

## ORGANIZATIONS UNFETTERED: ORGANIZATIONAL FORM IN AN INFORMATION- INTENSIVE ECONOMY

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The transition from an economy based on materials to an economy based on flows of information has created considerable challenges for organization design by unfettering many organizational aspects from physical constraints. We view the resulting new organizational forms as coping with four core issues: interdependence, disembodiment, velocity, and power. The nine articles in this special research forum provide evidence on how forms have changed, as well as on which aspects of traditional theorizing are likely to continue to be robust. Core themes reflected are an acceptance of contradiction and paradox, a shift in the goal of organizing from buffering against uncertainty to responding to it, a strategic focus on structure and process design, a reemphasis on the social and interpersonal, and a reemergence of issues of legitimacy.

Debates on the consequences of increased information intensity for the design of organizations have attracted so much attention that social scientists face an embarrassment of riches. Literally hundreds of new terms and perspectives have been introduced.<sup>1</sup> Notwithstanding this variety, there is

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The order of authorship above is alphabetical. Both authors contributed equally to the essay and to the work of pulling together this special research forum. The Special Research Forum on New and Evolving Organizational Forms would not have been possible without the hard work and perseverance of our authors and reviewers, for which we are deeply grateful. Anne Tsui and Ian C. MacMillan provided insightful comments.

<sup>1</sup> We are witnessing the introduction of a plethora of new organizational paradigms that have identified or at least implied new organizational forms (*Organization Science*, 1999). This multiplicity has pervaded the scholarly community, although those writing for a managerial readership have been equally assiduous (e.g., Gibson, 1997). Each paradigm has its own label. Concepts of "postbureaucratic" and "postmodern" organization express new organizing principles in broad terms (Clegg, 1990). The "postentrepreneurial organization" (Kanter, 1989) and the "flexible firm" (Volberda, 1998) are two other broad concepts. Such comprehensive formulations express the paradigm of new organizational form, as opposed to others that focus on more specific aspects of the paradigm. These include "federalism" (Handy, 1992), the "network organization" (Castells, 1996; Nohria & Eccles, 1992), the "virtual corporation" (Davidow & Malone, 1992), the "reengineered corporation" (Hammer & Champy, 1993), the "knowledge-creating company"

a widespread sense of a gap between the rapid development of new organizational forms in practice and the capacity of existing perspectives to account for them in theory. It thus seemed to us timely to provoke new theory based on the empirical examination of new forms. This Special Research Forum on New and Evolving Organizational Forms was intended to provide an opportunity for scholars from different theoretical traditions, utilizing different research methodologies, to provide evidence on how new forms actually operate, building upon insights developed in earlier attempts to make the evolving organization more tractable (see Lewin & Volberda, 1999).

In this essay, we set the context for the special forum in terms of the search for alternatives to conventional bureaucracy. We suggest four "new" issues to which organizations are attempting to respond: interdependence, disembodiment, velocity, and power.

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(Nonaka & Takeuchi, 1995), the "ambidexterous organization" (Tushman & O'Reilly, 1996), the "high performance" or "high-commitment work system" (Garvin & Klein, 1993; Pfeffer, 1998), the "boundaryless company" (Devanna & Tichy, 1990; Hirschorn & Gilmore, 1992), the "hybrid organization" (Borys & Jemison, 1989), and the "transnational solution" (Bartlett & Ghoshal, 1989). Most of these formulations result from case studies of firms that have pioneered various organizational innovations, which helps to explain the overlaps and confusion of terminology among them.

## ORGANIZATIONAL FORMS IN TRANSITION

Bureaucracies have been with humanity since ancient times (Kieser, 1987; Wong, 1997). Their economic effectiveness has seldom been in dispute (even among critics, such as Edwards [1979]), and they continue to represent the dominant form for major institutions such as the military, government, and religious organizations. Bureaucracy's familiar forms include hierarchical control and authority relations, relatively fixed boundaries, and top-down authority. Many have argued that these attributes are maladaptive when massive change, environmental dynamism, and considerable uncertainty are the norm. The challenge for scholars to offer more than the conventional theory of bureaucracy, however, is substantial. Let us begin by considering the core challenges to which bureaucratic organizations are designed to respond.

### Information Intensity

A conventional theory of organizational design emerged alongside modernist principles of production and manufacture. Modernists assumed that the primary function of economic organization was production, usually meaning the efficient creation of physical things. In the postmodern world, however, production of physical things is gradually being surpassed by production of information goods and services in economic importance (Quinn, 1992). This increasing information intensity is the fundamental challenge to which new organizational design theories must respond, because it challenges the very premises upon which bureaucratic organization's claim to economic performance rests—namely, the harnessing of efficient combinations of resources in an economy.

The work of Boisot (1995) and Boisot and Child (1988) suggests why. They have argued that knowledge that has competitive utility originates with small groups of learners, for instance, an R&D group. In a bureaucracy, the objective is to codify this valuable knowledge as rapidly as possible. In an economy based on physical objects, an organization can then reap returns from deploying its knowledge to offer new and better products or more efficiently manufacture existing products. Economic rents (where the term implies supranormal profitability relative to an industry) can thus be gained by the firm that creates new knowledge and keeps it to itself, enjoying a pseudomonopoly.

The problem for bureaucracy is that such a hoarding strategy for knowledge is impractical in the case of knowledge-based goods. For one thing, the knowledge must often be given away as part of

an economic transaction. For another, the very act of codifying knowledge to make it useful also makes it easier to diffuse. It can very quickly become a public good (Arrow, 1962). The result is that in many industries one can observe that regimes of appropriability are largely ineffective at providing genuine control over knowledge flows (McGrath & McGrath, 2001).

One implication is that the only way to sustain superior performance is to promote faster learning. Ironically, the control and reliance on conformity to rules implied in the bureaucratic form has been shown to inhibit the very accidental, fortuitous, and creative processes that facilitate exploratory learning (McGrath, 2001). When such inhibition is coupled with the stability, routinization, and robustness of process at which bureaucracies excel, one has a recipe for core rigidity and poor performance (Leonard-Barton, 1992). Thus, scholars, managers, and others face a widespread challenge to bureaucracy's central benefit, namely, its utility as a vehicle for strong economic performance. The managerial and scholarly challenge is to identify alternatives and develop theories that account for them. It is not trivial. How can we improve upon, even replace, such a painstakingly well-developed concept of how human beings collectively best accomplish their objectives?

Organizational forms have been characterized as essential to three sets of activities: (1) identifying and disseminating the collective aims of an organization, (2) regulating the flow of resources into and out of the organization, and (3) identifying and governing duties and rights, as well as functions and roles, of members of the organization (Aldrich, 1999). We now turn to a discussion of alternative forms and comment on how these differ from conventional forms. Table 1 summarizes the main themes.

### Setting Goals: Identifying and Disseminating the Collective Aims of Organizations

A presumption in the traditional bureaucracy is that the higher the organizational level of an actor, the more information the individual possesses and the better-informed she or he is with respect to goal setting and decision making. In a textbook bureaucracy, each level of organization is responsible for setting goals and making decisions at that level and below. Goals are characteristically set by the firm's senior team and acted upon by line managers. Decisions that require coordinated action across units are referred to higher levels in the organization for resolution. The members of the senior team act as policy makers for the rest of the company.

**TABLE 1**  
**Conventional and Emerging Perspectives on Organizational Form**

Organizational Activity	Conventional Perspective	Emerging Perspective
Setting goals: Identifying and disseminating collective aims, making decisions, exercising power	Top-down goal setting Concentrated power Preference for larger units Leaders control, monitor, and set specific and concrete objectives through the use of formal authority Vision dictated Hierarchy	Decentralized goal setting Distributed power Preference for smaller units Leaders provide guidance, manage conflict and provide general guidance Vision emergent Teams and work groups
Maintaining integrity: Regulating the flow of resources into and out of the organization and establishing boundaries	Firm as unit of analysis Boundaries clearly specified and durable Reliability and replicability Vertical Rule-based Assets linked to organizational units	Production system or network as primary unit of analysis Boundaries permeable and fuzzy Flexibility Horizontal Relationship-based Structure independent of assets
Differentiating rights and duties: Differentiation of functions and roles, establishment of duties and rights, including governance	Specialized roles Clear role definitions Uncertainty absorption Relative permanence Efficiency oriented	General roles Fuzzy role definitions Adaptation Impermanence Innovation oriented

In the new forms, hierarchical organization is seen to give way to operating "horizontally"—to reducing to a minimum the core activities retained within one unit and assigning other responsibilities to semi-independent units. Kanter (1992) has urged that a "horizontal shift" in organizing is needed. This notion somewhat parallels Hammer and Champy's (1993) business process reengineering (BPR) paradigm, which relies upon cross-functional processes, "delaying," and empowerment. The objective is to push decisions to where relevant knowledge and information reside, then to use information technology (IT) for support.

Bigger is better in a typical bureaucracy. By contrast, in the new thinking smaller units are expected to concentrate on core activities for which they have developed a distinctive competence. These are thought to be more responsive to market requirements and better able to adapt to external changes rapidly. Small units can become "self-organizing" more readily than can larger ones. Senge (1997) termed this process of organic evolution "chaordic organization," referring to its ability to generate order out of chaos and to arrive at constructive solutions in the face of high uncertainty.

Horizontal forms still must achieve scope and scale efficiencies, which many have argued they do by joining together in networks (Castells, 1996; Jarillo, 1993; Nohria & Eccles, 1992; Snow, Miles, & Coleman, 1992). An organized network is a value-creating system of several organizations possessing

complementary strengths and coordinated through a combination of contractual provisions and mutually beneficial relationships that are often orchestrated by a leading member. Powell (1990) distinguished an organizational network from both markets and hierarchies, as Williamson (1975) defined them. Effective networks involve an investment in relationships, a sense of mutual benefit, a level of trust, and a level of coordination—all to a degree that is normally absent from markets. Neither do networks depend on contracts and the price mechanism to the extent found in markets. On the other hand, in contrast to hierarchies, networks are not held together through employment relationships, or managed on the basis of bureaucratic rules and routines.

Despite favorable views of networks, Afuah (2001) suggested that we might wish to temper breathless advocacy of smaller or horizontal organizational structures. He found that there are contexts (specifically, the early days of a new technology) when a vertically integrated hierarchy "outperforms" horizontal structures.

What of the role of the senior manager when a shared characteristic of organizations is thought to be a shift toward organizations as a "distributed network of minds" (Gibson, 1997: 8)? The literature suggests that authority, power, responsibility, and resources will be decentralized to teams or semiautonomous units consisting of knowledgeable, professional, or multiskilled staff (Barley, 1996). Units

can also include relevant outsiders, such as suppliers and customers. These teams and units take a high degree of local initiative toward agreed-upon goals that are accepted, not imposed. Instead of providing top-down direction, managers are seen to provide guidance, to manage conflict, and to keep communications open (Child & Heavens, 2001; Hedlund, 1986; Wellins, Byham, & Dixon, 1994). Coherence and motivation are provided by shared vision and culture, rather than top-down instructions. Although it remains a top management role to articulate this vision, it is discussed and approved throughout the organization.

Galunic and Eisenhardt (2002), however, suggested that the stark contrast between a traditional role for senior managers and a "new" role may be insufficiently subtle. To their surprise, they found senior managers in the large multinational they studied to be personally involved with identifying opportunities and with making sure that the organization responded in a direct and hands-on manner. Unlike the stylized rationality of conventional bureaucracy or the free-for-all sometimes depicted in theories of new organization, the evolutionary process they depict is intensely social, reasonably orderly, and strongly influenced by performance requirements.

Viewing organizations as social places also suggests challenges for the networked or virtual organization. Mowshowitz, for instance, argued that "the essence of the virtual organization is the management of goal-oriented activity in a way that is independent of the means for its realization" (1994: 270). He identified the three pillars of virtual organization as the commodification of information, the standardization of interaction, and the abstraction of property rights. Questions arise as to the place of collective motivation and identity in a conception of organization marked by such dehumanization and absence of socialization. These characteristics may inhibit an organization's ability to accomplish systemic as opposed to discrete innovations, even if it scores highly on other criteria, such as flexible adjustment to changing market demand and low cost (Child & Faulkner, 1998).

### **Maintaining Integrity: Establishing Boundaries and Regulating the Flow of Resources**

A traditional tension in maintaining organizational boundaries is how organizations should respond to the twin pressures to be consistent and reliable and to replicate routines, and the need to maintain flexibility. Bartlett and Ghoshal (1998) wrestled with this issue in the context of large multinational corporations (MNCs). Their "transnational solution" is a vision of the use of an

integrated network format in which the corporate center guides the process of coordination and cooperation between subsidiary units in a climate of shared decision making. The transnational solution is an attempt to blend hierarchy with network but to retain value creation largely within a given corporation. Malnight (2001) extended Bartlett and Ghoshal's perspective and provided additional supporting evidence in favor of the transnational solution. The large MNCs in his study developed global internal networks, as predicted, but did so on the basis of process rather than the more conventional product, function, or market specialization.

Some authors, however, have abandoned the imperative to preserve activities within the boundaries of firms and have introduced an alternative, "boundaryless," point of view. Boundaryless organizations contribute complementary functions to a value chain, aided by electronic data exchange and communication. Among the challenges to conventional theorizing these arrangements create is to raise the question of whether a firm is actually the appropriate unit to study. Schilling and Steensma (2001) for instance, made the case that scholars need to understand entire production systems in order to properly assess organizational responses.

Indeed, many scholars have found that it is impossible to understand new organizational forms by studying organizations in isolation from their context. For instance, Bahrami and Evans (1995) identified "flexible recycling" as a key attribute of the Silicon Valley ecosystem. Within "a constantly changing environment of incessant novelty and innovation" (Bahrami & Evans, 1995: 62), these authors described what is in effect a semiautonomous yet mutually supportive network of high-technology firms, venture capitalists, academic and research institutions, and highly talented individuals. This dynamic network has been capable of recycling critical know-how and human assets so as to meet the prevailing conditions of turbulence and hypercompetition. As Bahrami and Evans illustrated, individual Silicon Valley firms come and go, often quite rapidly, but through flexible recycling the network remains a viable system for adaptation.

Bahrami and Evans's research indicates that the achievement of flexibility through a dynamic recombination of resources can take place both within the formal boundaries of a firm and across those boundaries, within a sectoral domain or regional ecosystem. The search for flexibility is seen to open up, even decompose, organizational boundaries. Taken to its full conclusion, the firm or business system becomes disassociated from any

one organization, though it remains "organized" and in this respect, distinct from a marketplace. The changing boundaries of firms are thus a major consideration in the study of new and evolving organizational forms (Colombo, 1998).

### **Differentiating Rights and Duties: Functions and Roles, Governance**

Conventional bureaucracies are organized to reflect the principle of specialization. The various functions of a firm—finance, marketing, production, and so forth—each focus on the efficient production of their own outputs, coordinated by general managers who exercise a command-and-control influence over the functions, at least in theory. Writers on new forms propose to alter this basic system. Instead of employees being expected to respond to hierarchical authority and perform well-defined jobs, in the new paradigm the value of engendering employees' commitment and contribution as trusted organizational members is emphasized. This new focus means organizing to "treat people more as assets to be developed than as costs to be controlled, and as renewable strategic resources rather than as replaceable operating parts" (Bartlett & Ghoshal, 1994: 345). In the new forms, organization members are increasingly responsible for larger, but less well-defined, roles.

Whereas previously, possessing assets and the know-how to make them productive was key, in today's organizations, the management of knowledge is increasingly seen to be central, a distinction suggesting dramatic shifts in roles and tasks. Nonaka and Takeuchi (1995) proposed a specific form of organization, the "hypertext," to facilitate the knowledge-creating process. This form combines the steady-state advantages of the functional form with the strategic flexibility of a flat, cross-functional task force as an independent parallel structure. Based on the practice of some innovative Japanese firms, such as Sharp, it is one of a number of hybrid organizational forms that have been suggested as ways of ensuring "ambidexterity" (Tushman & O'Reilly, 1996), so as to combine a capacity to innovate with the ability to operate efficiently; to explore new possibilities as well as exploit already existing knowledge (March, 1991).

One of the starkest contrasts between conventional thinking about organizations and the newer models is that change is taken for granted in the new forms. Rather than view organizations as stable structures designed to absorb uncertainty, as they were conceived to be in Thompson's (1967) era, today many thinkers suggest that new organi-

zations must build in flexibility and the capacity to handle constant change (Volberda, 1998).

### **Four Core Design Challenges**

For Thompson (1967), a key paradox in administration was aligning organizational components while preserving flexibility. Today, Thompson's concerns are reflected in the core design challenge, which is to build systems that can cope with paradox. Thus, we expect both efficiency and innovation, both global operating control and local responsiveness, both centralized vision and decentralized autonomy, and so on. This suggests a model for organizing that resembles a dialectic (Sargut & McGrath, 1998).

We suggest four distinct design challenges, or problems, that the dialectic of new organizational forms must address. Each reflects an issue created by the unfettered nature of operations that is possible when information is the good that is bought, sold, and utilized. These are (1) interdependence, (2) disembodiment, (3) velocity, and (4) power.

**Interdependence.** Traditionally, the extent to which an organization could operate interdependently with other organizations was constrained by limits imposed by information-processing capacity and physical distance. As information and communications technologies have advanced, interdependent operations are a much more cost-effective possibility than they were formerly. This development, combined with changes in regulatory regimes and capital flows, has made interdependent operations desirable. Although any social system exhibits interdependence (Forrester, 1971), the level of interdependence prevalent today is widely agreed to be unprecedented (Whitman, 1999).

A key aspect of interdependent systems is that the outcome for any party to a transaction is fundamentally entwined with the actions of and outcomes for other players. Further, actions taken by one player in an interdependent system can have unforeseen and far-reaching consequences for other actors. This meshing makes the management of interdependent systems particularly complex, because although authority is dispersed, the actions taken by any member of an interdependent network influence others. A change in one component of an interdependent system produces unpredictable changes in others, thus leading to coordination problems (Majumdar & Venkataraman, 1998).

**Disembodiment.** Traditional organization presumed tight links between the outputs, ownership, and control of assets. Performance had to do with how efficiently assets were deployed, relative to those of other firms. The major shift that has taken

place in the information economy is to disembodiment performance from asset ownership. In information-intensive businesses, it is not necessary to physically own an asset to utilize it. This shifts the traditional definition of the core activities of a corporation as linked to its production mission toward other criteria. For instance, to the extent that general purpose assets can be used to create an offering, a firm can elect not to own the asset (Schilling & Steensma, 2001).

**Velocity.** A third challenge that organization design must address is velocity (Eisenhardt, 1989). Greater velocity has come to characterize virtually all aspects of organizational functioning, from internal communications to product development to competitive interchange. Aside from the enabling effects of new communication technologies, increased velocity can also be attributed to liberalization of trade and of capital movements and to decreases in the cost of travel and transportation (United Nations Conference on Trade and Development [UNCTAD], 2000). Informal barriers to market entry are also lowered by the growing ease of long-distance communication.

One effect of velocity has been to decrease the market imperfections that previously offered some companies and sectors a relatively quiet life (D'Aveni, 1994; Ilinitich, D'Aveni, & Lewin, 1996). Another effect is to increase the volatility to which organizations are expected to respond. When capital can swiftly and inexpensively move across borders and into and out of securities portfolios, the result is greater volatility. Hassler (1999) offered a direct test of this proposition, finding that although purely domestic factors in the Swedish stock market showed no increase in volatility, an overall increase in the volatility of Swedish stocks could be attributed to international influence. A third consequence of velocity is to decrease the necessary stimulus-response times involved in even prosaic organizational activities. Thus, companies are experimenting with how they use time, for example, by passing software programming work from a group based in India to one based in North America and back again.

**Power.** One of the most profound shifts in the economy is the shift from power derived from possession of tangible assets and inputs to power derived from possession of knowledge and information. A longstanding practical concern with concentration of power at the top of bureaucracies is now exacerbated by the increasing scope of these organizations.

Whitman, for instance, observed that "the number of banking institutions in the United States has declined by 36 percent since 1984" (1999: 27), at

the same time that financial activity has enjoyed significant growth. Although mega global firms often compete fiercely among themselves, there is nonetheless a growing asymmetry of power between the managerial agents in charge of them and most other groups in society, including consumers, employees, and members of the local communities in which the firms' operations are located. Addressing new power asymmetries is thus a key challenge for new organizational forms.

Interdependence challenges the presumption that there is advantage in controlling resources within the boundaries of a given firm. Disembodiment challenges the presumption that an organization's assets can be "owned" and that efficient production is more valuable than inefficient innovation. Increased velocity shortens the acceptable lag time between stimulus and response, placing pressure on vertical information and decision flows. Power, and accountability for its use, which in the traditional bureaucracy was presumed to be placed in the control of top executives by their principals, becomes a far more complex matter in organizations that have multiple stakeholders and are not organized hierarchically.

### THE NEED FOR NEW THEORIES: INTRODUCING THE WORK IN THE SPECIAL FORUM

We received 44 submissions to the Special Research Forum on New and Evolving Organizational Forms. Following a two-stage review process, we accepted ten papers. Nine of these are in the special forum, and one was recommended for publication in a regular issue of this journal. Thus, 23 percent of the articles submitted were eventually accepted for publication.

We were delighted to find that the articles in the forum reflect a diversity of approach. Their authors examine different levels of analysis, use different theoretical lenses, and deploy different methodologies. Five of the papers test hypotheses, and four are inductive studies. Two focus at the industry level of analysis, two focus at a network or inter-firm level of analysis, three examine processes within firms, and two focus on group and individual dynamics. In our discussion, we have loosely grouped the articles by the main challenge they address, although most of them have something to offer to all four themes.

#### Interdependence

Four of the contributions address different aspects of interdependence. In "The Use of Modular

Organizational Forms: An Industry-Level Analysis," Schilling and Steensma (2001) directly confront the question of what leads firms to use interdependent organizing forms, in this case, modular forms. They persuasively argue that to answer this question, scholars must go beyond examination of a single firm's operations to consider the entire production system in which firms are embedded. They collected longitudinal data on 330 U.S. manufacturing industries to test hypotheses about the conditions under which firms seek to become more modular through using alliances, alternative work arrangements (such as contingent work), and contract manufacturing. Their results suggest that firms will tend to use modular forms when they face increasing environmental heterogeneity. A key contribution by these authors is to deploy new methodologies that allow many of the asserted characteristics of the new forms (for instance, greater flexibility as a response to environmental heterogeneity) to be put to empirical test. Consistent with Afuah's (2001) research (also in this issue), Schilling and Steensma's finding is that there are often conditions under which a new forms solution does not prevail. Their work challenges some of the new orthodoxies of the new forms, finding that the newest industries are not necessarily pioneers in organization.

In "Resource Partitioning and the Evolution of Specialist Organizations: The Role of Location and Identity in the U.S. Wine Industry," Swaminathan (2001) addresses another aspect of interdependence in organizational life, namely, the question of group identity. He challenges taken-for-granted assumptions about the influences on survival of different forms of organization by viewing image and identity as part of firms' critical resources. In contrast to prevalent expectations, he finds that the resource-partitioning effect first articulated by Carroll (1985) can be influenced by strategic choices with respect to investments, particularly in larger generalist firms. Received theory suggests that firms following generalist strategies and those following niche strategies occupy different resource environments. Swaminathan finds instead that some larger firms can effectively squeeze out smaller ones, not by competing in product-market terms, but by undermining the smaller firms' claims to a distinctive group identity. Small specialist firms, however, can evolve innovative responses to thwart larger firms, in this case, by forming interdependent ties to other specialist organizations in other industries. Such "communal support structures," as Swaminathan calls them,

are woefully underrepresented in studies of organizational evolution and change.

In "Emerging Structural Patterns within Multinational Corporations: Toward Process-Based Structures," Malnight (2001) examines the structuring decisions of two large pharmaceutical MNCs over a 15-year period. His study offers empirical support for claims that increasing complexity in the environments facing firms provokes increasingly complex and differentiated internal structures. A fascinating conclusion Malnight develops is that each firm he studied adopted different internal network structures for sharing different kinds of information, specifically, knowledge, data, and asset sharing. Part of the challenge of achieving global coordination is to ensure that these networks are linked appropriately. These different network structures appear to allow each firm to pursue seemingly contradictory goals, thus offering one way of resolving the inherent paradoxes of the new forms. Consistent with the work of Galunic and Eisenhardt (2001) is his observation that the functioning of any given structure in a system cannot be understood without reference to the others.

Afuah (2001), in "Dynamic Boundaries of the Firm: Are Firms Better Off Being Vertically Integrated in the Face of a Technological Change?," goes straight to a central question of interdependence—namely, the issue of when vertical integration makes sense in the face of changing environments. Unlike many scholars examining firm-level change, Afuah (2001) adopts concepts that are central to the technology and innovation literatures to inform his discussion of structural change. The contradictory conclusions of received theory, he suggests, can be resolved once one factors in the interaction between firm-level structure and industry-level technological evolution. The sample set for Afuah's study consisted of 81 RISC (reduced information set computer) workstation projects undertaken by 25 workstation makers between 1986 and 1993.

Afuah's research suggests that vertical integration is not simply a thing of the past, but rather, that in rapidly changing technological environments it can offer performance advantages over the horizontal structures that have become so popular with new forms writers. Afuah draws two conclusions from his analysis: first, that firm boundaries are not static, but rather, that they shift along an efficient frontier shaped by the evolution of the technologies underlying a firm's offerings, and second, that scholars need to incorporate community-level constructs to understand the effects of changes in organizational form.

## Disembodiment

The notion of disembodiment in the information economy suggests that the resources and routines creating corporate capability need not be firmly associated with a particular configuration of physical resources or locations. Two articles in the special issue shed particular light on this aspect of the new forms. In "Architectural Innovation and Modular Corporate Forms," Galunic and Eisenhardt (2001) focus on the movement of organizational "charters" within organizations. Montoya-Weiss, Massey, and Song (2001), in "Getting It Together: Temporal Coordination and Conflict Management in Global Virtual Teams," illuminate a different aspect of disembodiment, examining the functioning of 35 "virtual organizational" teams operating entirely without any form of physical contact.

Galunic and Eisenhardt take issue with conventional characterizations of how organizational tasks are allocated to units within firms. They spent 18 months studying a large, U.S.-based multinational firm to understand the process through which new product-market areas of responsibility, which they term "charters," are gained by a receiving unit. They conclude that, rather than a process driven by economic rationality, this is an intensely social process. Moreover, the gain or loss of a charter by one group cannot be understood without also taking into account the charters (and charter dynamics) of other groups within the firm. They identify three processes through which charters are gained—new opportunities, charter "wars," and charter "foster homes"—and observe that a set of simple rules governs the charter transition process.

To capitalize on the flexibility created by charter change, Galunic and Eisenhardt found, the parent firm had to impose standards for processes such as budgeting, financial reporting, and project management. Just as the literature on modularity (Baldwin & Clark, 2000) suggests that investment in standardization is a prerequisite to effective modular design, this study implies that investment in certain organizational standards may be a prerequisite to flexibility. A paradoxical tension in the design of organizations thus arises from this simultaneous matching of policies that impose standards with practices that allow flexibility and change. The paradox extends further in that it is not the variety created by the presence of multiple business units that creates benefits (because of narrow focus and specialization), but the way they provide greater raw material for the organizational equivalent of genetic recombination. This argument is distinct from the traditional arguments supporting the M-

form organization and corporate strategy more generally.

In the second work in the forum highlighting the idea of disembodied capability, "Getting It Together: Temporal Coordination and Conflict Management in Global Virtual Teams," Montoya-Weiss, Massey, and Song focus on the operation of "virtual teams." Although considerable research suggests that teams rely on the cues and signals inherent in face-to-face communication to regulate their behavior, relatively little research yet exists that examines what happens to teams required to operate without such cues. Montoya-Weiss and her colleagues used an experimental design to get at these issues, with 175 graduate student subjects residing in the U.S. and Japan. They found that, as they suspected, theories that have been accepted as explaining the behavior of groups operating synchronously and in real time may not be readily transplanted to the world of the virtual. A fascinating practical implication of their work is that teams cannot simply be transported to cyberspace and be expected to behave as they would were they physically together. Instead, their research suggests that in environments that are "lean" with respect to social cues and information, teams are more effective when they have been provided with compensatory tools, such as those that help them with temporal coordination.

## Velocity

The theoretical characterization of the ability of bureaucracy to respond to the challenges of velocity is mixed (Adler & Borys, 1996). Top-down decision-making processes and the infrastructure to create organizational alignment allow for changes to be rapidly executed. On the other hand, because signals of the need for change need to filter their way to decision makers and back again to those entrusted with execution, bureaucracy is characterized as slow to adapt when a change is necessary. Loosely coupled organizations, on the other hand, can more easily locate a potential problem and respond more quickly to challenges. Unfortunately, local adaptation can inhibit systemic change, which is dysfunctional (or myopic) in the long run (Levinthal & March, 1993). Two articles in the special research forum focus on velocity and organizational form. Rindova and Kotha examine the activities of two firms in the high-velocity environment of the Internet. Bigley and Roberts assume the vantage point of bureaucratic organizations. Both seek to understand new forms of adaptation in high-velocity situations.

In their article, "Continuous Morphing: Compet-

ing through Dynamic Capabilities, Form, and Function," Rindova and Kotha (2001) investigate the strategies, and corresponding structures, of Yahoo! and Excite. They wrote detailed case studies, in some cases supplemented by interviews and e-mail correspondence, then coded 353 actions reported in press releases by Yahoo! and Excite between 1995 and 1998. They identify a process they term "continuous morphing" to characterize changes in each of these firms.

Unlike traditional views of organizational change, in which change reflects a shift in charters (as in Galunic and Eisenhardt's work in this issue) or in structure (as in Malnight, also in this issue), the changes Rindova and Kotha identify are extremely deep transformations. Their finding, which is consistent with the findings of Galunic and Eisenhardt, is that the flexibility needed to successfully navigate change depends to some extent on the imposition of standards and a few simple rules. Rindova and Kotha's research challenges many theories, including population ecology, in which fundamental organizational change is seen as more or less lethal. Organizations undergoing deep change, the theory suggests, will fall victim to unreliable performance and fail (see Baum [1996] for an overview). Yet Rindova and Kotha imply that deep changes can be navigated.

Bigley and Roberts (2001), in the "Incident Command System: High-Reliability Organizing for Complex and Volatile Task Environments," pose the question of how bureaucracies can deliver reliable performance under conditions that are thought to be inimical to their effective functioning, namely, situations of great uncertainty and rapid change. They conducted an in-depth field study of the operations of several California fire departments engaged in the implementation of the Incident Command System (ICS). This system is intended to improve coordination among the various units that might be called to the scene in the event of an emergency. Like the authors of the other articles in the special issue, they find that conscious attention to structure and behavior in advance of an unplanned situation allow for the deployment of an effective adaptive response. Paradoxically, explicit structuring can coexist with improvisation, with each contributing uniquely to the flexibility potential of a system. Distinct from the focus of the other articles, however, is Bigley and Roberts's focus on the cognitive concept of a "collective mind." A group with a well-developed collective mind can operate heedfully, in such a way that the organization appears to have sufficient knowledge to address contingencies, even if no individual within it

possesses all the knowledge needed (see Weick & Roberts, 1993).

## Power

Although all the work in this special issue deals to some extent with dilemmas created by asymmetric power, the article by Ashcraft (2001), "Organized Dissonance: Feminist Bureaucracy as Hybrid Form," addresses power dynamics most directly. Feminist scholars have long held that the largely male-dominated form of bureaucracy is an instrument of domination that reinforces gender inequality. Ashcraft takes on the challenge of determining whether feminists can go beyond critique. She provides a richly textured depiction of an organization whose members are consciously attempting to go beyond bureaucratic principles, yet are unable to abandon them.

In analyzing the power dynamics of an organization she calls SAFE, which is dedicated to helping women suffering from abuse, Ashcraft identifies five tactics used by organization members to preserve their ability to use bureaucratic tools yet retain a nonbureaucratic ideology. These tactics create role dilemmas that highlight the paradoxical nature of organizational interactions. Her article offers an example of how nonmainstream ideas can often usefully extend and enrich concepts developed in the core body of work in our field. Like Galunic and Eisenhardt, she illustrates that the social, personal, and emotional aspects of organizational life often have profound effects on the structures and processes scholars address when we consider organizational form.

Ashcraft's article further encourages us to consider the nature of the implicit contracts between organizations and employees. Much of the performance leverage of new organizational forms is said to result from their enlisting the wholehearted commitment of organization members, through the decentralization of responsibility, the granting of empowerment, and the substitution of normative identification with the organization for the purely utilitarian traditional employment nexus (cf. Etzioni, 1961). Yet, at the same time, networks and virtual organizations facilitate impersonal transactions through "e-commerce" and other forms of arms-length contracting. A fundamental contradiction is created between the aspiration to enlist the personal commitment of staff and customers, on the one hand, and the depersonalization of employment and business transactions on the other. Organization scholars currently do not know enough to understand the potential implications. For instance, is the growing salience of contracts driving

out trust, so that, contrary to the aspiration to go beyond contracts to trust (Fox, 1974), the reverse is in fact underway?

### CONCLUSION: WHITHER NEW AND EVOLVING ORGANIZATIONAL FORMS?

This special research forum arose from a sense that the time is opportune to reflect on theory aimed at understanding new and evolving organizational forms. We have posited that the underlying transformation creating the necessity for new ways of organizing is the shift from a physical economy, which was served well by the principles of bureaucracy, to an information-intensive economy, whose structural implications are not yet clear. Although it is too early to say what the theory of new forms is, we believe that it is not premature to specify some of its conceptual elements. In our view, a theory of new forms will be required to accommodate paradox. It will illuminate the design choices that allow the new forms to help achieve organizational purposes, once traditional restrictions are relaxed. It will rely on configurational and coevolutionary analytical approaches. And it will be forced to address issues of legitimacy and governance in the face of the fragmentation of bureaucracy as a dominant form.

Paradox is likely to be a core theme of postmodern organizational design. As scholars, we must learn to allow contradictions to remain, stepping away from the modernist principles of alignment and congruence. This implies some bad news for theories that attempt to explain the diversity of organizational form in terms of local optimization (for instance, organizing to limit transaction costs). It suggests that the rigidity that comes with perfect alignment can be fatal. It also suggests that the traditional function of organizational form, namely, to protect organizations from external uncertainties, is no longer its primary task. As buffering becomes less feasible, scholars need to offer theories that can help organizations cope with, even embrace, uncertainty. Theories may themselves need to become more textured and dialectical.

Effectively navigating paradox appears to require conscious, *ex ante* attention to structure and process. In particular, simplifying complex situations appears to be an essential adaptive skill. This suggests the need for attention to underlying patterns and the ability to synthesize them into what Galunic and Eisenhardt (2001), call "simple rules." Complementing this notion is the idea, common to most of the special forum papers, that social processes and interpersonal relationships are of huge importance. The new forms appear to have made

the longstanding "content versus process" debate less relevant than it ever was with their emphasis on fluid reconfiguration as the norm of organizational evolution and a key determinant of performance (Child, 1997). Carefully designed and maintained processes and linkages, rather than content, are emphasized.

With respect to future methodologies, it seems to us that a configurational, coevolutionary approach will be required. Proponents of configurational analysis assert that the different aspects of an organization make sense in relation to the whole and cannot be adequately understood in isolation (Meyer, Tsui, & Hinings, 1993; Miller, 1986, 1996). This view contrasts with many of the methods that have been well regarded by organizational scholars, such as contingency analysis. Traditionally, scholars have endeavored to account one at a time for the relationships among a limited number of situational and organizational variables. In configurational analysis, one instead seeks to examine developments in organizational or system configurations in relation to relevant changes in their environmental configurations, with managerial strategy, decision making, and learning providing the action and behavior that bring the two sets into coevolution (Lewin, Long, & Carroll, 1999). It offers a particularly promising basis for building upon the various theories already available.

The change in the basic economics of production from materials- to information-based also changes what constitutes the organizational core as opposed to the periphery. Increasingly, the core consists of knowledge workers and professionals: the designers of soft concepts and hard technologies, plus key financial and managerial personnel. Other employees are considered peripheral. Their responsibilities shift, defined by the task of the moment. As Victor and Stephens put it, "Time, space, and shifting group membership are becoming the primary definers of responsibility and accountability for the virtual wage slave" (1994: 480-481).

In the new forms, employment appears to be differentiating along two dimensions. These are the knowledge level of the people concerned and their location within the value-adding system. The consequences are summarized in Table 2.

The prospects for employees are no longer split along core-periphery lines, as in conventional theorizing, but rather, along knowledge-intensive lines.

This point brings us to one of the great unknowns with scholars' experiments with new forms: namely, their effects on the employment relationship. Although new organizational forms may enhance the possibility for self-actualization for some

highly talented and fortunate individuals, their operations are corrosive for others—pushing the many down the rungs of the need hierarchy toward a greater concern for security and safety (Maslow, 1954). When a society's organizations thrust a large number of its citizens into a condition of permanent survival-oriented tension, it would be remarkable indeed if the effects were benign.

Formerly, for instance, a company that threw massive numbers of people out of work generally did so in a highly visible way, because they worked with highly visible physical assets, in plants or factories. This visibility allowed a variety of social responses to emerge, from government programs to regulate firm behavior and ease the pain of employment loss, to unionization that constrained the free hand of employers. In today's economy, the burden organizational flexibility imposes on the workforce is less visible. It can occur quietly, as when regular employees are let go in small batches; or subtly, as when people are never hired as employees but retained as permanent temporary workers; and without much trace, as when the employees affected by a company's decisions do not even work for that firm but for a partner in their network. In such cases, the pain of job loss is no less, but there is no polity for governments and other bodies to represent. There is no visible, common ground, no legitimated loss to address.

Just as the advent of the information economy has disembodied control over assets, removing it from the productive use to which those assets might be put, it has also enabled a shift away from organizations' links to specific geographic and cultural roots. Conventional notions of the relationships between business organizations and the greater society are strained. Corporations operating through extended supply chains and diffused networks are being held to task for all manner of negative social phenomena, from child labor to lost social cohesion (Carnoy, 1999). One of the emerging challenges for new organizational forms is that

of governance in the broadest sense: how to combine the benefits of scale and global reach with effective accountability to local interests.

A key assumption in the governance literature is that boards of directors have the capacity to make sure that the managers of capital do the right thing by the owners of capital (Monks & Minow, 2001; Parkinson, 1996). This premise stems directly from the theory of bureaucracy, according to which the senior executives of a firm make the most important decisions, control and influence the most significant resources, and have the power to execute the plans approved by the firm's board. Yet, in an organization that has left bureaucracy behind, these assumptions may not hold. By exerting influence only over the top of a corporation, a board may have little impact over its firm's most critical locus of activity, which may occur in a distributed and loosely coupled manner. The consequences may be that the board cannot have much impact on the activities of the organization, even if it has tremendous impact on its senior executives. Consider a recent wave in the United States of short-tenured senior executives, in companies ranging from Lucent Technologies to Coca-Cola. Despite their ability to throw CEOs out, the boards had relatively little influence on the organizations overall. This situation begs for fresh theorizing.

The responsibility of leading firms and other bodies with concern for the social consequences of the organizational developments they initiate is a major issue of our times (Mokhiber & Weissman, 1999). If firms and others do not attend to questions such as how people can be assisted in making the transition to new forms of working, how superfluous downsized workers can be retained, and how mounting levels of work-related stress can be reduced, their stock of social legitimacy is likely to run out rapidly. Indeed, the world is already witnessing signs of a decline in the social legitimacy accorded to MNCs. Protest directed against large corporations is increasing in its frequency, scope, and effectiveness,

**TABLE 2**  
**A New Differentiation in Employment**

Location within the Value-Adding System	Knowledge Level	
Core	Knowledge-intensive—graduate, professional, and technical.	Operations- or execution-intensive.
Periphery	Top managers; creative experts, both R&D and "brand" people. Self-employed experts on contract, such as consultants.	Information intermediaries, processors, customer service and sales staff. Cleaners, security staff, caterers, and so forth, on contract. Employees of other organizations in the wider network.

with protestors themselves using new technology to form organized networks. In part, this protest would appear to be fueled by perceptions of a contradiction between the rhetoric of new organization and the reality of centralized power.

New organizational forms thus do not sidestep long-standing issues of responsibility for the use of collective assets. Both anti-MNC protests and renewed concern during the 1990s about corporate governance indicate that postmodern organizations continue to face the enduring question of whose interests they are serving. This issue in turn raises the question of the criteria by which organizational performance is to be assessed. If one of the objectives of new forms is to map out key processes, inherent contradictions, and other dimensions of complexity within present-day organizations so as to assist a constructive resolution of the dilemmas they produce, their success in so doing provides one important criterion. It is not obvious, however, that new organizational forms can of themselves resolve more fundamental tensions, such as that between shareholder value and social returns. By promising both, the new organizational value system may lose credibility if it ends up by satisfying neither.

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