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THE PROBLEM OF BOUNDARIES IN CONTEMPORARY RESEARCH ON ORGANIZATIONS

Patricia H. Thornton, Department of Soeiology, Duke University, Box 90088, Durham, NC 27708
Nancy Brandon Tuma, Department of Sociology, Stanford University

ABSTRACT

An important but under theorized issue in organization research concerns how to partition the universe of organizations into subsets suitable for theoretical and empirical analysis. To shed light on the boundary problem we review and synthesize seven organization theories and present a case study of the college publishing industry.

INTRODUCTION

Much contemporary theory and empirical research is concerned with organizations and their environments. It often treats organizations as unitary forms and the processes within them as "black boxes;" it focuses on the population of organizations. Much of this research explicitly acknowledges that the behavior of organizations and the environment affect each other and that organizations are interdependent (to varying degrees). An important issue in such research is how to partition the universe of organizations into subsets or populations of organizations that are suitable for theoretical and empirical analysis. This is the problem of identifying appropriate boundaries of organizational populations.

Our goal in this paper is to delve more thoroughly into the issue of the boundaries of organizational populations. To date little explicit attention has been given to this issue even though researchers are beginning to notice it because of the increased focus on internationalization. A few, very recent studies have considered whether the proper boundaries for a population of firms extend beyond industrial and national borders (Hannan et al. forthcoming; Gereffi and Korenlewicz, 1994).

In this paper, we challenge the common view that population boundaries are obvious and, in particular, that they can be equated with industry boundaries, whether in a single country or in some larger geographical region. To support our view, we survey seven organization theories, focusing on what they assume and imply with regard to the issue of population boundaries. We follow this review with a synthesis of their key insights. To make this abstract discussion more concrete, we present a case study of U.S. firms engaged in college publishing. We conclude with insights from our theoretical review and the case study.

CONTINGENCY THEORY

Contingency theorists assume that organizations are open systems and that their strategies and structures are shaped by the characteristics of their environments (Lawrence and Lorsch 1967; Thompson 1967). Historical case studies in this vein have illustrated how organizational and industrial boundaries have changed substantially throughout history. Prior to 1870, most enterprises were firms owned and operated by families. The modern corporate form resulted from a series of interdependent changes (new technologies, organizational innovations, and sociodemographic changes), which together spawned new organizational forms and interdependent industries. According to Chandler's (1962) chronicle, firms were likely to grow across industry boundaries when they sought to reduce business uncertainty and their technologies naturally lead to unrelated products.

Although these changes occurred within business cycles, contingency theory suggests that each historical era spawned unique challenges and corresponding theories of management. Managers of firms actively rearrange organizational boundaries when it appears profitable, when opportunities permit it. Changes in organizational boundaries are products of horizontal and vertical integration, technological similarity, and diversification resulting from a search for competitive financial returns across various industries. Thus, defining the unit of study as a single industry may very well miss the dynamics of how organizational populations change over time.

AGENCY THEORY

We review agency theory from the perspective of a theory of organization (cf. Jensen and Meckling, 1976; Eisenhardt, 1989) with reference to capital markets and the market for corporate control (Jensen and Ruback 1983). The separation of firm ownership and managerial control in the United States began with the capital intensive needs of railroad expansion: its financing marked the emergence of modern capital markets (Chandler 1954). Since the late 1800s, Wall Street produced a series of financial innovations that have led to a shift from private to corporate shareholder ownership and have impacted on organizational and industrial boundaries . At the turn of the 19th century, Wall Street financed a merger movement by selling public shares of the companies built by the great entrepreneurs to the wealth-holding citizenry (Lazonick 1992:449). In the 1920s, the elaboration of financial institutions supported a second merger wave. With a third merger wave in the 1960s and the establishment of multi-industry conglomerates, the concept of the firm as a purposeful social system of production and employment (Selznick, 1957) began to be recast in financial terms, namely, as a portfolio of assets that could be easily bought and sold (Fligstein 1990). Moreover, the diversification in the 1960s, the divestitures in the 1970s, and the concomitant creation of a "business of buying and selling" corporations created the institutional structure for a market for corporate control (Chandler, 1992; Hirsch, 1986).

Agency theory focuses consideration on change in governance regimes. Eras characterized by firms with an organizational focus on production need to be distinguished from a later era of firms as a portfolio of shareholder assets. In the latter, population boundaries are much more likely to expand across industries as portions of corporations are acquired and divested in the market for corporate control.

TRANSACTION COST THEORY

The dichotomy between two modes of governance, markets and organizations (hierarchies), is the focus of Williamson's (1975) transaction cost theory. This theory considers how organizations devise their governance systems, which in turn affects organizational forms and population boundaries. Essentially, two structures governing the exchange of goods and services -- markets and hierarchies -- are compared in terms of their relative ability to minimize the costs of transacting business. The core concern is whether transactions occur in a market governed by the price system or within the boundaries of an organization governed by a bureaucratic hierarchy.

A central argument is that transactions requiring decisions characterized by high uncertainty, frequent recurrence, and sizeable and not easily transferable investments are more likely to be bounded by a hierarchy than to be coordinated by a market. Markets are predicted to fail under the above conditions of high "asset specificity," when cumulative knowledge specific to the transaction is needed. Given the increasing complexity of business environments over time, transaction cost theory suggests organizational populations should increasingly predict business transactions bounded by hierarchies rather than by markets.

RESOURCE DEPENDENCE THEORY

The structure and boundaries of firms are continuing to change in significant ways that do not fit the ideal dichotomy of hierarchies (organizations) and markets. Forms of relational contracting and strategic alliances, that is, forms of enterprise organized around networks, have become increasingly prevalent (Powell 1990). Networks of firms based on "flexible specialization" (Piore and Sabel 1984) and technological lock-ins and historical path dependence (Arthur 1989) are two such examples.

In the 1950s and 1960s, large, vertically integrated, multinational firms were a proven strategy when technology change was slow, production and markets were standardized, and product life cycles were long (Chandler 1962). Beginning in the 1970s, as international competition increased and world markets became increasingly specialized, large firms became cautious as product markets began to disappear before long-term investments in capital equipment had been recovered . This trend gave rise to a reemergence of networks of firms described as dynamic production and trade systems. These manufacturing networks are resource interdependent and designed around concepts of flexible specialization, commodity chains, family enterprises, and clan culture. A second type of network form of organization has developed in knowledge-based, increasing returns industries, such as computer hardware, software, and entertainment. In this case incentives to organize center on chains of technology and product compatibility.

Scholars (Arthur 1989; Piore and Sabel 1984; Gereffi and Koreniewicz, 1994) who account for the development of these type of networks argue that they have clear features of power and dependence that require negotiation of the organizational environment. Thus, we view resource dependence theory (Pfeffer and Salancik, 1978) as providing an over-arching framework for understanding these forms of organization.

Resource dependence theory predicts that interfirm and interindustry networks will form because as firms seek to reduce uncertainty, they depend on other organizations for resources. Thus, researchers challenged by patterns of organization based on networks need to recognize that networks of resource dependent firms have fluid boundaries over time, geography, and governance regimes.

INSTITUTIONAL THEORY

The rise of a global perspective in the 1980s has led to a recognition of similarities and differences in organizational forms across nation-states that suggests social, cultural, and political determinants of organizational governance and population boundaries (Hamilton and Biggart 1988; Whitley 1992; Granovetter 1994). Institutional theory is useful for understanding these influences on population boundaries by emphasizing two elements: 1) institutional agencies, and 2) institutional processes (DiMaggio and Powell 1983; Scott and Meyer 1983,1991).

Institutional agencies are collective actors, such as the state and the professions. By means of coercive sanctions, normative pressures, and mimetic influences, these agencies, associations, and firms create and promulgate legal requirements, industrial standards, and professional rules and ideologies that shape the behavior of organizations. Institutional processes refer to the social construction and institutionalization of beliefs and systems of meaning, such as managers' cognitive construction of competitive groups (Porac, Thomas, and Baden-Fuller 1989).

To bound network connections, institutional theorists use the concept of an organizational field. The boundaries of organizational fields are defined by horizontal (across similar firms) and vertical (across organizations in different industries and sectors) networks. For example, the relation between parent firms and their subsidiaries, or between state agencies, industry associations, and member firms. Organizational fields differ in many ways: in the jurisdiction of belief systems, in the nature of authority and their governance systems, and in the degree and type of "structuration." Organizational fields are subject to significant blending and transindustry influences because they are typically located in larger social systems (Scott

1994; Thornton 1994). Thus, institutional theory suggests that population boundaries shift vertically and horizontally over time based on actions of the State, the professions, and the social construction of entrepreneurial beliefs.

POPULATION ECOLOGY THEORY

Population ecology is a theory of organizational selection that has explicitly bounded populations for analysis by industry (Hannan and Freeman 1989). The theory employs three key concepts: carrying capacity, legitimation, and competition. Carrying capacity is the maximum number of organizations that can be supported given the level of resources available for sustaining the population (Hannan and Carroll, 1992:69). The theory focuses on the consequences of competitive relations of organizations in an industry over time -- in particular, the industry's vital rates (i.e., founding and mortality rates) -- are explained as density dependent in relation to two forces: legitimation and competition. As the number of organizations increases, legitimacy rises, causing founding rates to rise and mortality rates to fall; but as the number of organizations continues to increase, competition increases causing founding rates to fall and mortality rates to rise.

Population ecology theory predicts that boundaries are unitary and temporally stable as the concepts of competition, legitimacy, and carrying capacity operate among classes of organizations which are relatively homogeneous in terms of environmental vulnerability.

COMMUNITY ECOLOGY THEORY

Community ecology theory argues that a central force in the emergence, growth, and decline of organizational populations is technological innovation (Astley 1985). The community or population boundary is defined by the existence of shared or interdependent technologies. The community boundary may include organizations from one or several industries. Newly arising similarities in technologies act to fuse formerly separate populations, just as newly created differences in technologies fragment formerly unified populations. Thus, community ecology theory predicts technological innovation occurs in spurts or eras and promotes organizational and industrial interdependence and shifts in population boundaries.

THEORETICAL SYNTHESIS

We have reviewed diverse organization theories at different levels of analysis with the specific goal of gleaning their implications for population boundaries. Our review indicates that all theories except population ecology predict that organizations grow horizontally, vertically, and diagonally. That is, these theories predict that managers of entrepreneurial organizations do not act as though organizational or industrial boundaries are significant barriers or boundaries.

Each theory brings to light one or more key insights concerning how to locate the boundaries of organizational populations. Contingency and institutional theories highlight the coevolution of eras of environmental change and concomitant managerial strategies that affect the behavior of firms. Similarly, both agency and transaction cost theories point to shifts in governance structures that have come about in different time periods -- shifts from family firms to professionally managed organizations to organizations viewed as a nexus of market contracts. These shifts have different implications for the rigidity of boundaries of organizational populations. Obviously, the first two are more stable than the latter, and they are also more likely to encompass firms that have similar forms and strategies. The rising strength of market forces makes boundaries less stable over time, whereas the rise of hierarchy (organizations) probably has the opposite effect.

The diversity of world markets and the rise of resource dependent networks of firms in the last fifteen years has meant that boundaries of populations of such firms are tenuous and can be expected to shift over time, geography, and governance regimes. Resource dependence, institutional and community ecology theories suggest networks as one mechanism pulling boundaries outside the horizontal constraints of "like" organizations. Moreover, networks can stimulate diffusion of new practices and technologies that act to blend boundaries.

Older forms of research that have relied upon the nation-state to establish boundaries are increasingly inadequate as organizations and markets continue to internationalize. With a growing emphasis on international commerce, differences in business cultures become increasingly important. Institutional theory sensitizes us to this, but such conceptual richness requires challenging sensitivity to changes in the interpretation of institutions and in nominally similar data in different historical eras .

Integrating the insights of diverse theories of organization, emphasizes a focus on the location of resources, competition, and governance regimes. If organizational ownership and resources are located across a diverse set of industries, characteristic of modern industry, then a single industry as a unit of analysis, can bias model estimates. Population ecologists have skillfully dealt with this problem by concentrating their analyses on populations in which the definition of organizational forms and industrial boundaries are largely unchanging and noncontroversial.

AN ILLUSTRATIVE CASE: THE COLLEGE PUBLISHING INDUSTRY

We use the college publishing industry to illustrate how industrial boundaries have shifted over a 35-year period, 1958-1994. During this time, there were three significant eras of institutional change, which were propelled by an acquisition wave in the late 1960s, a second acquisition wave in the late 1980s, and technological innovations in electronic media in the 1990s. We argue that organizational and technological changes, which began as

exogenous industry forces, acted to blend the college publishing industry with other industries.

The first acquisition wave in the 1960s galvanized the linkage of family estate firms to national M-form corporations. The second acquisition wave in the 1980s joined the American college publishing industry to large international publishing and communications firms. In the 1990s, the institutionalization of computers and electronic media as an alternative to print technology created incentives for alliances with firms in other industries, such as computer hardware, software, and entertainment.

Prior to the acquisition wave in the late 1960s, the majority of firms in the college publishing industry were privately held. They were viewed as growth targets by Fortune-500 firms seeking to improve rates of return by diversifying across industrial boundaries. During this era, the publishing industry, like other specialized industries, experienced a wave of acquisitions driven by 1) the diversification movement, and 2) life cycle of family firms seeking to "cash-out" or to obtain corporate resources to expand in the growing college market.

Most acquiring firms in the acquisition wave of the late 1960s were large corporations outside the publishing industry (such as Litton, Bell and Howell, and Xerox). These acquisitions produced a collective change of ownership in a significant part of the industry in essentially three years. Many new CEOs were introduced by large parent firms based outside the industry and the traditional culture and practices of college publishing. The acquiring firms introduced not only new leadership, they also linked the specialized industry of college publishing to national trends in business organization (Chandler 1962; Rumelt 1974; Fligstein 1985, 1987; Thornton, 1994). Hazard plots, illustrated in the working paper, show the hazard rate of two waves of CEO succession that temporally coincide with the hazard rate of two acquisition waves in the 1960s and 1980s. These hazard plots generally parallel the timing of known merger waves in other business sectors.

The decade of the 1970s was largely a period characterized by growth and mimetic isomorphism; that is, it was a period of environmental munificence in which publishing houses that had not been acquired in the acquisition wave of the late 1960s sought to model themselves on the newly acquired and restructured firms in the industry. For example, firms with a multidivisional structure accounted for only about 17 percent of the total in the industry between 1958 and 1969, but for over 40 percent by 1983.

In the 1970s and thereafter, newly trained managers in the industry began to replace craft practices in publishing with corporate managerial conventions. For example, diversified parent firms provided managers with training and incentives to rapidly increase the size of their divisions by the financial practice of acquisitions. Traditional publishing practices entailed slow organic growth by hiring and training editors to scout and sign authors who would produce a book within three years. For family firms, this craft practice led to hand-to-mouth relations with outside banks and the risks resulting from uncertainty about future book sales. Backed by the resources of corporate owners, the practice of acquisition increased because it provided an easy way for managers to acquire successful book lists and entire companies. Figure 1 shows the increase in the hazard rate of acquisitions over the 35-year period. As these financial practices became institutionalized during the next two decades, they helped set the stage for a second wave of acquisitions by large domestic and international publishers in the 1980s. The second wave had a different character than the first: it brought an international world to the domestic business of publishing and again extended the boundaries of the industry. Eight of the eleven major acquirers of publishing companies in the 1980s were large foreign owned and international firms.

From the late 1980s until the mid-1990s, the development of electronic media technology opened the boundaries of the publishing industry for a third time, only this time to other, technologically similar industries. What were once separate products and services -- namely, books, entertainment, computer hardware, computer software, and communications -- were becoming divisions of one encompassing organization or a network of strategically-allied organizations. For example, Paramount Communications, acquired in 1994 by Viacom, a television cable firm, owns assets in book publishing and movies. Microsoft and Sony founded publishing divisions, and Osborne Computers allied with McGraw-Hill.

A confluence of factors facilitated the agglomeration of firms in these once distinct industries. With financially-oriented leadership and large multi-divisional organizations in place, the development of electronic digital formats lets conglomerates reduce transaction costs, at least in theory. Digital formats facilitate scale economies by the efficient transfer of the same content for sale in several different markets, such as print, video, and CD ROM. Thus, industrial boundaries blend with the marriage of the owners and experts of electronic technology and publishers' control of programming content.

CASE CONCLUSION

The college publishing industry has not remained a unitary population during the 35-year period we have described. Its boundaries have shifted three times concomitant with eras of change in the larger environment. The first two periods of boundary change were largely driven by eras of new management discourse: diversification and globalization. The third was driven by technological innovation that affected a community of industries that economically benefit from sharing similar technologies.

The first acquisition wave was the catalyst that introduced modern corporate practices into the craft industry of college publishing. The second wave joined the publishing industry with international firms. Both waves linked this industry with larger environments and were part of larger, secular trends. In the 1950s, college publishing was an isolated specialized industry; in the 1960s and 1970s, it became

isomorphic to management practices in the national business environment. In the 1980s, it was invaded by international acquirers that acted to expand its boundaries. And in the 1990s, the industry's boundaries were weakened by technological innovations. Hence, to understand the dynamics of the college publishing industry, attention must be given to change in the population boundary and not just change in the members within some given boundary. Guided by our theoretical review, we have found it useful to consider the role of exogenous institutional forces, such as eras or epochs of management practice, change in governance, and technological innovation. To treat the industry as a unitary population with an unchanging definition -- as a "black box" -- would miss the real story.

METHODOLOGICAL ISSUES

Much population-level research on organizations analyzes event histories constructed from archival data and examines categorical changes or events. Populations are conceptualized as having a unitary character with member organizations that exhibit a common form and shared dependence on the material and social environment (Hannan and Freeman 1989:45). Transitions among categories are often analyzed using classes of hazard rate models that rest on two important assumptions: 1) that the boundaries of the population (technically referred to as the "risk set") can be empirically defined unambiguously, and (2) that the transitions of the members of the population are statistically independent. The strategic practices of the theories we have reviewed contradict the validity of the first assumption. The second point, though not directly discussed earlier, is problematic according to the assumption that population members depend on common resources, react to one another's behavior and signals.

As our review of theories of organization and case study have shown, population-level research needs to consider carefully to what extent and in what way a set of organizations under study are bounded. To date, population-level research on organizations has almost always operated with the working assumption that the universe of all organizations existing at some time point can be partitioned exhaustively and mutually exclusively into nonoverlapping sets of organizational (sub)populations. Membership within some population has been assumed to be dichotomous: any given organization is either in or out. Moreover, any given organization has been assumed to be in one and only one subpopulation.Our review and case study suggest that another view may be more suitable, especially since the 1960s: namely, a given organization may be linked to several populations of organizations at the same time and to varying degrees over time.

This alternative view challenges existing data collection practices and common methods of analysis. It implies that those constructing data-sets on organizations from archival information need to consider carefully not only which organizations react similarly to their environments, but also which other organizations they affect and which other organizations affect them. And, it implies that, at the very least, existing methods of analysis need to be elaborated so that definitions of risk sets may vary over time and also so that differential impacts of organizations on one another can be modeled. Some first steps in this direction can be found in Strang and Tuma's (1993) models for heterogeneous diffusion processes (see also Greve, Strang, and Tuma, in press) and on Tuma and Ingram's (1993) models for interdependent processes more generally. But even in these new modeling approaches, it is not yet clear how to deal with a multiplicity of weak linkages among organizations, which undoubtedly exist. Neither data collection nor analytic methods are yet ready to cope with completely unbounded organizational populations.

IMPLICATIONS FOR FUTURE RESEARCH

Our discussion has revealed the need to distinguish between defining the boundaries of the risk set conceptually and measuring them empirically (Tuma and Ingram 1993). Methodological problems, however, ultimately stem from theoretical ones (Hannan 1971; 1991). Before conducting population-level research on organizations, one needs to ask what gives a population of organizations a unitary or diverse character over time. Such analysis should be guided by the theoretical insights of diverse schools of thought so that one can better understand how a population and its boundaries are likely to change over time. More specifically, this might take place in several ways.

Historical Time: Epochs and Eras

It is important to focus on economic and business history at the level of eras and epochs (Aldrich and Fiol 1994). Organization theories are social products that reflect historical trends in the development of firms and industries (Scott 1991). Consequently, the explanatory fit of specific theories and methods is likely to vary by epochs. For long observation periods, each theoretical paradigm is likely to capture part but not all of the story. For example, resource dependence theory treats firms as "open systems" focused outward on the environment. Therefore, it makes most sense for observation periods from the late 1970s and thereafter, rather than for earlier eras when firms functioned as isolated independent units (Scott 1992).

Qualitative and empirical methods can be used to crossvalidate the existence of critically different time periods (Jick 1979). Historical accounts that interpret archival data can be the starting point for a quantitative analysis based on assessing the sensitivity of model fit to alternative specifications of eras and epochs. Once time periods with qualitative and empirical significance have been identified, they can be used to specify more elaborate models with substantive covariates. This can help clarify the definition of population boundaries and the underlying mechanisms of industrial growth by modeling period effects before and after shifts in population boundaries.

Organizational Structure and Governance

The work of Chandler (1962, 1992), Fligstein (1985, 1987) and the case of the book publishing industry signal the penetration of secular trends toward organizations nested in large M-form companies that are financially driven to reach across industrial borders. This means that the population-level study of organizations should consider patterns of ownership and organizational structure in defining populations of organizations. If subsidiary firms are nested within parent firms, this type of ownership structure needs to be clearly recognized because it has important implications for the assumptions of statistical independence in model specification and empirical analysis.

Competition

In defining a population of organizations, the definition of the industry should be distinguished from that of the businesses in which firms compete (Porter, 1980:9). The implications of these differences need to be thought through in conceptually and empirically drawing population boundaries. Many businesses since the 1960s are nested within M-form organizations operating outside the industry. This means that they may have transaction cost advantages, "deep pockets," and large scale and scope (Chandler 1990) by which to wage fiercely competitive battles and circumvent the dynamics of competition within a single industry. Indeed, contingency theorists and industrial economists argue that one strategy for changing the structure of competition is to change industrial boundaries. Carrying capacity empirically defined in terms of an industry can be misleading since organizations can "escape" their industrial environment by drawing upon resources from outside the industry (Rumelt, 1974). Indeed, diversification strategies could well bias estimates if carrying capacity is measured only by the number of organizations within a specific industry. Equating population boundaries with industrial boundaries may lead to biased estimates of the effects of legitimation and competition on population dynamics. Ecological studies need to be sensitive to industries and time periods where such organizational strategies and structures became commonplace.

Industry Boundaries

. The opening and closing of social networks alters the flow of resources that either diminish or create differences between populations (Hannan and Freeman 1989:55) Networks are identifiable and can be conceptualized in a number of ways Linkages may be based on proximity and/or structural equivalence in terms of governance, technology, production, distribution, and/or markets. Approaches to modeling contact between interindustry members of a population (Strang and Tuma 1993; Tuma and Ingram 1993) need to be developed further. Rates of change in industry membership might be modeled by assessing the association between social networks and industry membership. The comparative strength of boundary-crossing ties and the connections between current industry members might help to predict rates of industry membership turnover (Granovetter 1973).

There is a need for further research on where and how to locate boundaries, not only horizontally, but also vertically and diagonally. Research that develops formalized methods linking qualitative research, network analysis, and event history methods promises to systematically advance the analysis of organizational populations.

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