The Coevolution of New Organizational Forms

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Abstract

This paper outlines an alternative theory of organization–environment coevolution that generalizes a model of organization adaptation first proposed by March (1991), linking firm-level exploration and exploitation adaptations to changes in the population of organizations. The theory considers organizations, their populations, and their environments as the interdependent outcome of managerial actions, institutional influences, and extra-institutional changes (technological, sociopolitical, and other environmental phenomena). In particular, the theory incorporates potential differences and equifinal outcomes related to country-specific variation. The basic theses of this paper are that firm strategic and organization adaptations coevolve with changes in the environment (competitive dynamics, technological, and institutional) and organization population and forms, and that new organizational forms can mutate and emerge from the existing population of organizations. The theory has guided a multicountry research collaboration on strategic and organization adaptations and the mutation and emergence of new organizational forms from within the existing population of organizations.

(*Coevolution*; *New Organizational Forms*; *Exploration*; *Exploitation*)

1. Introduction

This paper outlines an alternative theory of organization–environment coevolution (McKelvey 1999) that generalizes a model of organization adaptation first proposed by March (1991), linking firm-level exploration and exploitation adaptations to changes in the population of organizations. The theory considers organizations, their populations, and their environments as the interdependent outcome of managerial actions, institutional influences, and extra-institutional changes (technological, sociopolitical, and other environmental phenomena). The theory has guided a multicountry research collaboration on strategic and organization adaptations and the mutation and emergence of new organizational forms from within the existing population of organizations. The basic theses of this paper are that firm strategic and organization adaptations coevolve with changes in the environment (competitive dynamics, technological, and institutional) and organization population and forms, and that new organizational forms can mutate and emerge from the existing population of organizations.[1]

How organizations evolve and adapt to their environments has been historically a major theme of organization theorists. The literature in strategic management and organization adaptation operates at several levels of analyses and encompasses diverse theoretical and empirical approaches. Population ecology theorists are concerned with variation, retention, and selection processes at the population level of analysis and not with explicating or analyzing adaptation at the level of the individual organization. The strategic management literature, broadly defined, is concerned with performance and conduct of the individual organization. The theories and empirical studies focus on such topics as achieving fits with the environment, sources of competitive advantage, and the role of intentionality. For a review of the adaptation selection debate, which contrasts ecological and strategic management perspectives, see Lewin and Volberda (1999).

Other research themes relating to adaptation highlight the idiosyncratic nature of organization adaptations and the futility of generalizing an ideal performance conduct theory (Numagami 1998, Yates and Van Maanen 1996). The causes of idiosyncrasy are many and are detailed in a rich theoretical and empirical literature on managerial and organization cognition (Meindl et al. 1994), as well as in postmodernism research, applying, for example, Adaptive Structuration theory (DeSanctis and Poole 1994, Orlikowski 1992, Sydow and Windeler, 1998). The thrust of the postmodern arguments and the weight of research on managerial and organization cognition indicate that, at the level of the individual organization, idiosyncratic events and firm-specific factors overwhelm higher level, more generalized theories of firm adaptation for explaining performance and conduct of specific organizations.

Polos (Polos et al. 1998) suggests that organization ecology could be informed from a new definition of organizational forms and their evolution. The new definition is based on certain identity features of the form that

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both enable and restrict the range of variation of specific organization adaptations. Polos et al. (1998) suggests that forms and populations coevolve: forms define populations, but populations affect identities—such as those formed by cultural rules—which in turn define the form. The more sharply defined the identities, the greater the pressure toward form congruence. New technological and product markets lead to new identities and the weakening of existing ones. Similarly, the emergence and crystallization of exogenous macroforces, such as social movements, lead to new cultural identities, which in turn affect organizational forms and their populations.

The Polos et al. (1998) framework represents a significant attempt at providing new insights beyond variation, retention, and selection, and on the dynamics of organizational systems and the evolution of organization ecologies. However, this framework still does not reach the individual organization level of analysis.

This paper diverges from the positivist–postmodern and adaptation–selection debates by developing a more general theory of organization–environment coevolution. The theory attempts to integrate the interplay between the adaptation of individual organizations, their competitive dynamics, and the dynamics of the institutional systems within which firms and industries are embedded. The theory assumes that organizations, industries (populations) and environments (institutional and extra-institutional) coevolve, that their rate, pace, and patterns of change are distinct and interdependent, and that the direction of these changes is not unidirectional. Moreover, theorizing and empirical research within a coevolutionary inquiry system, as shown in Exhibit 1, involves the following:

- Studying organizations over time (McKelvey 1999) within a historical context (Calori et al. 1997, Kieser 1994, Stinchcombe 1965)
- Multidirectional causalities between micro- and macrocoevolution (McKelvey 1999)
- Mutual, simultaneous, lagged, and nested effects
- Restricting and enabling constraints of organization path dependence
- Contingent effects such as nation–state institutional arrangements,
- Extra-institutional influences, such as geopolitical, economic, and natural environmental changes, as well as social movements that affect the deep structure enveloping the enterprise and market competition.

Exhibit 1 highlights the traditional focus of strategic management research on the performance and conduct of the firm and the competitive dynamics of the industries within which the firm competes. However, it also introduces the institutional environment as a source of constraints on firm and industry adaptation, and the mutual adaptation of firm, industry, and institutional environments. The institutional environment is further differentiated to acknowledge potential differences and equifinal outcomes related to country-specific variations. Finally, Exhibit 1 also includes the influences of extra-institutional effects (macroeconomic, technological, social, and political).

The remainder of this paper elaborates the elements of Exhibit 1. Section 2 develops a model of organization adaptation that subsumes idiosyncratic variation at the individual organization level, yet links adaptation at the organization level to changes at the population level. Section 3 introduces the mediating role of different institutional systems (countries) within which industries and firms are embedded. Country-specific constraints are the basis for expectation of differences in organizational forms across countries and for equifinal adaptation outcomes over time.

Section 4 elaborates the change drivers associated with emergence and crystallization (Perez 1985) of macroeconomic, technological, and social and political extra-institutional forces. The periodic confluence of such forces is assumed to be the cause of a shift in the "rugged landscape" within which the coevolution of organizations and their environments unfolds.

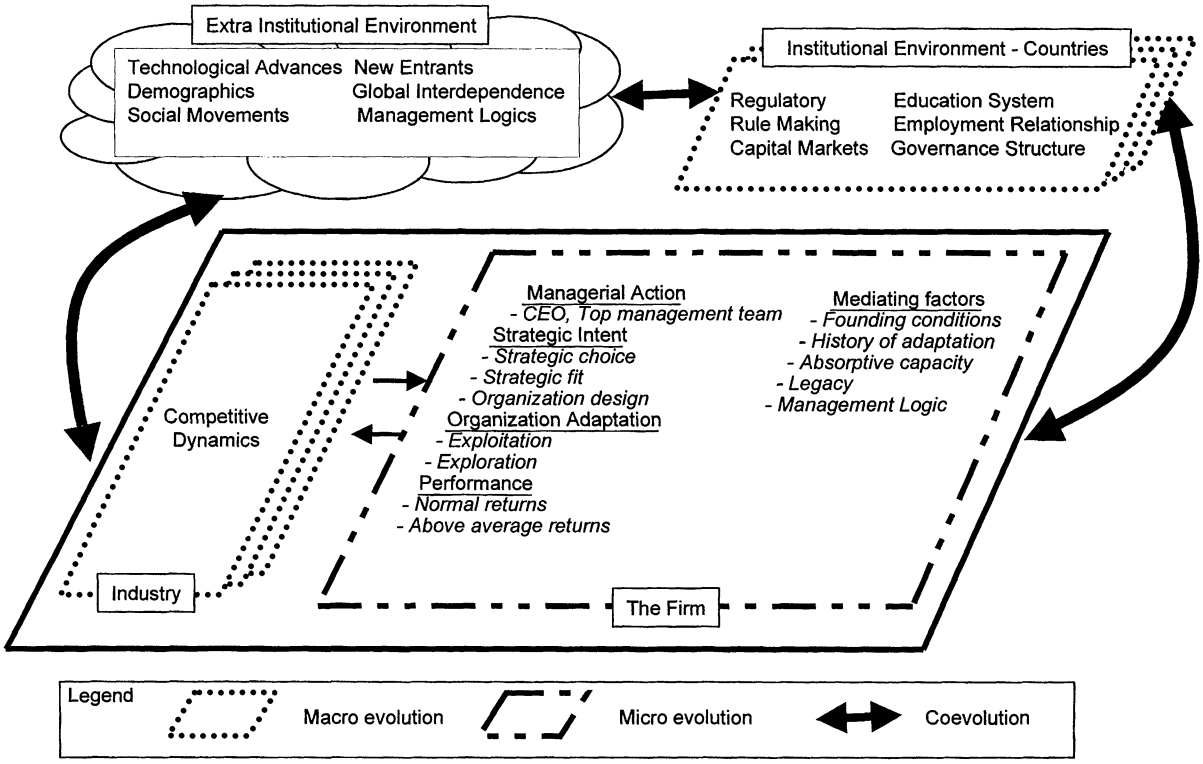
Section 5 considers the implications of the theory for studying the mutations and emergence of new organizational forms.

2. A Model of Organization Adaptation

March (1991) draws a distinction between exploration of new possibilities and exploitation of old certainties. He associates exploration with complex search, innovation, variation, risk taking, relaxed control, loose discipline, and flexibility. Exploration involves experimenting with ideas, paradigms, technologies, strategies, and knowledge in hope of finding new alternatives that are superior to obsolete practices. In contrast, exploitation is associated with systematic reasoning, risk aversion, defining and measuring performance, and explicitly linking activities to these measures. Exploitation involves improving existing capabilities, processes, and technologies, as well as rationalizing and reducing costs. Exploitation legitimates refining, standardizing, routinizing, and elaborating established ideas, paradigms, technologies, heuristics, and knowledge.

The effects of organizational adaptations are realized in changes in the firm's performance distribution. The returns associated with exploration are distant in time and highly variable, while the returns associated with exploitation are proximate in time and more certain. Exploratory and exploitative adaptations have theoretically distinct effects on an organization's performance

Exhibit 1 **Coevolution of Firm, Its Industry, and Environment**



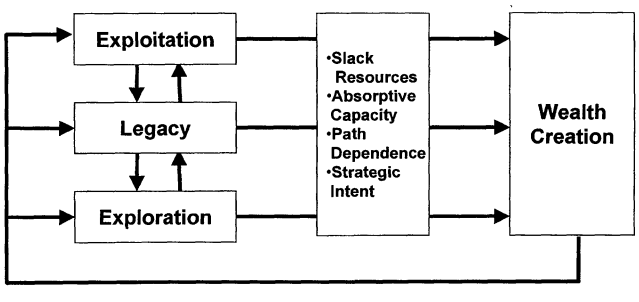
distribution. Exploration increases the likelihood of achieving performance levels significantly above or below the historical trend line. Exploitation, on the other hand, is likely to maintain the historical performance trend line.

The exploration/exploitation theory also advances a process explanation for why and how organizational forms are "selected in" and "selected out." Survival of the organization in the long run requires a balance of exploration and exploitation adaptations. Levinthal and March (1993) contend that the long-term survival of an organization depends on its ability to "engage in enough exploitation to ensure the organization's current viability and engage in enough exploration to ensure its future viability" (p. 105). Exploration at the expense of, or to the exclusion of, exploitation leads to "too many undeveloped ideas and too little distinctive competence" (p. 105). Exploitation pursued in the extreme jeopardizes the organization's survival by creating a "competency trap," a continual elaboration of increasingly obsolete capabilities.

Survival of the firm is realized in changes in the firm's wealth creation performance over time. We hypothesize wealth creation to be an interdependent outcome from returns to (1) exploitation, (2) exploration, and (3) legacy. Legacy embodies returns to reputation, market position, scale, and capabilities reflecting firm-specific history of exploitation and exploration adaptations. Exhibit 2 depicts the recursive interplay of exploitation, exploration, legacy, and firm wealth creation.

Exploitation adaptations are directed primarily toward incremental improvement of existing capabilities and efficiency (e.g., cost reductions) and are represented in the firm's plans, costs, and revenue architecture (business model) as specific targets or operational goals. However, because exploitation adaptations are highly imitable, any

Exhibit 2 **Model of New Wealth Creation**



advantages are likely to be short lived, as well as competed away. Therefore, returns to exploitations cannot be the source of significant above-average returns in the long run. Exploration involves searching for, identifying, and investing in new opportunities and has the potential to expand and replenish legacy. Therefore, a sustained strategy of exploration can be expected to yield new wealth creation gains and above-average returns in the long run.

Managers, however, are assumed to prefer more certain, proximate (in time) returns over less certain, distant (in time) returns. Moreover, because organizations find it difficult to search for new routines while simultaneously improving old routines (Nelson and Winter 1982), most firms on balance are likely to favor exploitation adaptations over exploration adaptations.

The cumulative effect of exploitation and exploration adaptations is reflected in the firm's legacy. Legacy moderates the immediate effect of exploitation and exploration adaptations as a function of size; reputation; established relationships with customers, suppliers, and distributors; and the capital markets. Proprietary technology and patents further contribute to legacy. A new blockbuster drug, for example, would have a larger impact on the legacy of a pharmaceutical firm than an orphan drug. The concept of legacy has analogues in many theoretical formulations. Legacy encompasses such concepts as inertia and core competencies. Legacy also subsumes such factors as tacit, explicit, and procedural knowledge; human capital; market share; brand loyalty; technological platforms; research and development capabilities; and size. Legacy, however, can decay as well as grow over time. Countless case examples and accounts are reported in the literature of firms that have dissipated their franchise, given competitors an opening to take away market share, or seen their legacy decay because of technological innovations.

Organizations increase, deplete, or enhance their legacy through the cumulative effect of their exploration and exploitation activities as mediated by their absorptive capacities to assimilate new knowledge. Legacy, however, is also an industry characteristic. At the industry level, legacy reflects the size of the market, which evolves as the joint outcome of industry-competitive dynamics, barriers to entry, institutional constraints, rates of technological obsolescence, substitution possibilities, and competitive intensity. Because industries vary greatly in market dimensions such as size, rate of growth, and density dependence, legacy can vary across industries. Consequently, industries and firms should differ in terms of their legacy decay rates and performance contributions. The contribution of legacy to firm wealth creation in highly competitive industries can be expected to be smaller than in oligopolistic industries. Similarly, the decay rates of legacy in highly competitive industries should tend to depreciate more steeply.

The availability of slack resources (Cyert and March 1963, Singh 1986) and competitor density in the new landscape, among other things, moderate the enactment of exploration adaptations and the likelihood of achieving above-average returns. Cyert and March (1963) note that slack resources are a necessary but not sufficient condition for allocating resources to innovation (exploration adaptations). In addition to slack, innovation requires the strategic intent, as well as other enabling organization conditions, to invest slack resources in exploration adaptations. However, the potential for above-average returns from new opportunities decreases as competitor density in that niche increases. This dynamic is consistent with the extant literature on first mover (fast follower and late adopter) advantage. Other moderating factors are absorptive capacity for assimilating new knowledge (Cohen and Levinthal 1990, Lane and Lubatkin 1998, Levinthal and Myatt 1994, Van den Bosch et al., this issue) path dependence—the firm's unique historical profile of exploitation and exploration adaptations and managerial intentionality, such as strategic intent (Lewin and Wong 1998)—and top management preference for risk seeking (Finkelstein and Hambrick 1996, Lewin and Stephens 1993).

The following propositions summarize the implications of the exploration/exploitation model (March 1991, Levinthal and March 1993) for firm adaptations over time.

Ceteris paribus,

PROPOSITION 1. *Prevalence of exploitation adaptations is likely to exceed exploration adaptations.*

PROPOSITION 1.1. *Expectations for exploitation adaptations are more likely to be formulated as operational goals to produce explicit and measurable performance outcomes.*

PROPOSITION 1.2. *Expectations for exploration adaptations are more likely to be formulated to achieve nonoperational learning outcomes such as new opportunities or new capabilities.*

PROPOSITION 2. *Higher historical rates of wealth creation performance are more likely to be associated with higher historical rates of exploration adaptations.*

PROPOSITION 2.1. *The higher the rate of exploration adaptation, the more likely are firms to be favorably selected.*

PROPOSITION 3. *Slack resources are a necessary but not sufficient condition for sustaining exploration adaptations.*

PROPOSITION 3.1. *Absorptive capacity to assimilate new knowledge, path dependence, and managerial intentionality enable and restrict the level and range of exploration adaptations.*

PROPOSITION 3.2. *The higher the absorptive capacity of the firm to assimilate new knowledge and the lower the niche density dependence, the higher the likelihood of increasing returns to exploration.*

PROPOSITION 4. *The decay and growth rate of legacy differ across and within industries.*

2.1. Adaptation in Times of Increasing Disorder

Drawing on evolutionary biology in considering organizations as "organisms" (McKelvey 1999), the theory assumes that the coevolution of organizations is an outcome of the interplay between forces internal and external to organizational environments. During periods of relative stability, organizations and populations change and adapt in ways analogous to species variation, elaborating and reinforcing the existing dominant organizational form (Proposition 1, Proposition 2). However, during periods of environmental change characterized by a confluence of major environmental change forces, a shift in the "rugged landscape" ensues.

The "rugged landscape" metaphor helps us understand the implications of organization–environment coevolution (Anderson 1999). The notion of "fitness landscapes" was originally developed as a tool for understanding biological evolution. Wright (1931, 1932) developed the notion of a topological space where a given location on the landscape represents a genetic element and the height of the peak at that location corresponds with the relative fitness contribution of that element for the organism as a whole. Landscapes are said to be "rugged" when attributes are correlated, that is, when the characteristics of attributes carry implications for other attributes, their neighbors on the landscape. Therefore, evolution on rugged landscapes is an attempt to find the peaks, or the high ground.

But this effort is complicated by the fact that changes in one attribute evoke changes throughout other parts of the landscape. As the rate of environmental change increases, it alters the fitness function of the organization's landscape. This change impels organizations to search for and invent new paradigmatic forms, and this increases selection rates. The environmental dislocations that cause mutations of organizational forms eventually evolve toward a new condition of relative system stability and order. Organizations learn to adapt to new, more volatile conditions by developing new and enhanced capabilities for coping with higher levels of disorder (cf. papers in Brown and Eisenhardt 1998, Ilinitch et al. 1998, and Walker et al. 1998).

In addition, the institutional environment is likely to approach a new period of relative order through other means, such as internalizing new identity features (Polos et al. 1998) and self-organizing processes. As social movements and macroenvironmental forces achieve prominence and become institutionally embedded state forms, the new, successfully coevolved forms are acknowledged, legitimated, and imitated (retained). This process results in increased isomorphism and lower perceived environmental uncertainty among organizations.

We distinguish among several stages of coevolution in firm response to changes in the state of environmental uncertainty. During periods of contingent stability, the "fit" between the dominant organization paradigm and the environment is perceived as robust. Changes in the external environment are expected to be accommodated by incremental adaptation of strategies and organization (DiMaggio and Powell 1983; Meyer et al. 1997, Scott 1987), as well as with local search (Cyert and March 1963).

These processes are reinforced in concert with repeated validation feedback. As major forces of change begin to converge and the environment becomes more turbulent (organizations perceive increased failure rates of historically robust adaptation routines), most organizations can be expected to adapt initially to the changing conditions by intensifying their historical patterns of strategic exploitation and exploration adaptations. However, firms that have a history of sporadic or no experience with certain exploration adaptations, such as learning alliances, will likely delay entering learning alliances, and initial entry is more likely to occur as a result of mimetic isomorphism (Koza and Lewin 1998).

Ceteris paribus,

PROPOSITION 5. *Organizations experiencing increasing rates of environmental turbulence are initially most likely to intensify their historical pattern of exploitation and exploration adaptations.*

PROPOSITION 5.1. *The greater the prior success of specific exploration adaptations, the greater the likelihood of replication.*

PROPOSITION 5.2. *The rate of increase and type of adaptations are likely to be both enabled and restricted by the firm unique historical path dependence of exploitation and exploration adaptations.*

PROPOSITION 5.3. *Firms are more likely to adopt strategic exploration adaptations with which they have had no prior experience through mimetic isomorphic mechanisms.*

As they perceive that their environments are entering a phase of high-velocity turbulence (Brown and Eisenhardt 1998), firms can be expected to intensify and diversify their prospecting activities for new "landscapes" (exploration strategies). Such strategies can encompass heightened merger activities (for entering new lines of business), expanded greenfield investments, intensifying and diversifying internal research and development, and increasing participation in learning alliances such as co-development projects and real options (Koza and Lewin 1998, Liebeskind et al. 1996). However, the more an organizational form is overdetermined (Anderson 1999, Lewin and Stephens 1994), the lower its absorptive capacity for new knowledge and the lower its ability to recognize new opportunities. Lewin and Stephens (1994), for example, note that an overdetermined (bureaucratic, high administrative intensity) organization reflecting a CEO's extreme propensity for control over others (high Machiavellianism) can result in a contingency misfit and dysfunctional organization performance. In general, overdetermined organizations characterized by an overriding preference for mechanistic designs (Burton and Obel 1998) regardless of environmental contingency factors are more likely to exhibit lower adaptive and improvisation capabilities (Weick 1998) and higher structural inertia.

Some firms can be expected to opt for hypercompetitive strategic responses of dominance and disruption (Ilinitch et al. 1998) that require a mindset shift—forsaking beliefs in sustained competitive advantage and adopting a path of strategic temporary advantage as their new a way of life. Other firms, however, can be expected to opt for strategies of consolidation and growing scale on the assumption that increasing returns to scale and size are associated with access to resources, longevity, and long-term survival. Finally, some firms can be expected to exit an existing line of business because of inability to remain competitive in that industry segment, and reconstitute themselves in an entirely new industry landscape (e.g., Westinghouse Corp. became CBS).[2] In general, in times of increasing disorder, firms are more likely to intensify their exploration adaptations.

Ceteris paribus, in times of high-velocity turbulence,

PROPOSITION 6. *The mean and the variance of firm strategic exploration adaptations are likely to be increasing.*

PROPOSITION 6.1. *Firms are likely to accelerate their restructuring strategies (mergers, acquisitions, and divestitures).*

PROPOSITION 6.2. *Firms are likely to accelerate participation in learning alliances.*

PROPOSITION 6.3. *The mean size distribution of the population is likely to increase while the variance will decrease.*

Extended periods of dislocations and high-velocity turbulence can be expected to coincide with an increasing mortality rate of the affected population. However, which firms can be expected to survive and which firms are more likely to be selected out? Levinthal and March (1993) argue that overexploitation and overexploration are likely to result in organizations being selected out. They reason that overexploration can result in an endless unorganized search for new ideas and unrelated discoveries, and overexploitation can result in obsolete competencies and the underutilization of new opportunities.

Based on our theoretical development, surviving firms could include those that consolidate their niche by growing scale and obtaining increasing returns to scale, as long as the niche itself has not decayed. Similarly, firms ceasing operations of original business and reconstituting themselves in a new line of business could prosper and survive as new entities (subject to density dependence). Finally, another class of firms likely to be selected in are those that have evolved new organizational forms appropriate for competing in high-velocity and turbulent environments. Most likely, these are the few firms that, throughout their histories, have developed and nurtured a balance of exploitation and exploration capabilities and the absorptive capacity for assimilating new internal and external knowledge necessary for supporting increasing rates of prospecting strategies—and ultimately, for innovating new organizational forms.

Hypercompetition is emerging as a new form of competitive strategy (D'Aveni and Gunther 1994). Firms opt to become hypercompetitors for various reasons. A failing firm that has "nothing to lose" might choose to destabilize an industry by breaking the accepted rules of competition (Craig 1996). Once an industry is plunged into a hypercompetitive state, survival depends on being able to leapfrog competitors, engage in rapid moves and countermoves, and compete on the premise that advantage is temporary (Ilinitch et al. 1998).

Hypercompetition in turbulent environments as a strategy of successful firms is consistent with research in complexity theory, which explores the relationship between exploration and exploitation. One of the central findings of complexity theory is that robust (dynamic) systems

evolve toward that balance between order (the pull of exploitation) and disorder (the pull of exploration) that is often called "the edge of chaos" (Kauffman 1993, Langton 1990). At this point of dynamic tension, truly novel emergent behavior can occur.

As firms introduce hypercompetitive strategies into an industry or learn to "compete on the edge," they themselves become accelerators of disorder for the industry, thereby accelerating perceived environmental turbulence (Ilinitch et al. 1998). We theorize that in this stage of heightened turbulence, selection rates accelerate and mutation of new organizational forms might become more visible. In particular, we contend that firms will increasingly engage in radical organizational adaptations, with a focus on innovating and experimenting with new capabilities of organizational adaptivity (Grant 1996; Volberda 1996, 1998). New capabilities of organizational adaptivity support intensified exploration strategies and hypercompetitive strategic behavior, as well as fast-follower strategies. Moreover, the firms most likely to experiment with, discover, and innovate new organizational forms are likely to be those few with a history of institutionalizing a dual adaptation strategy of sustaining increasing rates of explorations and exploitations.

PROPOSITION 7. *Ceteris paribus, under conditions of a high-velocity turbulent environment, firms adopting hypercompetitive and/or fast-follower strategies are more likely to originate new organizational forms characterized by radically new adaptive capabilities.*

3. The Mediating Effect of Forms of Capitalism

Nation states develop political institutions, social compacts, educational systems, institutional structures, and corporate governance systems—their nation–state form of capitalism—that reflect a collective enactment of the nation's culture, values, and history. The specific nation–state form of capitalism legitimizes particular business systems (Chandler and Hikino 1990; Hofstede 1993; Meyer et al. 1997; Whitley 1992, 1994) and is reflected in the governance structure, employment relationship, and management practices of enterprises and public institutions (Baron 1996, Bendix 1956, Calori et al. 1997, Djelic 1998, Guillén 1994, Kieser 1994). Societies create these structures and institutional arrangements in a way that is consistent with the social ideology or value system of the nation state (cf. Polos et al. 1998) to buffer economic entities, groups, and individuals from the effects of environmental uncertainty.

Whether the institutional system affects the organizational form and strategies of large enterprises across countries or whether the organizational form is a direct outcome of technical and economic constraints has been an important theme of strategy and organization theory research. Many studies have compared the size distribution and organization structure (adoption of M-Form), across nation states (e.g., Hamilton and Biggart 1988, Lazonick 1992). The findings overwhelmingly support a convergence of the M-Form across countries, despite differences in their institutional systems.

The studies of the diffusion and adoption of the M-Form are concerned with the generic structural features of the organizational form, which may indeed be the preferred formal structure for large diversified firms. The emphasis on the formal divisional organization design, however, ignores many other important design dimensions of organizations, such as leadership (CEO and top management team), strategic intent, employment relationship and human resources policies and incentives, information processing and decision-making systems, production technology, organizational culture, and interorganizational linkages (Burton and Obel 1995, Daft 1998, Lewin and Stephens 1994, Meyer et al. 1997).

Specific institutional arrangements tend to enable and restrict strategic and organization adaptation options (Kogut et al. 1999). These institutional arrangements may involve the employment relationship; strategic orientation (e.g., long- vs. short-term risk preference); diversification strategies; production systems and the type and structure of organizational linkages with the political system; other stakeholders; vendors; alliance partners; and local communities.

In the global marketplace, institutions and organizations established within diverse capitalistic systems interact through domestic and international, private- and public-sector initiatives. However, differences in accounting practices (O'Malley 1992), taxation regimes, and social welfare programs (e.g., maternity and disability leave; old-age survivor care; and workers' injury, disease, and unemployment compensation), as well as differences in work rules, management styles, corporate cultures, and union activities (Frank and Burton 1997) tend to reinforce distinctions between nation–state forms of capitalism.

Boyer and Hollingsworth (1997) contend that economic coordination and industrial organization will continue to take multiple forms, because the incumbent production organizations are inherently embedded in immutable yet diverse nation–state configurations. These varied configurations provide nation states and their domestic organizations with unique specializations, economies of scale, and comparative advantages (Williamson

1985, 1996). Established national institutions and distinctive historical, technical, and cultural patterns lead to different corporate governance structures, long-term financing strategies, patterns of foreign investment (Koechlin 1995), R&D activities, and technology export directives (Pauly and Reich 1997).

Kogut (1993) concludes that shop-floor organization, corporate structure, inter- and intrafirm relationships, and other corporate institutions are unique to a specific form of capitalism and are much more difficult to duplicate or imitate by organizations located in alternate institutional fields.

Ceteris paribus,

PROPOSITION 8. *The specific institutional system defining each form of capitalism both enables and restricts the adaptation and development of organizational forms within individual nation states.*

PROPOSITION 8.1. *Organizational forms in different countries will differ in their managerial practices and performance measures.*

Following Whitley (1992, 1994), we classify nation–state forms of capitalism along institutional and management practices dimensions. The institutional dimension is reflected in the role of government in the economy, structure of capital markets, culture, and educational system. The management practices dimension is reflected in authority and control systems, employment relationships, strategic paradigms, importance of long-term relationships, and the dispersion of tacit and explicit knowledge.

Exhibit 3 compares the institutional contexts and management practices of Germany, Japan, and the United States.

Thus, for example, a major characteristic currently distinguishing the German, Japanese, and U.S. systems is the structure of the capital markets and their respective implications for the management of strategic orientations.

The scale, diversity, efficiency, liquidity, and highly competitive nature of capital markets in the United States have served to focus management attention on maximizing "shareholder value." For most U.S. corporate managers, this focus has intensified a short-term orientation, a preference for predictable increasing performance, and therefore, a preference for exploitation adaptations. In addition, the scale and liquidity of the U.S. capital markets has created a dynamic market for mergers, acquisitions, and initial public offerings.

In contrast, capital markets in Germany and Japan operate under a "patient" capital structure and scale concomitant with less direct coupling to market monitoring. In these two countries, liquidity and diversity of financial investors are far less developed. In Germany, the major banks hold controlling equity positions (as well as key roles as lenders) in almost all the publicly held companies. In Japan, crossholding arrangements of equity among companies belonging to a Keiretsu, as well as major bank ownership of equity, have a similar effect of decoupling from market monitoring (Sakano and Lewin, this issue). In either case, managers can behave as if they are more insulated from capital market monitoring. They are freer to adopt a longer term strategic orientation, which allows them to be less concerned with short-term (e.g., quarterly) fluctuations in reported performance. German and Japanese management is likely, therefore, to exhibit a higher preference for exploration adaptations. Moreover, cultural differences also are associated with preferences for risk taking and for long-/short-term (Palmer et al. 1993, Triandis 1989). The related implications for organizational strategic adaptations could be that companies and industries in Germany, Japan, and the United States will have different patterns of strategic diversification and/or financial risk-seeking behavior.

Ceteris paribus,

PROPOSITION 9. *Evaluation of firm performance in Germany, Japan, and the United States will to a great extent reflect country-specific financial measures.*

PROPOSITION 9.1. *German and Japanese firms will tend to emphasize growth in revenues, whereas U.S. firms will tend to emphasize attainment of hurdle rates of returns on capital.*

PROPOSITION 10. *The incidence of both related and unrelated diversification through mergers and acquisition will tend to be higher for the United States relative to Germany and Japan.*

PROPOSITION 11. *Time horizons for investments in business projects are likely to be longer for Germany and Japan relative to the United States.*

4. Extra-Institutional Forces of Change

The open-systems view in organization theory introduced the idea that the institutional systems themselves coevolve in response to exogenous forces of change, interaction between nation states, and organizational interactions within a particular nation state (Katz and Kahn 1978, Meyer et al. 1997). Evolutionary economists, for example, have investigated the "long waves" of global economic fluctuations of prosperity and depression as a function of capital investment cycles (Kondratieff 1984); product and production innovations (Schumpeter 1934);

Exhibit 3 A Comparison of Institutional Factors and Management Practices in Germany, Japan, and the United States

	Germany	Japan	United States
		Institutional Factors	
Role of Government	• Extensive Involvement • Detailed Regulatory Environment	• Industrial Policy • Embedded Government Guidance	• Relatively Laissez-faire
Rule of Law	• Highly Developed • Central Role for Government and Parliament • Transparent	• More General • Administrative Guidance	• Highly Developed • Decentralized • Transparent
Structure of Capital Markets	• Restrictive • Banks Major Long-term Equity Owners	• Very Restrictive • Market for Divestiture/M&A Very Limited	• Very Competitive • Sophisticated, Large-scale, Very Liquid Markets
Culture: Individualism/ Collectivism	• Moderate Individualism • Institutionalized Communitarianism	• Collectivism	• Individualism
Educational System	• Centralized • Uniform • Vocational System • Meritocracy	• Centralized • Uniform • Meritocracy Determines Entry Level into Socioeconomic Status	• Decentralized • Heterogeneous • No Vocational System • Path to Socioeconomic System
		Management Factors	
Governance Structure	• Supervisory Board Considers Employees, Society and State	• Company Managed for Employees and Shareholders • Inside Directors • Stable Cross-shareholding • Main Bank	• Company Managed for Shareholders • Board Responsible to Shareholders • Outside Directors • Diversified Ownership
Authority and Control	• Hierarchy • Top-Down	• Top-Down • Bottom-Up • Consensus-based Decision Making	• Hierarchy • Top-Down • Individual Centered Decision Making
Employment Relationship	• Long-term Commitments • Layoffs/Downsizing/Severance Pay Tightly Regulated by Social Legislation	• Life-Time Employment • Entry-Level Hiring • Internal Labor Markets	• Employment-at-Will • External Labor Markets • High Internal and External Mobility
Compensation		• Seniority-based • No Stock Options	• Performance-based • Stock Option
Strategic Paradigm	• Related Diversification • Infrequent Exit-Entry of Lines of Business • Long-term Orientation • Risk Seeking	• Related Diversification • Most Joint Ventures with Group • Long-term Orientation • Risk Seeking	• Exit-Entry of Lines of Business • Short-term Orientation • Less Risk Seeking
Knowledge	• Tacit: Low. High for Masters Craftsmen • Explicit: High	• Tacit: High • Explicit: Moderately Low	• Tacit: Low • Explicit: High

trade and real wages (Goldstein 1988); and major political, technological and social innovations (Perez 1983, 1985).

Sociologists and social theorists have examined the variations in social movements such as civil unrest and political conflicts that occur within nation–state contexts. For example, the emergence and intensification of sociostructural changes in developing countries has been attributed to destabilization processes caused by rapid economic growth (Olsen 1963) and to international trade specialization and the transfer of resources from less to more developed countries (Wallerstein 1979). Although research on the antecedents of sociostructural change in developing countries has yielded inconsistent findings, the research does illustrate that social movements emerge and crystallize over long periods of time.

To this day, the dominant features of the nation–state forms of capitalism in the industrialized countries reflect the imprinting conditions—social movements and macroenvironmental forces—that framed the transition from the craft to the industrial age (Djelic 1998, Whitley 1992). These forces of change included major demographic effects, such as population movements from the land in support of food production to cities, and the growth of the industrial work force (Ross 1989, Tylecote 1992). Recently, scholars have begun to examine the coevolution of demography, domestic and international sociopolitical conflicts, and changes in social order (Cohen and Rubin 1984).

The post-Enlightenment social movements played a role in a commitment to an open economy (Maddison 1991). Church–state separation and technological advances in mass communication and transportation—telegraph, telephone, and railroads—created new opportunities for the structuring of enterprises (Ross 1989, Tylecote 1992). Newly available sources of convenient energy, used initially to power industrial motors and vehicles, also created opportunities for the development of new technologies, products, and organizational forms (Chandler 1962).

The transition to the industrial age and the emergence of the nation–state forms of capitalism were accompanied by a long period of environmental turbulence and by the emergence and development of new organizational forms. According to Max Weber (1978), particular forms of organization arise at particular times in history, within particular sets of social and technological conditions (Stinchcombe 1965). Weber argues that bureaucracy, the predominant type of formal organization and the bedrock of organization theory assumptions through the late twentieth century, evolved in response to forces of change that were unfolding at the end of the nineteenth century. The confluence of these change forces ushered in the industrial age and gave rise to the U-form of organization (Chandler 1962).

In addition, Chandler (1962, Chandler and Hikino 1990) note that further developments in the transportation and communication industries allowed entities to promote increased levels of differentiation, integration, and coordination, from which evolved subsequently the formation of the more complex M-Form as the dominant organizational form.

The deep structure within which the interplay between the nation–state institutional structure, the enterprise system, and the firm takes place, is subject to the influence of macroenvironmental forces such as social movements, demography, and technological discoveries. In general, these forces have unique origins and unfold over long periods of time before their impact is felt.

4.1. The Transition to the Postindustrial Age

The forces of change that are ushering in the postindustrial age appear to parallel forces at the turn of the nineteenth century that stimulated the emergence and crystallization of the nation–state forms of capitalism and of the bureaucratic organization paradigm dominant throughout the twentieth century (Coleman 1990, Etzioni 1988, Lewin and Stephens 1993). The full measure of these forces' ultimate impact and associated dislocations has yet to be realized. However, in general, these forces include the following:

1. Global economic interdependence that originated in the post-W.W.II Breton Woods era and that evolved as a complex web of institutions (e.g., IMF, WTO, BIS, World Bank) and arrangements that have served to integrate the global economy (Kahler 1995, Milner and Keohane 1996).

2. The emergence of vast global capital pools and their potential to affect national economies (Quinn 1992), and the role of the Asian economies as global competitors beyond sources of supply for labor-intensive goods has only recently been recognized (Abbegglen 1994).

3. Demographic changes, such as population aging (consequence of 1948–1952 baby boom); decline in birth rates; and the repeat of massive population migration in China, India, and other rapidly industrializing countries (Hatton and Williamson 1998). These demographic changes are creating major social and economic dislocations for all nations, especially the advanced industrialized countries.

4. Advances in information technology—the convergence of computing, networks, internet, and video technologies—that have the potential to radically affect the socioeconomic system, from global commerce to personal life styles, and to enable new organizational forms

(Applegate et al. 1988; Fulk and DeSanctis 1995, 1999; Keen 1988; Ross 1989).

5. Emerging social and labor market forces that are affecting key features of nation–state forms of capitalism and the design characteristics of organizations. Examples include redefinition of the employment relationship (in the advanced industrialized countries) and personal norms that undergird individuals' self-esteem and well-being (Freeman 1986), labor market globalization (Williamson 1997), and the shift of labor-intensive work from industrialized to rapidly industrializing countries (e.g., China).

6. Social movements and political forces already underway that signal the evolution of significant social unrest, a decline in social trust, and a return to individual-centered ideologies (Putnam 1994, Figure 4, Social Trust, 1960–1993). The decline in union memberships (Hirsch and Addison 1986, Putnam, 1994) and the disengagement of individuals from political processes (Hill and Leighley 1992, Putnam, 1994) are indicative of growing social alienation and distrust of the entrenched institutions in some nation–state forms of capitalism (Teeple, 1995).

Ceteris paribus,

PROPOSITION 12. *The higher the rate of transition to the postindustrial era, the higher the social and economic dislocations, and the higher the felt environmental turbulence.*

PROPOSITION 13. *The adaptation of nation–state forms of capitalism and of new organizational forms coevolve with the rate of crystallization of macroenvironmental changes ushering in the postindustrial era.*

In general, all industrialized countries will be experiencing, to varying degrees, the effect of the confluence of the extra-institutional forces of change and the associated increasing environmental turbulence. However, the new organizational forms that evolve during this process will differ depending on the particular business-system contexts in which they emerge. Thus, the profile of adaptive capabilities representative of multidivisional firms operating in Japan might favor strategies that leverage tacit knowledge of their workforce. In contrast, those in the United States might favor information technology-enabled strategies (Fulk and DeSanctis 1999, 1995; Yates and Van Maanen 1996).

Firms in both countries will experience the pressure to become more adaptive. Their strategic and organizational responses, however, can be expected to be partly shaped by their country-specific changes affecting the business system and culture, and by history and firm-specific history-dependent exploitations and explorations. Furthermore, the nation–state forms of capitalism rate and direction of change can be expected to differ because of differences in the flexibility and adaptivity of their individual institutional systems. Lewin (1997) contends that relative to other G-7 countries, the United States is more favorably positioned for nurturing experimentation, innovation, and entrepreneurship in times of increasing global dislocations. Lewin (1997) argues that the greater flexibility of the United States institutional system is the result of several distinguishing factors, such as the diversity of the educational system; culture of individualism, equal opportunity, and self-reliance; heterogeneity of the population; greater malleability of rule making at the federal and state level; and the scale, diversity, and fluidity of the capital markets.

5. Implications for Research on New Organizational Forms

The theoretical framework developed in this paper provides another lens for framing and interpreting research on evolution and adaptation of organizations over time in general, and on management strategic and organization change specifically. Research on how and why organizations evolve and change over time has been accumulating for some time (Aldrich 1979, 1999; Miller 1990; Romanelli 1991; Tushman and Romanelli 1985). However, most of the empirical research at the level of the organization involves short-term strategic and organization adaptations under certain environmental conditions (cf. Whittington et al., this issue). Some notable comprehensive case studies describe organization restructuring and rejuvenation (Baden-Fuller and Stopford 1992, Pettigrew 1985) at a time when organization survival is at stake. Many more empirical case studies focus on specific themes such as the role of innovation processes, impact of information technology or CEO succession in organization adaptation (Hagstrom 1991, Kesner and Sebora 1994, Sakano and Lewin, this issue, Van de Ven et al. 1989).

Case studies by definition focus on individual or small samples of organizations. Although case studies can lead to important insights (Numagami 1998), the findings do not necessarily generalize to population phenomena. Most studies of organization evolution, however, focus on the population of organizations (Romanelli 1991). In these studies, the emergence of new organizational forms equates to the rise and decline of industries and not to the emergence of new forms of organizing. For example, several theories propose that new industries (and by implication new organizational forms) emerge from entrepreneurial activity of new entrants (Aldrich and Mueller 1982, Aldrich and Zimmer 1986), or as an outcome of

radical socioeconomic changes such as social movements (Aldrich 1979, Carroll and Huo 1986, Polos et al. 1998, Stinchcombe 1965). Still other theories posit that new organizational forms result from technological innovations that lead to "creative destruction of industries" (Schumpeter 1950), or from technological advances that supplant existing competencies (Tushman and Anderson 1986).

In his historical account of the emergence and evolution of the U- and M-Forms of organizations, Chandler (1962) demonstrates that new organizational forms can and do emerge in the course of major environmental transformations. Chandler's account is noteworthy also for documenting the outlier characteristics of the early innovating companies (e.g., Dupont, General Motors, and Sears) and the long passage of time before the M-Form becomes the dominant prototypical structural organizational form for large diversified companies (Fligstein 1985, Khandwalla 1977, Mintzberg 1979).

To identify the mutation and emergence of new organizational forms in "real time," as distinct from retrospective historical analyses (once a new form is in wide use), requires longitudinal research. The need for conducting longitudinal studies of organization adaptations over time is not new (Huber and Van de Ven 1995, Miller 1990, Miller and Friesen 1982). Studies of stage models of organization adaptations (e.g., cycles of venturing, expansion, decline, and rejuvenation) or of punctuated equilibrium models of population evolution (Tushman and Romanelli 1985) have provided an important foundation for new research directions linking mutation and genealogical adaptation at the organization level to the emergence of new prototypical dominant organizational forms. The earlier research also supports the case for a coevolutionary perspective (McKelvey 1997) that accommodates, for example, firm-specific trajectories of adaptation (Miller 1990), managerial strategic intent (Child 1972), emergence of competency destroying technologies (Tushman and Anderson 1986), impact of information technology (Hunter 1999a, 1999b), environmental institutional influences (Kogut et al. 1999, Thomas 1999), and other coevolving factors.

A major barrier for longitudinal studies on organization adaptation is the absence or lack of access to organization-specific time series data on adaptation events. McKelvey (1999) argues for research using time-based sequences of firm-specific microstate adaptation events. Such sequences lend themselves to longitudinal empirical studies of rates and pace of change and can be the source of insights that are independent of firm-specific contextual details. However, research using such data sequences are in the early experimental stage (Baden-Fuller et al. 1999; Hanaoka and Sakano 1999; Hunter 1999a, 1999b; Lewin and Weigelt 1999; Obel et al. 1999; Oliver et al. 1999; Utikal et al. 1999; v. Werder, this issue; Webb and Pettigrew, this issue).

The theory proposed and developed in this paper provides the basis for longitudinal research on firm adaptation in general and on the emergence and mutation of new organizational form specifically. At the firm level, longitudinal research requires assembly of new types of data series consisting of firm-specific strategic and organizational adaptation events. Because the timing and crystallization of new organizational forms or elements of such forms cannot be foreseen, such a research project must be structured as an open-ended program.

Moreover, the theory provides the basis for specifying the most favorable conditions and industry candidates for tracking the emergence of new organizational forms. For example, selecting an industry that is entering a period of deconstruction offers a more promising research opportunity for tracking the emergence and mutation of new organizational forms than an industry that is not in a deconstruction stage. Recently examples of industries undergoing dramatic deconstruction include financial services, telecommunication, retailing, steel, and pharmaceuticals.

A more crucial issue relates to what microadaptation data sequences to collect and analyze. As longitudinal empirical research studies within coevolutionary inquiry systems grow in popularity, new types of data sets, and research methods will emerge into wider use. The NOFIA project pioneers the use of firm-specific strategic and organization adaptation sequences obtained from publicly available accounts. Such data sequences, when combined with information relating to environmental changes and with performance time series data, can be used to revisit prior research on organization adaptation such as CEO succession (Sakano and Lewin, this issue) or the question of strategy following structure (Webb and Pettigrew, this issue).

Analyses of sequences of strategic and organization adaptations also lend themselves to identifying outlier organizations that innovate new aspects of organizational adaptive capabilities. These are changes to strategy and organizational form that, in accordance with complexity theory (Anderson 1999), affect sources of dissipative energy and move an organization toward "the edge of chaos," where an organization is at its optimal state of adaptivity and flexibility. McKelvey (1999) discusses such organization adaptations. For example, he proposes that switching to modular structures or stimulating heightened emergent processes (bottom up, product champions, etc.), or new incentive structures can be

sources of dissipative energy and increased internally induced organization change. Lewin (1999) and Dijksterhuis et al. (1999) suggest that organizations that have transformed themselves to the "edge of chaos" also will invent a new underlying management logic based on the principle of self-organization that will become the basic driver for new forms of organizing, strategy and leadership.

If the new organizational forms involve mutation of new adaptive capabilities, then the focus of analysis ought to be on microadaptation of all aspects of organization levels that increase rate and sources of dissipative energy. Moreover capturing interaction effects of new entrants, competitive dynamics and environmental changes (institutional and extra-institutional), requires a longitudinal coevolutionary perspective. This paper has outlined such a model of firm adaptation within a coevolutionary framework. This model also guides a large-scale international research project on studying the mutation and emergence of new organizational forms.

Finally, we believe that the theoretical framework opens an agenda for new fundamental research on organization adaptation and change involving application of new forms of data and empirical methods. The paper also has important implications for reintegrating research and teaching of strategy, organization theory, and organization design, and for informing management practice of strategic and organizational change at the firm level.

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Endnotes

[1]The International Research Program on New Organizational Forms for the Information Age (NOFIA) is centered at Duke University. The principal investigator is Arie Y. Lewin. The purpose of this open-ended longitudinal multicountry comparative study is to detail mutation process and emergence of new hyperadaptive, flexible organizational forms from existing stock of large organizations. The participating research teams are from Southern Denmark University, Technical University Berlin, Cologne University, Waseda University, Seoul National University, Erasmus University, Stockholm School of Economics, and IMD, Warwick University. For more information, contact the first author.

[2]Other examples include American Can becoming Travelers Insurance and Libby Owens Ford becoming Trinova.

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