evolution within product-market classes. In both cases, the authors devised these dimensions as a basis for identifying changes in organizational forms over time. A basic problem in any evolutionary theory is the specification of significant differences in organizational form. The use of common dimensions for comparing organizations over time helps identify both the nature and degree of emergent differences.

Finally, of course, a very large number of organizational typologies have been developed. A typology is simply a description of the characteristics of distinct organizational groups whose primary differences are identified according to the interests or beliefs of the theorist. Rothschild-Whitt (1979) offers an excellent example of typological method as she distinguishes the collectivist form of organization from the rational-bureaucratic form on the basis of characteristic differences over clearly specified dimensions of organizational activity and structure. Scott (1981) identified 18 organization typologies, which he classified according to the "organizational element"—goals, social structure, technology, participants, and environment—each typology emphasized. His classification scheme is perhaps the closest thing we have in the way of an organizational taxonomy. Perhaps an emergent theory of organizational classification may be extrapolated from the fit of these many typologies within a relatively few dimensions or elements of organization.

The principal benefit of typologies as a basis for identifying organizational forms is that they usually provide a detailed description of different types so that organizations may be unambiguously classified. The drawback, of course, is that such specificity may obscure similarities or differences on other dimensions or elements of organization.

What can be learned from this diverse array of approaches to identifying organizational forms? Can the evolution of new organizational forms be considered without a consensus on the meaning and measurement of differences in organizational form? I propose that the discussion alone, no matter how disparate the viewpoints, properly focuses attention on the importance of organizational differences and similarities. Two observations merit elaboration. First, whether or not we ever achieve consensus regarding the meaning and measurement of organizational form, the concept has spurred researchers to attend more thoroughly to the similarities and differences of organizations in their samples. This alone improves prospects for generalizability. A "random sample of organizations" is no longer an acceptable research procedure. We must now know and describe the basis on which firms are grouped and compared. Second, whether or not we can ever agree on a classification of organizational forms, the concept emphasizes the importance of establishing a baseline for comparing new patterns in organizational activity. Evolution can only be known after the fact, when differences in form can be clearly identified.

The perspectives that follow do not obviously adopt any one of these concepts as the basis for their consideration of organizational form evolution. In every case, however, and albeit in various ways, all of the authors indicate the existence of relatively stable patterns or forms of organization as the basis for investigating the contexts and processes of evolution. Though particular organizations may be classified differently according to the interests of an investigator, evolution is always examined against the backdrop of some system for classifying organizations. The concept of organizational form helps clarify the point that evolution is the study of changes in types, not changes in individual entities. The process by which evolutionary differences emerge becomes open to discussion.

ORGANIZATIONAL GENETICS: A RANDOM VARIATION VIEW

It is appropriate to begin a review of perspectives on the evolution of organizational forms with theories that draw directly from biological evolutionary models. Two works, *Organizational Systematics* (McKelvey 1982) and *An Evolutionary Theory of Economic Change* (Nelson & Winter 1982),

stand out as offering rather complete, if also somewhat different, views of a biological analogue of variation in organizational forms.

The starting point for both of these theories is an elaboration of the concept of an organizational gene. Two characteristics of "genes" make them critical to construction of an evolutionary theory. First, genes must express the characteristic traits that identify the distinctive nature of the organization and, at the same time, make clear its appropriate classification based on similarities with other firms. Second, these organizational genes must be transmissible or communicable so that the characteristic traits can be copied. Nelson & Winter describe "routines" as the organizational counterpart of biological genes. Routines, which refer to formal as well as tacitly understood rules of behavior, are defined as the regular and predictable behavioral patterns of firms. Routines are reflective of historically given decisions and behaviors that have come to govern the actions of a firm (i.e. profit maximization as a realized goal need not be assumed), and they tend to persist in organizations for rather long periods. Somewhat similarly, McKelvey described organizational "competence elements" (comps) as the analogue of biological genes. Comps are base units of knowledge and skill that make up what the organization knows how to do. Comps also tend to persist in organizations for rather long times.

Routines and comps express the characteristics of organizational form that are selected for or against by environmental conditions. Natural selection is the second key theoretical component of these evolutionary models. Nelson & Winter and McKelvey disagree about how variations in routines or competencies are generated.

As the basis of their theory of organizational evolution, Nelson & Winter distinguished among three classes of routines: (a) routines, called operating characteristics, that govern organizational decisions and behaviors given a particular stock of resources; (b) routines that augment or diminish the stock of resources in response to changes in the state of the organization (e.g. growth, increased/decreased profitability) or the environment; and (c) search routines, including the organization's own R&D and its investigation of what other firms are doing, that can modify various aspects of the operating characteristics. The particular search routines of an organization constrain, in a probabilistic sense, what is likely to be found. The organization will alter its operating characteristics or not according to the firm's criteria for evaluating new alternatives. These variations will then be subject to processes of natural selection. At any given point, organizations will present for selection a broad array of routines, some long-established and some recently innovated. Those organizations whose routines are relatively better fit for coping with environmental conditions will thrive; other organizations will either imitate the more successful routines (i.e. their search routines will discover them, and the

firms' evaluation criteria will permit adoption of the new routines), or they will decline.

McKelvey, on the other hand, regarded the organizational population, not the individual firm, as the critical focus of evolutionary analysis. An organizational population is defined simply as a group of firms with similar forms, or dominant competencies. There are two important results of this emphasis on the population. First, adoption of the population as the unit of environmental selection means that a variation in organizational form must establish itself in at least a few organizations before any selection can occur. McKelvey emphasized isolating processes that can provide variations with a hospitable resource environment, meaning principally that the variation is not beleaguered by competition from existing organizational forms. The second important implication of the population focus is that the individual firm in an established population is not examined as the place in which variations occur or the means by which they are generated. McKelvey argues that comps are carried (at least temporarily) in the minds of individual employees. Because people are mobile, and because people can communicate what is on their minds, interactions between individuals become the vehicle for the transmission of comps. An ever-churning exchange of competencies can occasionally result in a new combination of competence elements, i.e. a variation in the organizational form.

Despite differences in their theories about how variations are generated, both Nelson & Winter and McKelvey posited that the nature of realized variations in organizational forms (i.e. variations that are selected by the environment for retention) is random. Neither theory proposed a guiding hand of any sort. Changes in environmental conditions may increase or decrease the rates of variation occurring in the organizational community. For example, from the Nelson & Winter perspective, a technological invention might trigger a wave of changes in organizational operating routines set off by organizational search routines. From the McKelvey perspective, we might expect the establishment of a new organizational population that is isolated from competitive forces due simply to a few individuals having knowledge of the new technology. Changes in environment will not, however, dictate the occurrence of particular variations. Variations in organizational activities may be conditioned by the nature of the routines or comps that preceded the variations, but there is no way of knowing which of the variations will prove better adapted to the environment. Genetic theories of evolution in organizational forms expressly limit the focus of concern to the processes of evolution, not its specific outcomes.

There are at least two important practical implications of these process theories of random variation. First, biological analogies for the evolution of organizational forms are conceptually attractive because they offer so com-

plete a view of the processes of evolution. If we could identify these characteristic organizational routines or competence elements, we could more accurately and unambiguously classify firms according to their similarities and differences. With respect to variation, we would be able to tell more clearly when one had occurred. Since routines and competencies are also the characteristics of organizations that change when an organization is involved in the evolution of an organizational form, we might be able to track the variation process itself.

A major drawback to these theories, of course, is the empirical elusiveness of routines and competencies. Only limited attempts, even by these authors themselves, have been made to identify existing routines or competencies in organizations. Winter (1990:276) discusses the benefits of "careful description of prevailing routines," but does not mention any such efforts specifically. McKelvey presented a history of Ancient Mesopotamia to show the evolution of different organizational forms, and he especially emphasized the isolating events (e.g. floods, wars, and the physical movement of populations) that could both nourish and protect the organizational form variations. Presumably, the variations derived from some combining and recombining of existing competence elements. Retrospective examinations of such time-distant events, however, cannot identify the competence elements or any new combinations that account for new organizational forms.

Hannan & Freeman (1989) questioned whether even an exhaustive delineation of organizational competence elements would be able to distinguish between different organizational forms. They posed the example of public versus private universities and wondered whether differences between the two could be discerned even with a complete list of the competencies of the organization's members. Presumably, members' competencies would overlap almost completely. Of course proponents of the genetics analogy might respond that such evidence would imply that the public-private distinction for universities is not indicative of distinctive organizational forms. Nevertheless, Hannan & Freeman's question does raise an issue about how to determine which of the many competencies carried by organizational members are actually reflective of the dominant competence of the organization. It seems that much thick description of intuitively different organizations will be necessary before rigorous taxonomic research can be conducted.

The second practical implication of these theories expressly does not rely on any empirical demonstration of routines or competencies. If variations are random, then we can examine patterns of organizational form evolution without needing to identify the specific processes that generate the variations. For example, we may be able to identify contextual conditions in organizations and in environments that are more and less facilitative of variations being generated (Aldrich 1979). Under some conditions, knowledge about the

patterns of evolutionary differentiation may lead to supportable assumptions about the nature of processes that produce the variations themselves (Romanelli & Tushman 1986). For example, some organizations' search and evaluation routines may be more productive of variations than those of other organizations. Such organizations might be identified through investigation of patterns in variation. Overall, emphasis on patterns in variation supports investigation of rates and locations of variations. The specific nature or content of the variations, which is a relevant concern of some of the other perspectives, can here be ignored.

ENVIRONMENTAL CONDITIONING: A CONSTRAINED VARIATION VIEW

Where the genetics analogy emphasizes microlevel processes that produce specific organizational variations, other perspectives from economics (e.g. Schumpeter 1939, 1950, Dosi 1988) and sociology (e.g. Stinchcombe 1965a, Hannan & Freeman 1989) examine how conditions of environments may be more or less productive of organizational form variations, and predictably so. Three related approaches to the study of constrained variation in organizational forms capture most of the relevant research and theory: (a) Creative destruction, described by Schumpeter (1939, 1950) as a competitive process that advances the evolution of new organizational forms in response to the development of new technologies, emphasizes industrial organization as a key influence on the likelihood of evolution. (b) Environmental imprinting, described by Selznick (1949, 1957) and Stinchcombe (1965a) as a process by which new organizations forms come to reflect environmental conditions during the period of the form's evolution, emphasizes the historical conditioning of organizational forms. (c) Finally, organization speciation, the most recent argument in the constrained variation view (Freeman 1982, 1986, Romanelli 1989a, Lumsden & Singh 1990), examines organizations and populations as producers of organizational form variations.

Creative Destruction

Probably the intellectual father of all research on macro level change in organizational environments is Joseph Schumpeter. Especially in his writings on capitalism and on business cycles (1939, 1950), Schumpeter advanced propositions linking changes in the structures of industries (e.g. concentration) to rates of new industry formation. He considered technological innovation to be the primary factor in the creation of possibilities for structural change. New technologies, which existing organizations typically do not adopt and assimilate easily, offer the greatest possibilities for new resource combinations, i.e. for new forms of organization. As the new technologies

support competitive activity that challenges existing organizations, the older firms begin to fail and in so doing free up even more resources for more new combinations, and so on. In his famous phrase, "the gales of creative destruction," Schumpeter expressed the dynamic linkages among the demise of existing organizational arrangements, the invention of new technologies, and the rise of new organizational forms.

Schumpeter's ideas have spawned literally hundreds (perhaps thousands) of empirical studies in the economics literature, although most of them have focused on factors that affect R&D expenditures in existing organizations and not on rates of technological innovation per se or on rates of organizational birth. Expenditures on R&D are presumed to relate to rates of technological innovation, but only a few studies have examined this relationship directly. Due to this literature's emphasis on the activities of large, ongoing organizations, and its focus on technological innovation and not the invention of new organizational forms as the outcome of interest, I will not examine this literature further here. Kamien & Schwartz (1982) and Dosi (1988) provide superb reviews.

A few themes in organization theory, however, do strongly reflect Schumpeter's ideas about competition among populations. Recent studies from population ecology compare the relative advantages of competing populations based on their abilities to exploit evolving resource conditions. For example, a series of studies by Barnett and Carroll (Barnett & Carroll 1987, 1990, Barnett 1990) on competition and cooperation among forms of telephone companies during the early years of that industry clearly indicate that interactions and relationships of organizational forms affect the ongoing diversity of forms. Similarly, a study of competition for human resources among voluntary associations in five nations by McPherson & Smith-Lovin (1988) showed how differences in organizational forms affect the stability of the niche structure in an organizational community. In their study of the ecology of organizational foundings in American labor unions, Hannan & Freeman (1987) showed how the growth of industrial unions restrained the founding rate of craft unions. These studies focus on the interdependent relationships of existing populations. Thus, their findings pertain principally to factors that either maintain or (in most cases) reduce the diversity of organizational forms in an environment. This emphasis is in keeping with ecologists' prevalent concern for specifying selection mechanisms. These same competitive processes might also be examined, however, for their effect on the larger resource space and, thus, on the evolution of new organizational forms.

Tushman & Anderson (1986) took up this theme explicitly in their study of the differential likelihoods that old or new populations of firms will adopt and promote technological innovations. Particular innovations, they argued, will

either enhance or destroy the established competencies of existing organizations. Based on a study of technological innovations in three industries—minicomputers, airlines, and cement—their work showed that when new technologies enhance the competencies of existing organizations the existing organizations will adopt the technologies. When the new technologies are destructive of existing competencies, however, new organizations will be established with competencies explicitly tailored to the new technological conditions. Though Tushman & Anderson did not directly discuss the competitive demise of old populations due to activities by new populations, their findings are directly in keeping with Schumpeter's theory of competition in the evolutionary process.

Environmental Imprinting

A very different perspective on the evolution of new organizational forms develops from the arguments of Selznick (1957) and Stinchcombe (1965a), both of whom argued that organizations tend to take on the characteristics of people and environments that surround their early establishment. Selznick emphasized the influence of organizational founders on characteristics of the early organization, although he recognized that the decisions of the founders are constrained by environmental conditions. Stinchcombe, by contrast, emphasized the influence of environmental conditions, although he stressed an important role for individual founders in the process of organizational form variation. Together, these arguments have come to be known as the organizational imprinting hypothesis. Stinchcombe (1965a:153) stated the hypothesis most clearly, when he wrote: "The organizational inventions that can be made at a particular time in history depend upon the social technology available at the time. . . . Then, both because they can function effectively with those organizational forms, and because the forms tend to become institutionalized, the basic structure of the organization tends to remain relatively stable."

Most of the research on organizational imprinting is found in case histories of the establishment and early years of innovative organizations. Many notable analyses of the origins of innovative organizations suggest a strong association between environmental conditions and the creation of a new organizational form. For example, Selznick (1949) described how changing political philosophies in favor of more localized government led to the founding of the Tennessee Valley Authority and shaped administrative characteristics of that organization long into the future. Kimberly (1979) described how an expected shortage of doctors in the United States, coupled with increasing unhappiness about trends toward specialized medicine, led to the formation of an innovative new medical school expressly established to train general practitioners. These histories describe specific occurrences of innova-

tion in response to specific environmental conditions, and emphasize the persistence of the innovative organizational arrangements over a very long time. Taking a slightly different perspective, recent excellent accounts of crises and declines faced by older organizations—e.g., Sears (Katz 1987) and American automobile manufacturers (Halberstam 1986)—trace modern difficulties to the organizations' ideological commitments and arrangements that were established in response to early environmental conditions. All of these histories—and there are many more like them (e.g. Hall 1976, Messinger 1955)—describe the origins of highly innovative organizations, i.e. firms that were founded to produce a new product or service, to employ a new technology, or to experiment with fundamentally new organizational arrangements.

While the number of case studies showing imprinting at the level of particular innovative organizations is impressive, and supportive of imprinting as an important factor in the evolution of new organizational forms, large sample studies are needed to demonstrate a general effect. Stinchcombe's (1965a) demonstration study which showed that modern industries tend to reflect the forms of organization innovated during the period of the industries' establishments represents one of the very few attempts. Stinchcombe collected data on labor force characteristics (e.g. per cent unpaid family members, clerical as per cent of administrative workers) in a number of different industries, and he classified the industries according to the general historical period of their emergence. What appeared was a relatively close association between modern labor force characteristics and the time of the industry's emergence. Results of this demonstration must be viewed with caution since we cannot determine whether the modern day forms are the same as those exhibited earlier in the lifetimes of the industries. Nevertheless, the substantial similarity of organizational forms across industries that are similar only in their period of emergence suggests a rather strong influence of initiating conditions. Kimberly (1975) presents probably the best analysis of the imprinting hypothesis as it relates to the evolution of new organizational forms in his study of 123 sheltered workshops in the United States. To begin with, Kimberly explicitly tied the characteristics of the different forms—i.e. sheltered workshops that provided long-term work for disabled veterans versus rehabilitation organizations that taught skills to allow the disabled person to function independently in the labor market—to changes in prevailing attitudes regarding the appropriate treatment of the disabled. Moreover, Kimberly identified the forms that were exhibited by these firms at their founding and demonstrated a rather tight association in time between changes in environmental conditions and the organizational form innovation. Perhaps most important, Kimberly showed that sheltered workshops did not tend to alter their forms even as the rehabilitation organizations began to pervade the environment and attract the lion's share of public resources.

Difficulties involved in collecting detailed longitudinal data about environmental and organizational characteristics (especially for new organizations) is one possible reason that there are so few studies of imprinting at the population level. Another reason, however, may be the scarcity of theory regarding the characteristics of environments that may most likely engender a new organizational form.

One theme suggested regularly is political upheaval (e.g. Stinchcombe, 1965a, Aldrich 1979, Carroll & Huo 1986, Carroll, Delacroix & Goodstein 1990). Stinchcombe (1965a) discussed state revolution as one clear means by which established control over the distribution of resources can be broken. Emphasis on revolution is reflective of how much stability is believed to exist in organizational arrangements, including allocations of resources among established power elites. Political revolution frees resources for use in new combinations. Carroll et al (1990) developed a set of propositions that link political upheaval to explicit forms of organization that will likely emerge and thrive; for example, they proposed that *r*-strategist organizational forms will outcompete *K*-strategists during periods of upheaval. Organizations exhibiting an *r*-strategy are those that are most able to exploit resources quickly when they first come available (Brittain & Freeman 1980); *K*-strategists are efficient utilizers of resources as the environmental space reaches carrying capacity. Arguing that political upheaval fundamentally represents the replacement of one set of *K*-strategists for another, Carroll et al also proposed that the character of the *K*-strategists before and after the revolution will reflect their respective political institutions. The careful system of propositions developed in this paper represents an important advance in the imprinting literature as it begins to specify particular relationships between environmental conditions and the rates and kinds of organizational innovations that are likely to occur.

Fligstein's (1990) analysis of the effect of the Cellar-Kefauver act on merger activity in the United States shed a somewhat different light on the processes and effects of political activity on kinds of organizational forms. The legislation itself resulted from political activism against the increasing size and power of large, horizontally and vertically integrated corporations. The act effectively prevented mergers of closely related organizations that could substantially increase a corporation's control over economic activity within industries. It had the unintended consequence, however, of stimulating mergers among corporations in unrelated industries. Large, diversified organizations, controlled mainly by the tools of financial as opposed to sales analysis, were established as a new organizational form. Fligstein's study is more reflective of institutional aspects of political activity than competitive aspects, which are a key focus of the ecological studies. Mezas (1990) provided another example of political and institutional effects on organiza-

tional form in his study of influences on regulators of accounting reporting standards and firms' adoptions of different methods.

Short of revolution or legislation at the state level, Aldrich (1979) has described how technological innovation, entrepreneurs' access to power and wealth, and the changing structure of labor markets, can disrupt established resource distributions to increase the probability of organizational form variation. Brittain & Freeman (1980) and Boeker (1988, 1989) offered evidence of imprinting based changes in the industry environment. Brittain & Freeman's analysis of changes in organizational forms over several years in the semiconductor industry shows *r*-strategists to be most effective early when resources are abundant; later *K*-strategists displace the *r*-strategists as the carrying capacity of the resource space is approached. This analysis suggests that political upheaval and technological innovation may be similar phenomena in terms of their main effects on types of organization forms that will be established. Boeker links more specific characteristics of organizations' early strategies, such as emphasis on marketing or manufacturing, to particular developments in the semiconductor environment. Finally, taking a very different approach to a slightly different phenomenon—ethnicity and entrepreneurship—Aldrich & Waldinger (1990) analyzed historically conditioned opportunity structures and group characteristics as key influences on the rise of ethnic entrepreneurial enclaves. Opportunity structures influence the access that entrepreneurs can gain to traditional markets. Group characteristics tend to predispose certain ethnic groups to establish entrepreneurial networks.

Organizational Speciation

Recently, several authors (e.g. Astley 1985, Brittain & Freeman 1986, Romanelli 1989a, Hannan & Freeman 1986, 1989, Lumsden & Singh 1990) have discussed the evolution of new organizational forms in terms of conditions and processes of organizational speciation. This perspective emphasizes organizations and the populations in which they compete as "producers" of new organizations and new organizational forms. Although there are differences in the specific approaches taken by the different researchers, two components seem central to all perspectives. First, organizations are considered to differ in their capacities for producing new organizations based on differential access to information about opportunities for new organizational forms. Second, the distribution of information and other resources that is necessary to the evolution of new organization forms is expected to change over time. Thus, the organizational origins of new forms will change over time.

Several authors have described specific characteristics of organizations that should affect how frequently they produce new organizations. Stinchcombe

(1965b) proposed that an "organization-creating organization" would have a relatively large fund of resources (e.g. money, legitimacy) overall, that some of these resources would be explicitly free from vested interests, and that the firm would operate in a variable environment (e.g. multiple product markets, volatile sales growth). In different ways, these variables affect organizational members' abilities to perceive opportunities for innovation as well as their abilities to exploit them. Organizations that are high in these characteristics, he argued, will tend to produce more organizational variations. Brittain & Freeman (1986) considered five characteristics of organizations that might affect the rates at which they produce new organizations. Three characteristics—CEO succession where an outsider assumes the office, takeover of the firm by an organization outside of the firm's primary competence, and changes in organizational growth that hinder individuals' mobility—were proposed as a positive influence on new-firm production in that they decrease the attractiveness of career prospects for the individual within the firm. The other two characteristics—whether the firm is a specialist or generalist, and whether it was a first entrant in at least one of its product groupings— influence the amount and variety of information that is available about environmental conditions and entrepreneurial opportunities, and so the rate of new firm production. In a study of the characteristics of the entrepreneurial source organizations for 351 semiconductor producers that were founded in Silicon Valley between 1955 and 1981, Brittain & Freeman found general support for these hypotheses.

Extending these arguments, Freeman (1982, 1986) suggested that organizational characteristics affect not only the rates at which existing firms would produce new firms, but also the form of the new organizations. He argued that "People who start Catholic convents do not do so after toying with the notion of beginning cement plants, advertising agencies, or universities" (1982:16). Individuals are restricted in the information they possess by their organizational experiences. Thus, we might expect them to found organizations in populations that are either the same as or closely related to those they have worked in previously.

The concept of an organization community was discussed by Carroll (1984) and Astley (1985) as crucial to developing theory about how new forms of organization arise. The organizational community, which is defined as a set of interrelated organizational populations, constitutes the environment within which a new organizational form (i.e. a new population) becomes established. If existing organizations are stable, in both their forms and their relationships to one another, they will tend not to exploit any new resources that may become available in the environment at large. Thus new spaces open. Hannan (1986) and Hannan & Freeman (1986, 1989) emphasized that the fundamental

“branching” occurs in the environment. New organizations, expressing new organizational forms, will arise to exploit the resources.

Some theorists have considered conditions that might cause an environment to branch and in so doing create a resource space for a new organizational form. Astley (1985) emphasized technological innovation as the crucial space-creating variable. Romanelli (1989a) argued that virtually any event or development that could fundamentally alter existing flows of resources—e.g. changes in social values, the discovery or depletion of natural resources, changes in the demography of a human population, economic growth or decline, and so on—can effect a change in organizational resource space. Moreover, she suggested that existing arrangements of organizations and populations will influence characteristics of the emerging resource space. Even if firms in existing populations do not adapt to changing environmental conditions, they will be differentially likely to tap information regarding the change; thus individuals will have differential access to information based on their employment. Moreover, members of these organizations will differ in their abilities to attract resources for the innovation of new organizational forms. Thus, the “opening” (Astley 1985) of new resource spaces may depend on the dynamic interaction of exogenous change and existing constraining conditions.

Little empirical work has been done to support or add detail to the speciation perspective. Marrett’s (1980) description of the formation of women’s medical societies showed that they tended to be founded by women doctors who possessed more and stronger ties to these organizations, usually via association with male members of the organizations. Aldrich & Zimmer (1986) emphasized the importance of entrepreneurial networks in facilitating resource and information combinations. Astley & Fombrun (1983) described the relationship of various populations in the communications industry—e.g. motion picture production, television broadcasting, publishing—to the videotape production and distribution resource space. Detailed studies of the organizational origins of new organizations are needed to validate and extend the arguments of this perspective.

There are two overlapping but competing arguments that characterize these three perspectives on how environments constrain the rates and kinds of organizational forms that are invented. One perspective, articulated by Hannan & Freeman (1986, 1989), emphasizes the creation of a new resource space in the environment as primary to the invention of a new organizational form. Both creative destruction and environmental imprinting reflect this view, although the perspectives differ substantially in their arguments about how new spaces are created. Ecologists (e.g. Hannan & Freeman 1989) assume a quite direct relationship between characteristics of the new resource

space and the nature of organizational form that will arise. A very different understanding is represented in the idea that organizations and populations are producers of new organizational forms. While some relatively "free" environment is also assumed in this perspective, the organization-as-producer hypothesis emphasizes the differential distribution of information over existing firms and populations as the critical environmental variable that determines the particular innovation in organizational form that will arise. The characteristics and information-gathering proclivities of existing organizations exert a substantial influence on whether a new environmental space is created or even perceived.

It is somewhat tempting to suggest that these two views are compatible by saying that the environmental branching hypothesis identifies where the opportunities for an organizational form innovation will exist while the organizational speciation hypothesis explains the processes that realize the opportunities. Integrations of this sort, however, tend to obscure real theoretical differences. At this early stage of research and theory on the evolution of new organizational forms, it seems most appropriate to allow all differences, i.e. all diversity, to remain undiluted.

EMERGENT SOCIAL SYSTEMS

The final perspective on the evolution of new organizational forms avoids grappling with the question of specific antecedent conditions—i.e. organizational genes, environmental conditions, or organizational spawning grounds—almost altogether. Van de Ven & Garud (1989) draw on Etzioni (1963) to present an "accumulation" or "epigenetic" theory of the evolution of new organizational forms. As they argue, new "environmental niches do not pre-exist . . . they are socially constructed domains through the opportunistic and collective efforts of interdependent actors in common pursuit of a technological innovation" (1989:205). This perspective views variations in organizational forms as arising dynamically through the cumulative interactions of entrepreneurs and organizations toward the establishment of a new industry system.

The process begins with the largely independent activities of entrepreneurs who perceive an opportunity for creating a new organization and who begin to accumulate the social and material resources that are necessary to build the business. Over time, as the independent entrepreneurs seek resources from similar sources and otherwise travel in the same circles (e.g. industry associations, trade shows, academic conferences), their paths begin to intersect. Interdependencies are established that benefit the actors directly through sharing of information and resources, which speeds the efforts of all entrepreneurs, and through expressing an emergent legitimacy, i.e. strength in num-

bers. Van de Ven & Garud argued that these interdependencies help isolate the emerging organizational form from direct competitors, or others whose vested interests might be threatened, by reducing the needs of the new firms to draw resources from the existing organizations. Once isolated, the participants themselves begin to compete over alternative technological paths. Different paths lead to different clusters of interdependencies with organizations outside the focal group. Over time, a network of competing and cooperating organizations, i.e. an industry, emerges that is defined by organizations' productive or service relationships to a technological innovation.

Aldrich & Wiedenmayer (1989) support this perspective and linked levels and kinds of collective action to changes in population density. Especially for new organizational forms, denser populations result in more frequent contacts among members, which should enhance learning about the organizational form. Collective action can lower entry barriers for would-be entrepreneurs, thus increasing the size of the populations and potentially the legitimacy of the organizational form. Collective action can also dampen competitive rivalry through institutionalizing, perhaps via trade associations, certain competitive and employment practices.

Like most other perspectives on the evolution of organization forms, this perspective has yet received only a little empirical attention. Rappa (1989) described the development of the research community surrounding early work on compound semiconductors. His findings demonstrate how the dynamics of communication flows among researchers, and how changes in those communications flows, affect both the evolution of the technology and the development of an industry to support and commercialize the research. In a later study, Rappa & Debackere (1990) provided a detailed analysis of the very early evolution of a research community surrounding neural network technologies. This study emphasized flows of researchers into and out of the neural network community over time. The authors described how resources are "bootlegged" from laboratories devoted to other technological pursuits. They identified core group members who sustain the community through cycles of enthusiasm (the "bandwagon" effect) and despair. Finally, they described the eventual emergent "grapevine" that developed over public and private sectors and over different nations. Through these thick descriptions of the emergence of research communities, a view of industry evolution as a dynamic social process is gained; i.e. the evolution of a technological innovation is integrally related to the evolution of a new organizational form. Technology is not simply the necessary antecedent as typically assumed by most organizational researchers.

Garud & Van de Ven (1989) examined the cochlear implants industry to describe isolating processes that carry a research community into the realm of economic enterprise. Initially, as a critical mass of individuals who believed

in the superior benefits of the cochlear implant technology identified themselves, special conferences and training programs emerged to facilitate the sharing of information, which thus sped development of the technology overall. These activities helped achieve the endorsement of the American Medical Association. Then, to further establish the distinctiveness of cochlear implants as alternative technology, special standards of evaluation and separate panels of evaluators were established within the United States Food and Drug Administration and the American Speech and Hearing Association. In other words, the separation of cochlear implant technology from other hearing-aid technologies was formally and structurally institutionalized.

The practical implications of this perspective are twofold. First, according to this perspective, technological innovation may not be taken as a given incident around which new forms of organization evolve. Technological innovation is a dynamic social process which, as it unfolds, creates the resource space that will support the new firms reflecting new organizational forms. In other words, in the emergent and initially dispersed research communities that form around possibilities for innovation, we may find the processes of evolutionary branching or speciation that other perspectives take as a given or, for some, even a random event.

Second, neither populations nor organizations can be used as the sole focus of empirical investigation. In contrast to the organizational genetics and environmental conditioning perspectives, research in this emergent social processes vein must identify, at least initially, the human networks that enact the evolution of a new organizational form. Organizations, and the populations and communities in which they compete, may present a constraining context for the emergence of new technological enterprise. According to this social systems perspective, however, the contexts are not directly productive of any variation. The context merely is the resource pool from which individuals and their interactions create new organizational forms.

THE EVOLUTION OF A NEW ORGANIZATIONAL THEORY

If there is anything clear from this review of perspectives on the evolution of new organizational forms, it should be that a great number of theoretical arguments have been recently formulated. Well over half of the citations in this review are to papers and chapters published within the last decade. This is not surprising in that much of the impetus for exploring the evolution of new organizational forms derives from research and theory in organizational ecology and institutional sociology. Ecology and at least recent formulations of the institutional perspective (e.g., Meyer & Rowan 1977, Zucker 1977, Meyer, Scott & Deal, 1983) are themselves fairly new perspectives on the

ongoing evolution of organizational populations. An even more striking statistic, however, is that virtually all of the citations regarding the evolution of new organizational forms specifically are to papers and chapters published during the last five years.

It appears that, as a subject for study, the evolution of new organizational forms is undergoing its own speciation process. I will not press this argument by trying to identify any combining theoretical genes, though one might note the variety of disciplines that are intermingling in these theoretical discussions. It does seem possible and instructive, though, to consider some branchings in the intellectual environment.

Three areas of traditional thinking about organizational evolution are not represented in these current theories. First, the phrase "life cycle," whether in reference to organizations or environments, has not appeared in this review. Its absence was not intentional. It is simply the case that these theories of the evolution of organizational forms do not assume any developmental stages in either the conditions or activities of evolutionary change. O'Rand & Krecker (1990:256) pointed out that use of the term life cycle with respect to ecological studies of organizational birth and change evokes "only the broadest outlines of the idea of life cycle." Almost no attention has been paid to the timing, sequencing, or processes of maturation, although these are the central concern of most life-cycle theories. Second, there is only a hint of concern in these theories for explaining the "progress" of a society. The social and economic well-being of a society is understood as a product of evolutionary changes in organizational forms. Nothing in these theories, however, suggests that evolution will be synonymous with progress or advancement. Organizational diversity is a variable, and the same evolutionary processes may account for its increase and decline.

Finally, the debate about whether existing organizations can adapt to changing environmental conditions, though not obviated by theories of the evolution of organizational forms, is properly relegated to a different category of theoretical and empirical concern. While some of the above theories do assume that new organizational forms will be invented, more typically by new versus established organizations, nearly all allow that the vehicles of evolution may differ under different environmental conditions. As evolutionary theories explore processes that engender the innovation of new organizational forms, new insight will be gained regarding the role of organizational change and inertia.

Intellectual branchings can be identified whenever a particular new theory is presented. The striking similarity on the above points of so many different theoretical arguments, however, suggests the occurrence of a fundamental change. Over the last decade, longitudinal and dynamic analyses of organizations and populations have come to dominate empirical work in organizational

sociology. It should not be surprising that new theory is evolving to explain the evolution of new organizational forms.

CONCLUSIONS

In constructing this review, I have kept in mind three basic goals. First, I sought to describe the various recent theories that have been offered to explain the evolution of new organizational forms. Second, I wanted to organize that literature along lines that would identify some basic differences in perspective, but not overly suggest homogeneity of arguments within perspectives. Because all theories of genesis must postulate some final origins of variation, I grouped these writings according to their views on the principal sources of new organizational forms. Finally, as my reading of this literature has revealed the great variety of approaches to understanding the evolution of new organizational forms, I have tried to reflect that diversity. I see no overarching themes for integrating the perspectives. At this stage of our understanding, it seems that the most insights will be gained by emphasizing differences so that the promise of this diversity may be realized. Of course, the challenge now to proponents of all these theories is empirical research.

ACKNOWLEDGMENTS

I am grateful to Howard Aldrich, Angela O'Rand, Richard Scott, and Michael Tushman for comments that substantially improved this paper. My work in preparing this chapter was supported by the National Science Foundation.

Literature Cited

- Aldrich, H. E. 1979. *Organizations and Environments*. Englewood Cliffs, NJ: Prentice-Hall
- Aldrich, H. E., Mueller, S. 1982. The evolution of organizational forms: technology, coordination, and control. In *Research in Organizational Behavior*, Vol. 4, ed. B. M. Staw, L. L. Cummings, pp. 33-87. Greenwich, Conn: JAI
- Aldrich, H. E., Waldinger, R. 1990. Ethnicity and entrepreneurship. *Annu. Rev. Sociol.* 16:111-35
- Aldrich, H. E., Wiedenmayer, G. 1989. From traits to rates: an ecological perspective on organizational foundings. Pres. Gateway Conf. on Entrepreneurship, St. Louis University, St. Louis
- Aldrich, H. E., Zimmer, C. 1986. Entrepreneurship through social networks. In *The Art and Science of Entrepreneurship*, ed. D. Sexton, R. Smilor, pp. 3-23. Cambridge, Mass: Ballinger
- Astley, W. G. 1985. The two ecologies: population and community perspectives on organizational evolution. *Admin. Sci. Q.* 30:224-41
- Astley, W. G., Fombrun, C. J. 1983. Technological innovations and industrial structure: the case of telecommunications. In *Advances in Strategic Management*, Vol. 1, ed. R. Lamb, pp. 205-29. Greenwich, Conn: JAI
- Barnett, W. P., 1990. The organizational ecology of a technological system. *Admin. Sci. Q.* 35:31-60
- Barnett, W. P., Carroll, G. R. 1987. Competition and commensalism among early telephone companies. *Admin. Sci. Q.* 30:400-21
- Barnett, W. P., Carroll, G. R. 1990. How institutional constraints shaped and changed competition in the early American telephone industry: an ecological analysis. Work. Pap. Madison: Univ. Wisc. Sch. Business

- Boeker, W. 1988. Organizational origins: entrepreneurial and environmental imprinting at the time of founding. In *Ecological Models of Organizations*, ed. G. R. Carroll, pp. 35-51. Cambridge, Mass: Ballinger
- Boeker, W. 1989. The development and institutionalization of subunit power in organizations. *Admin. Sci. Q.* 34:388-410
- Brittain, J., Freeman, J. 1980. Organizational proliferation and density-dependent selection. In *The Organizational Life Cycle*, ed. J. R. Kimberly, R. H. Miles, pp. 291-338. San Francisco: Jossey-Bass
- Brittain, J., Freeman, J. 1986. Entrepreneurship in the semiconductor industry. Pres. 46th Ann. Meet. Acad. of Mgmt. New Orleans
- Carroll, G. R. 1984. Organizational ecology. *Annu. Rev. Sociol.* 10:71-93
- Carroll, G. R., Delacroix, J. 1982. Organizational mortality in the newspaper industries of Argentina and Ireland: an ecological approach. *Admin. Sci. Q.* 27:169-98
- Carroll, G. R., Delacroix, J., Goodstein, J. 1990. The political environment of organizations: an ecological view. In *The Evolution and Adaptation of Organizations*, ed. B. M. Staw, L. L. Cummings, pp. 67-100. Greenwich, Conn: JAI
- Carroll, G. R., Hannan, M. T. 1989. Density delay in the evolution of organizational populations: a model and five empirical tests. *Admin. Sci. Q.* 34:411-30
- Carroll, G. R., Huo, Y. P. 1986. Organizational task and institutional environments in ecological perspective: findings from the local newspaper industry. *Am. J. Sociol.* 91:838-73
- DiMaggio, P. J. 1983. State expansion and organizational fields. In *Organizational Theory and Public Policy*, ed. R. H. Hall, R. E. Quinn, pp. 147-61. Beverly Hills, Calif: Sage
- DiMaggio, P. J. 1988. Interest and agency in institutional theory. In *Institutional Patterns and Organizations*, ed. L. G. Zucker, pp. 3-21. Cambridge, Mass: Ballinger
- DiMaggio, P. J., Powell, W. W. 1983. The iron cage revisited: institutional isomorphism and collective rationality in organizational fields. *Am. Sociol. Rev.* 48:147-60
- Dosi, G. 1988. Sources, procedures, and microeconomic effects of innovation. *J. Econ. Lit.* XXVI:1120-71
- Etzioni, A. 1963. The epigenesis of political communities at the international level. *Am. J. Sociol.* 58:407-21
- Fligstein, N. 1985. The spread of the multidivisional form among large firms, 1919-1979. *Am. Sociol. Rev.* 50:377-91
- Fligstein, N. 1990. *The Transformation of Corporate Control*. Cambridge, Mass: Harvard Univ. Press
- Fombrun, C. J. 1988. Crafting an institutionally informed ecology of organizations. In *Ecological Models of Organizations*, ed. G. R. Carroll, pp. 223-39. Cambridge, Mass: Ballinger
- Freeman, J. 1982. Organizational life cycles and natural selection processes. In *Research in Organizational Behavior*, vol. 4, ed. B. Staw, L. L. Cummings, pp. 1-32. Greenwich, Conn: JAI
- Freeman, J. 1986. Entrepreneurs as organizational products: semiconductor firms and venture capital firms. In *Advances in the Study of Entrepreneurship, Innovation and Economic Growth*, ed. G. Libecap, pp. 33-58. Greenwich, Conn: JAI
- Freeman, J., Carroll, G. R., Hannan, M. T. 1983. The liability of newness: age dependence in organizational death rates. *Am. Sociol. Rev.* 48:692-710
- Freeman, J., Hannan, M. T. 1983. Niche width and the dynamics of organizational populations. *Am. J. Sociol.* 88:1116-45
- Garud, R., Van de Ven, A. H. 1989. Innovation and the emergence of industries. In *Research on the Management of Innovations*, ed. A. H. Van de Ven, H. Angle, M. S. Poole, pp. 489-532. Cambridge, Mass: Ballinger
- Halberstam, D. 1986. *The Reckoning*. New York: Avon
- Hall, R. H. 1976. A system pathology of an organization: the rise and fall of the old *Saturday Evening Post*. *Admin. Sci. Q.* 21:185-211
- Hannan, M. T. 1986. Uncertainty, diversity and organizational change. In *Social and Behavioral Sciences: Discoveries over Fifty Years*, ed. N. J. Smelser, D. R. Gerstein, pp. 73-94. Washington, DC: Natl. Acad. Press
- Hannan, M. T., Freeman, J. 1977. The population ecology of organizations. *Am. J. Sociol.* 82:929-64
- Hannan, M. T., Freeman, J. 1986. Where do organizational forms come from? *Sociol. Forum* 1:50-72
- Hannan, M. T., Freeman, J. 1987. The ecology of organizational founding: American labor unions, 1836-1985. *Am. J. Sociol.* 92:910-43
- Hannan, M. T., Freeman, J. 1989. *Organizational Ecology*. Cambridge, Mass: Ballinger
- Hawley, A. H. 1988. Forward. In *Ecological Models of Organizations*, ed. G. R. Carroll, pp. xiii-xvi. Cambridge, Mass: Ballinger
- Kamien, M., Schwartz, N. 1982. *Market Structure and Innovation*. Cambridge: Cambridge Univ. Press
- Katz, D. R. 1987. *The Big Store: Inside the Crisis and Revolution at Sears*. New York: Viking Penguin
- Kimberly, J. R. 1975. Environmental con-

- straints and organizational structure: a comparative analysis of rehabilitation organizations. *Admin. Sci. Q.* 20:1-9
- Kimberly, J. R. 1979. Issues in the creation of organizations: initiation, innovation, and institutionalization. *Acad. Mgmt. J.* 22:437-57
- Lumsden, C. J., Singh, J. V. 1990. The dynamics of organizational speciation. In *Organizational Evolution: New Directions*, ed. J. V. Singh, pp. 145-63. Newbury Park: Sage
- Marrett, C. B. 1980. Influences on the rise of new organizations: the formation of women's medical societies. *Admin. Sci. Q.* 25:185-99
- McKelvey, B. 1982. *Organizational Systematics: Taxonomy, Evolution, Classification*. Berkeley: Univ. Calif. Press
- McKelvey, B., Aldrich, H. E. 1983. Populations, natural selection, and applied organizational science. *Admin. Sci. Q.* 28:101-28
- McPherson, J. M., Smith-Lovin, L. 1988. A comparative ecology of five nations: testing a model of competition among voluntary organizations. In *Ecological Models of Organizations*, ed. G. R. Carroll, pp. 85-109. Cambridge, Mass: Ballinger
- Messinger, S. I. 1955. Organizational transformation: a case study of a declining social movement. *Am. Sociol. Rev.* 20:3-10
- Meyer, M. W. 1990. Notes of a skeptic: from organizational ecology to organizational evolution. In *Organizational Evolution: New Directions*, ed. J. V. Singh, pp. 298-314. Newbury Park, Calif: Sage
- Meyer, J. W., Rowan, B. 1977. Institutionalized organizations: formal structure as myth and ceremony. *Am. J. Sociol.* 83:340-63
- Meyer, J. W., Scott, W. R., Deal, T. E. 1983. Institutional and technical sources of organizational structure: explaining the structure of educational organizations. In *Organizational Environments: Ritual and Rationality*, ed. J. W. Meyer, W. R. Scott, pp. 45-67. Newbury Park, Calif: Sage
- Mezias, S. J. 1990. An institutional model of organizational practice: financial reporting at the Fortune 200. *Admin. Sci. Q.* 35:431-37
- Nelson, R. R., Winter, S. G. 1982. *An Evolutionary Theory of Economic Change*. Cambridge, Mass: Harvard Univ. Press
- O'Rand, A. M., Kreckler, M. L. 1990. Concepts of the life cycle: Their history, meanings, and uses in the social sciences. *Annu. Rev. Soc.* 16:241-62
- Rappa, M. A. 1989. Assessing the emergence of new technologies: the case of compound semiconductors. In *Research on the Management of Innovation*, ed. A. H. Van de Ven, H. L. Angle, M. S. Poole, pp. 439-64. Cambridge, Mass: Ballinger
- Rappa, M. A., Debackere, K. 1990. The emergence of a new technology: the case of neural networks. *Res. Policy*. Forthcoming
- Romanelli, E. 1989a. Organization birth and population variety: a community perspective on origins. In *Res. Organ. Behav.*, vol. 11, ed. L. L. Cummings, B. Staw, pp. 211-46. Greenwich, CT: JAI
- Romanelli, E. 1989b. Environments and strategies of organizational start-up: effects on early survival. *Admin. Sci. Q.* 34:369-87
- Romanelli, E., Tushman, M. L. 1986. Inertia, environments, and strategic choice: a quasi-experimental design for comparative longitudinal research. *Mgmt. Sci.* 32:608-21
- Rothschild-Whitt, J. 1979. The collectivist organization: an alternative to rational-bureaucratic models. *Am. Sociol. Rev.* 44:509-27
- Rowan, B. 1982. Organizational structure and the institutional environment: the case of public schools. *Admin. Sci. Q.* 27:259-79
- Schumpeter, J. A. 1939. *Business Cycles: A Theoretical, Historical, and Statistical Analysis of the Capitalist Process*. New York: McGraw-Hill
- Schumpeter, J. A. 1950. *Capitalism, Socialism, and Democracy*. New York: Harper & Row
- Scott, W. R. 1981. *Organizations: Rational, Natural, and Open Systems*. Englewood Cliffs, NJ: Prentice-Hall
- Selznick, P. 1949. *TVA and the Grass Roots*. Berkeley, Calif: Univ. Calif. Press
- Selznick, P. 1957. *Leadership in Administration*. New York: Harper & Row
- Singh, J. V., Tucker, D. J., House, R. J. 1986. Organizational legitimacy and the liability of newness. *Admin. Sci. Q.* 31:171-93
- Stinchcombe, A. L. 1965a. Organizations and social structure. In *Handbook of Organizations*, ed. J. G. March, pp. 142-93. Chicago: Rand McNally
- Stinchcombe, A. L. 1965b. Organization-creating organizations. *Trans-Actions*. 2:34-35
- Tolbert, P., Zucker, L. G. 1983. Institutional sources of change in the formal structure of organizations: the diffusion of civil service reform, 1880-1935. *Admin. Sci. Q.* 28:22-39
- Tucker, D. J., Singh, J. V., Meinhard, A. G. 1990. Organizational form, population dynamics, and institutional change: a study of founding patterns of voluntary organizations. *Acad. Mgmt. J.* 33:151-78
- Tushman, M. L., Anderson, P. 1986. Technological discontinuities and organizational environments. *Admin. Sci. Q.* 31:439-65

- Tushman, M. L., Romanelli, E. 1985. Organizational evolution: A metamorphosis model of convergence and reorientation. In *Research in Organizational Behavior*, vol. 7, ed. L. L. Cummings, B. M. Staw, pp. 171-222. Greenwich, Conn: JAI
- Van de Ven, A. H., Garud, R. 1989. A framework for understanding the emergence of new industries. In *Research on Technological Innovation, Management and Policy*, ed. R. S. Rosenbloom, R. A. Burgelman, pp. 195-225. Greenwich, Conn: JAI
- Winter, S. G. 1990. Survival, selection, and inheritance in evolutionary theories of organizations. In *Organizational Evolution: New Directions*, ed. J. V. Singh, pp. 269-97. Newbury Park, Calif: Sage
- Zucker, L. G. 1977. The role of institutionalization in cultural persistence. *Am. Sociol. Rev.* 42:726-43