

branches of major importance were managed by partners," p. 80.

2. Alfred D. Chandler, Jr., *The Visible Hand* (Cambridge: Harvard University Press, 1977), chaps. 3-6, for the coming of such hierarchies to manage railroad and telegraph systems and chap. 7 for their use in the management of mass distribution. Pages 231 and 232 describe the organization of Sears Roebuck.

3. B. W. E. Alford, W. D. & H. O. Wills and the *Development of the U. K. Tobacco Industry* (London: Methuen, 1973), pp. 143-49. Also Chandler, *Visible Hand*, pp. 249-58.

4. Sachio Kahu, "The Development and Structure of the German Coal-Tar Dyestuffs Firms," Akio Okochi and Hoshimi Uchida, eds., *Development and Diffusion of Technology* (Tokyo: University of Tokyo Press, 1979), p. 78.

5. This statement is based on a review of histories of and internal reports and pamphlets by the leading rubber companies.

6. Harold Livesay, *Andrew Carnegie and the Rise of Big Business* (Boston: Little, Brown, 1975), pp. 102-106,

155. When in 1873 Carnegie opened the first works directed entirely to producing rails by the Bessemer process, the cost dropped to \$56.64 a ton. By 1859, with increase in sales, the cost fell to \$25 a ton.

7. L. F. Haber, *The Chemical Industry During the Nineteenth Century* (Oxford: Oxford University Press, 1958), p. 92.

8. Chandler, *Visible Hand*, pp. 302-14.

9. Allan Nevins, *Ford: The Times, the Man, the Company* (New York: Charles Scribner's Sons, 1954), chaps. 18-20 (especially pages 473, 489, 511). Alfred D. Chandler, Jr., *Giant Enterprise: Ford, General Motors and the Automobile Industry* (New York: Arno Press, 1980), p. 26.

10. Scott J. Moss, *An Economic Theory of Business Strategy* (New York: Wiley, 1981), pp. 110-11.

11. Chandler, *Visible Hand*, pp. 402-11.

12. W. S. and E. S. Woytinsky, *World Population and Production* (New York: Twentieth Century Fund, 1953), pp. 383-85.

13. Chandler, *Visible Hand*, chap. 10.

25

NEITHER MARKET NOR HIERARCHY

Network Forms of Organization

WALTER W. POWELL

In recent years, there has been a considerable amount of research on organizational practices and arrangements that are network-like in form. This diverse literature shares a common focus on lateral or horizontal patterns of exchange, interdependent flows of resources, and reciprocal lines of communication.

[...]

MARKETS, HIERARCHIES, AND NETWORKS

I have a good deal of sympathy regarding the view that economic exchange is embedded in a particular social structural context. Yet it is also the case that certain forms of exchange are more social—that is, more dependent on relationships, mutual interests, and reputation—as well as less guided by a formal structure of authority. My aim is to identify a

coherent set of factors that make it meaningful to talk about networks as a distinctive form of coordinating economic activity. We can then employ these ideas to generate arguments about the frequency, durability, and limitations of networks.

When the items exchanged between buyers and sellers possess qualities that are not easily measured, and the relations are so long-term and recurrent that it is difficult to speak of the parties as separate entities, can we still regard this as a market exchange? When the entangling of obligation and reputation reaches a point that the actions of the parties are interdependent, but there is no common ownership or legal framework, do we not need a new conceptual tool kit to describe and analyze this relationship? Surely this patterned exchange looks more like a marriage than a one-night stand, but there is no marriage license, no common household, no pooling of assets. In the language I employ below, such an

Reprinted from *Research on Organizational Behavior*, Vol. 12, Walter W. Powell, "Neither Market nor Hierarchy: Network Forms of Organization," pp. 295-336. Copyright © 1990; reprinted with permission of Elsevier Science.

arrangement is neither a market transaction nor a hierarchical governance structure, but a separate, different mode of exchange, one with its own logic, a network.

Many firms are no longer structured like medieval kingdoms, walled off and protected from hostile outside forces. Instead, we find companies involved in an intricate latticework of collaborative ventures with other firms, most of whom are ostensibly competitors. The dense ties that bind the auto and biotechnology industries, discussed below, cannot be easily explained by saying that these firms are engaged in market transactions for some factors of production, or by suggesting that the biotechnology business is embedded in the international community of science. At what point is it more accurate to characterize these alliances as networks rather than as joint ventures among hierarchical firms?

We need fresh insights into these kinds of arrangements. Whether they are new forms of exchange that have recently emerged of age-old practices that have gained new prominence [...], they are not satisfactorily explained by existing approaches. Markets, hierarchies, and networks are pieces of a larger puzzle that is the economy. The properties of the parts of this system are defined by the kinds of interaction that takes place among them. The behaviors and interests of individual actors are shaped by these patterns of interaction. Stylized models of markets, hierarchies, and networks are not perfectly descriptive of economic reality, but they enable us to make progress in understanding the extraordinary diversity of economic arrangements found in the industrial world today.

Table 25.1 represents a first cut at summarizing some of the key differences among markets, hierarchies, and networks. In market transactions the benefits to be exchanged are clearly specified, no trust is required, and agreements are bolstered by the power of legal sanction. Network forms of exchange, however, entail indefinite, sequential transactions within the context of a general pattern of interaction. Sanctions are typically normative rather than legal. The value of the goods to be exchanged in markets are much more important than the relationship itself; when relations do matter, they are frequently defined as if they were commodities. In hierarchies, communication occurs in the context

of the employment contract. Relationships matter and previous interactions shape current ones, but the patterns and context of intraorganizational exchange are most strongly shaped by one's position within the formal hierarchical structure of authority.

The philosophy that undergirds exchange also contrasts sharply across forms. In markets the standard strategy is to drive the hardest possible bargain in the immediate exchange. In networks, the preferred option is often one of creating indebtedness and reliance over the long haul. Each approach thus devalues the other: prosperous market traders would be viewed as petty and untrustworthy shysters in networks, while successful participants in networks would be viewed as naive and foolish. Within hierarchies, communication and exchange is shaped by concerns with career mobility—in this sense, exchange is bound up with considerations of personal advancement. At the same time, intraorganizational communication takes place among parties who generally know one another, have a history of previous interactions, and possess a good deal of firm-specific knowledge, thus there is considerable interdependence among the parties. In a market context, it is clear to everyone concerned when a debt has been discharged, but such matters are not nearly as obvious in networks or hierarchies.

[...] One need not go as far as Polanyi (1957) did, when he argued that market transactions are characterized by an "attitude involving a distinctive antagonistic relationship between the partners," but it is clear that market exchanges typically entail limited personal involvement. "A contract connects two people only at the edges of their personalities" (Walzer, 1983, p. 83). The market is open to all comers, but while it brings people together, it does not establish strong bonds of altruistic attachments. The participants in a market transaction are free of any future commitments. The stereotypical competitive market is the paradigm of individually self-interested, noncooperative, unconstrained social interaction. [...]

Markets offer choice, flexibility, and opportunity. They are a remarkable device for fast, simple communication. No one need rely on someone else for direction, prices alone determine production and exchange. Because individual behavior is not

Table 25.1 Stylized Comparison of Forms of Economic Organization

| Key Features | Forms | | |
|---|---|--|---|
| | Market | Hierarchy | Network |
| Normative Basis | Contract— Property Rights | Employment Relationship | Complementary Strengths |
| Means of Communication | Prices | Routines | Relational |
| Methods of Conflict Resolution | Haggling— resort to courts for enforcement | Administrative fiat—Supervision | Norm of reciprocity Reputational concerns |
| Degree of Flexibility | High | Low | Medium |
| Amount of Commitment Among the Parties | Low | Medium to High | Medium to High |
| Tone or Climate | Precision and/or Suspicion | Formal, bureaucratic | Open-ended, mutual benefits |
| Actor Preferences or Choices Mixing of Forms | Independent Repeat transactions (Geertz, 1978) Contrast as hierarchical documents (Stinchcombe, 1985) | Dependent Informal organization (Dalton, 1957) Market-like features: profit centers, transfer pricing (Eccles, 1985) | Interdependent Status Hierarchies Multiple Partners Formal rules |

dictated by a supervising agent, no organ of systemwide governance or control is necessary. Markets are a form of noncoercive organization, they have coordinating but not integrative effects. As Hayek (1945) suggested, market coordination is the result of human actions but not of human design.

Prices are a simplifying mechanism, consequently they are unsuccessful at capturing the intricacies of idiosyncratic, complex, and dynamic exchange. As a result, markets are a poor device for learning and the transfer of technological know-how. In a stylized perfect market, information is freely available, alternative buyers or sellers are easy to come by, and there are no carry-over effects from one transaction to another. But as exchanges become more frequent and complex, the costs of conducting and monitoring them increase, giving rise to the need for other methods of structuring exchange.

Organization, or hierarchy, arises when the boundaries of a firm expand to internalize transactions and resource flows that were previously conducted in the marketplace. The visible hand of management supplants the invisible hand of the market in coordinating supply and demand. Within a hierarchy, individual employees operate under a

regime of administrative procedures and work roles defined by higher level supervisors. Management divides up tasks and positions and establishes an authoritative system of order. Because tasks are often quite specialized, work activities are highly interdependent. The large vertically-integrated firm is thus an eminently social institution, with its own routines, expectations, and detailed knowledge.

A hierarchical structure—clear departmental boundaries, clean lines of authority, detailed reporting mechanisms, and formal decision making procedures—is particularly well-suited for mass production and distribution. The requirements of high volume, high speed operations demand the constant attention of a managerial team. The strength of hierarchical organization, then, is its reliability—its capacity for producing large numbers of goods or services of a given quality repeatedly—and its accountability—its ability to document how resources have been used (DiMaggio & Powell, 1983; Hannan & Freeman, 1984). But when hierarchical forms are confronted by sharp fluctuations in demand and unanticipated changes, their liabilities are exposed.

Networks are "lighter on their feet" than hierarchies. In network modes of resource allocation,

transactions occur neither through discrete exchanges nor by administrative fiat, but through networks of individuals engaged in reciprocal, preferential, mutually supportive actions. Networks can be complex: they involve neither the explicit criteria of the market, nor the familiar paternalism of the hierarchy. [A] basic assumption of network relationships is that one party is dependent on resources controlled by another, and that there are gains to be had by the pooling of resources. In essence, the parties to a network agree to forego the right to pursue their own interests at the expense of others.

In network forms of resource allocation, individual units exist not by themselves, but in relation to other units. These relationships take considerable effort to establish and sustain, thus they constrain both partners ability to adapt to changing circumstances. As networks evolve, it becomes more economically sensible to exercise voice rather than exit. Benefits and burdens come to be shared. Expectations are not frozen, but change as circumstance dictate. A mutual orientation—knowledge which the parties assume each has about the other and upon which they draw in communication and problem solving—is established. In short, complementarity and accommodation are the cornerstones of successful production networks. As Macneil (1985) has suggested, the “entangling strings” of reputation, friendship, interdependence, and altruism become integral parts of the relationship.

Networks are particularly apt for circumstances in which there is a need for efficient, reliable information. The most useful information is rarely that which flows down the formal chain of command in an organization, or that which can be inferred from shifting price signals. Rather, it is that which is obtained from someone whom you have dealt with in the past and found to be reliable. You trust best information that comes from someone you know well. [...] Networks, then, are especially useful for the exchange of commodities whose value is not easily measured. Such qualitative matters as know-how, technological capability, a particular approach or style of production, a spirit of innovation or experimentation, or a philosophy of zero defects are very hard to place a price tag on. They are not easily traded in markets nor communicated through a corporate hierarchy. The open-ended, relational features of

networks, with their relative absence of explicit *quid pro quo* behavior, greatly enhance the ability to transmit and learn new knowledge and skills.

Reciprocity is central to discussions of network forms of organization. Unfortunately it is a rather ambiguous concept, used in different ways by various social science disciplines. One key point of contention concerns whether reciprocity entails exchanges of roughly equivalent value in a strictly delimited sequence or whether it involves a much less precise definition of equivalence, one that emphasizes indebtedness and obligation. Game theoretic treatments of reciprocity by scholars in political science and economics tend to emphasize equivalence. [...] As a result, these scholars take a view of reciprocity that is entirely consistent with the pursuit of self-interest.

Sociological and anthropological analyses of reciprocity are commonly couched in the language of indebtedness. In this view, a measure of imbalance sustains the partnership, compelling another meeting (Sahlins, 1972). Obligation is a means through which parties remain connected to one another. Calling attention to the need for equivalence might well undermine and devalue the relationship. To be sure, sociologists have long emphasized that reciprocity implies conditional action (Gouldner, 1960). The question is whether there is a relatively immediate assessment or whether “the books are kept open,” in the interests of continuing satisfactory results. This perspective also takes a different tack on the issue of self-interest. In his classic work *The Gift*, Marcel Mauss (1967 [1925]), attempted to show that the obligations to give, to receive, and to return were not to be understood simply with respect to rational calculations, but fundamentally in terms of underlying cultural tenets that provide objects with their meaning and significance, and provide a basis for understanding the implications of their passage from one person to another. Anthropological and sociological approaches, then, tend to focus more on the normative standards that sustain exchange; game theoretic treatments emphasize how individual interests are enhanced through cooperation.

Social scientists do agree, however, that reciprocity is enhanced by taking a long-term perspective. Security and stability encourage the search for

new ways of accomplishing tasks, promote learning and the exchange of information, and engender trust. [...] Trust is, as Arrow (1974) has noted, a remarkably efficient lubricant to economic exchange. In trusting another party, one treats as certain those aspects of life which modernity rendered uncertain (Luhmann, 1979). Trust reduces complex realities far more quickly and economically than prediction, authority, or bargaining.

It is inaccurate, however, to characterize networks solely in terms of collaboration and concord. Each point of contact in a network can be a source of conflict as well as harmony. Recall that the term alliance comes from the literature of international relations where it describes relations among nation states in an anarchic world. Keohane (1986) has stressed that processes of reciprocity or cooperation in no way “insulate practitioners from considerations of power.” Networks also commonly involve aspects of dependency and particularism. By establishing enduring patterns of repeat trading, networks restrict access. Opportunities are thus foreclosed to newcomers, either intentionally or more subtly through such barriers as unwritten rules or informal codes of conduct. In practice, subcontracting networks and research partnerships influence who competes with whom, thereby dictating the adoption of a particular technology and making it much harder for unaffiliated parties to join the fray. As a result of these inherent complications, most potential partners approach the idea of participating in a network with trepidation. In the various examples presented below, all of the parties to network forms of exchange have lost some of their ability to dictate their own future and are increasingly dependent on the activities of others.

ILLUSTRATIVE CASES OF NETWORK FORMS

[...]

Networks in Craft Industries

[...] Craft work tends to be project-based, while in bureaucratic organizations a product moves through a series of functional departments where different activities are performed. In craft work each product is relatively unique, search

procedures are non-routine, and the work process depends to a considerable degree on intuition and experimentation (Perrow, 1967). The examples presented below represent well-researched cases that highlight the many network features associated with craft production.

Construction. Robert Eccles (1981), in his research on the construction industry, found that in many countries the relations between a general contractor and his subcontractors are stable and continuous over long time periods, and only rarely established through competitive bidding. This type of quasi-integration results in what Eccles calls the “quasi-firm.” Although most contracts are set under fixed price terms, no hierarchical organization arises, even though there are clear “incentive for shirking performance requirements.” Instead, long-term and fairly exclusive association obviates the need for costly organizational monitoring. In an empirical study of residential construction in Massachusetts, Eccles found that it was unusual for a general contractor to employ more than two or three subcontractors in a given trade. This relationship obtained even when a large number of projects were done in the same year, and despite the fact that a number of alternative subcontractors were available.

[...]

Film and Recording Industries. Sociologists who study popular culture have long known that the music and movie businesses were external economy industries in which there was heavy reliance on subcontracting and freelance talent. But recent research has shed new light on this particular method of matching investment capital and human capital. These industries thrive on short-term contracts, minimization of fixed overhead, mutual monitoring of buyers and sellers, and a constant weaving and interweaving of credits, relationships, and successes or failures. But the ostensibly open competition that one might expect to pervade these markets is minimal (Peterson & White, 1981). Instead, recurrent small-numbers contracting appears to be the norm.

Cultural industries are characterized by high variance and great unpredictability; conditions which breed high rates of social reconstruction or

reproduction (Faulkner & Anderson, 1987). These "project markets" are complex, dynamic, and uncertain. The participants in the firm industry—producers, directors, cinematographers, actors, and musicians—appear at first glance to be highly mobile. They move from studio to studio, from one project to another, with few stable ties to any formal organization. But as Faulkner and Anderson (1987) show, in their analysis of participation in 2,430 films over a fifteen year period (1965–1980), considerable stability and recurrent contracting among the participants is the norm. It is the networks of participants, however, that are stable and enduring, not the film studios, where employees come and go and ownership changes frequently.

Not surprisingly, the key players in the film industry trust others with whom they have worked in the past and found to be reliable. What is striking about Faulkner's and Anderson's analysis is how dramatic the patterns of inclusion and exclusion are. Reproduction persists within film genres and between big money and small money films. They observe (p. 907) that "distinct networks crystallize out of a persistent pattern of contracting when particular buyers of expertise and talent (film producers), with given schedules of resources and alternatives, settle into self-reproducing business transactions with distinct (and small) sets of sellers (directors, cinematographers, and fashionable actors and actresses)." Commercial results feedback and then historically shape the next round of contracting.

These network patterns are interesting in their own right; but Peterson and White (1981) point out that even though they are powerful and long-lasting, they tend to be invisible to most observers. Instead of long-term rates of reproduction most participants observe individual acts of ranking, favors, and contacts.

These craft-based examples are not particularly unique. Network forms of social organization are found in many cultural industries, in research and knowledge production, and in various industrial districts—such as the diamond trade (Ben-Porath, 1980), the garment and fashion business in Milan and New York, the Lyonese silk industry (Piore & Sable, 1984), or the "Third Italy," discussed below. And many of the professions exhibit some network-like features. Architecture is a prime example; but so

apparently is engineering where, to judge from one recent study (Von Hippel, 1987), the informal trading of proprietary know-how among technical professionals in competing firms is extensive.¹ What these different activities share in common is a particular kind of skilled labor force, one with hands-on experience with production and the strategic ability to generate new products to keep pace with changing market demands. The people who perform the work have a kind of knowledge that is fungible, that is, not limited to an individual task but applicable to a wide range of activities. The organizations that complement these human capital inputs are highly porous—with boundaries that are ill-defined, where work roles are vague and responsibilities overlapping, and where work ties both across teams and to members of other organizations are strong.

Regional Economies and Industrial Districts

Recent economic changes have created, or perhaps recreated is a more apt description, new forms of collaboration among for-profit firms. In the previous century, a number of regions and industries were closely identified because both the social life and the economic health of such areas as Lyon and Sheffield were closely linked to the fate of the silk and cutlery trades, respectively (see Piore & Sable, 1984; Sable, 1989). This rediscovery or reinvigoration of the 19th century industrial districts points to the advantages of agglomeration, in which firms choose to locate in an area not because of the presence of an untapped market, but because of the existence of a dense, overlapping cluster of firms, skilled laborers, and an institutional infrastructure. [. . .]

German Textiles. Charles Sabel and his colleagues (1987) describe the German textile industry, centered in the prosperous state of Baden-Wurttemberg in southwestern Germany, as an "association of specialists, each with unmatched expertise and flexibility in a particular phase or type of production." This flourishing traditional craft industry employs a highly refined system of production that links small and medium-size firms with a wide range of institutional arrangements that further the well-being of the industry as a whole. These support services

include industry research institutes, vocational training centers, consulting firms, and marketing agencies. Most textile producers are highly specialized; and, as Sabel et al. (1987) argue, the more distinctive each firm is, the more it depends on the success of the other firms' products that complement its own. This production system depends on an extensive subcontracting system in which key technologies are developed in a collaborative manner. The subcontractors are also connected to overlapping inter-industry supplier networks. These linkages allow textile makers to benefit from the subcontractors' experiences with customers in other industries, and the suppliers are, in turn, buffered from downturns in any one industry. All of these arrangements serve to strengthen the social structure in which textile firms are embedded and to encourage cooperative relations that attenuate the destructive aspects of competition.

The Emilian Model. Perhaps nowhere have socially integrated, decentralized production units had more of an impact than in Italy, where the economy has outgrown Britain's and is catching up to France's. Modena, the microcosm of Latin Europe's renaissance, is the center of Emilia-Romagna, in north central Italy, and it is here that Italy's economic performance has been most exceptional. Behind this success is both a set of unusual, to an American eye, political and social institutions, and a size distribution of firms that seem more suited to the nineteenth century than the late twentieth.²

Firms employing fewer than 50 employees engaged 49 percent of the Italian labor force, and the average manufacturing firm has only 9.19 employees (Lazerson, 1988, p. 330). The proportion of the labor force grouped in smaller units of employment is greater in Emilia than in Italy as a whole (Brusco, 1982). The success of these small enterprises rests on a different logic of production than found in a typical vertically-integrated firm.

These small firms are frequently grouped in specific zones according to their product, and give rise to industrial districts in which all firms have a very low degree of vertical integration (Brusco, 1982). Production is conducted through extensive, collaborative subcontracting agreements. Only a portion of

the firms market final products, the others execute operations commissioned by the group of firms that initiate production. The owners of small firms typically prefer subcontracting to expansion or integration (Lazerson, 1988). The use of satellite firms allows them to remain small and preserve their legal and organizational structure as a small company. Often satellite firms outgrow the spawning firms. Though closely related and highly cooperative, the firms remain strictly independent entities.

These industrial districts embrace a wide range of consumer goods and engineering components and machines: knitwear in Modena, clothes and ceramic tiles in Modena and Reggio, cycles, motorcycles and shoes in Bologna, food processing machinery in Parma, and woodworking machine tools in Capri, to name but a few (see Brusco, 1982, pp. 169–170).

Why is production so widely decentralized and so spatially concentrated? The answer appears to be rather idiosyncratic to the Italian case. It is partly a response to labor union power in large firms, where union influence has proved to be a disincentive to job expansion. The small firms exhibit high wage dispersion, with highly skilled workers who have registered as artisans in order to make more than is standard in large-firm industrial relations agreements, and unskilled, temporary employees—students, the elderly, immigrants, who work off the books for much less than they would receive in a large factory, if they could find employment. The districts are also a response to changing tastes and technology, in particular the emerging popularity of custom rather than the standardized goods and the availability of high quality, flexible technologies that are compatible with the needs and budgets of small firms.

These decentralized organizational arrangements depend on a unique set of political and social institutions, most notably the fact that almost all local political authorities are controlled by the Communist party (Brusco, 1982; Lazerson, 1988). A combination of familiar, legislative, ideological, and historical factors buttress Emilia-Romagna's economic progress. The continued existence of the extended family provides for economic relations based on cooperation and trust, and facilitates the search for new employees through family and

friendship networks (Lazerson, 1988). The CNA, a national organization with close ties to the Italian Communist party, represents some 300,000 artisanal firms and provides them with a rich array of administrative services. These artisanal associations prepare pay slips, keep the books, and pay the taxes, as well as establish consulting, marketing, and financial services (Brusco, 1982). By coordinating these various administrative activities, the associations establish on a cooperative basis the conditions for achieving economies of scale.

Brusco (1982) and Sabel (1989) make a persuasive case that the Emilian model fosters the skills and initiative of artisanal entrepreneurs. The number of entrepreneurs previously employed by large firms, particularly as foremen, is very high. By tapping both initiative and detailed production knowledge, the small firms are able to offer a vast array of new products. And these small firms, through their multitude of collaborative networks, are able to give shape to new ideas with a speed unimaginable in larger enterprises.

Extended Trading Groups. The kind of collaboration that obtains in the industrial districts of southwestern Germany or north central Italy is based in part on a set of local circumstances, but the principles of mutual organization on which the districts are based are more widely applicable. Interfirm cooperation is often found in economic activities based in a particular region, such as in Japan or Scandinavia, or in locales where firms from similar industries are spatially concentrated, such as Silicon Valley or Route 128 in the United States. The extended trading relationships that develop under these circumstances of physical proximity may vary considerably in their details, but their underlying logic is constant.

Ronald Dore (1983) argues that networks of preferential, stable trading relationships are a viable alternative to vertical integration. His work on the regionally concentrated Japanese textile industry, particularly its weaving segment, aptly illustrates this point. The industry was dominated in the 1950s by large mills, most of which were vertically integrated enterprises with cotton-importing, spinning and finishing operations. By 1980 the larger mills had closed and the integrated firms had divested and returned to

their original base in spinning. This "devolution" has led to a series of stable relationships among firms of different sizes. The key to this system is mutual assistance. Dore (1983) gives the example of a finisher who re-equips with a more efficient process, which gives him a cost advantage. This finisher, however, does not win much new business by offering a lower price. The more common consequence is that merchants go to their own finishers and say: "Look how X has got his price down. We hope you can do the same because we really would have to reconsider our position if the price difference goes on for months. If you need bank financing to get the new type of vat we can probably help by guaranteeing the loan." This type of relationship is, of course, not limited to the Japanese textile industry; similar patterns of reciprocal ties are found in many other sectors of the Japanese economy.

What are the performance consequences of these kinds of trading relationships? Dore suggests that the security of the relationship encourages investment by suppliers, as the spread of robotics among Japan's engineering subcontractors amply attests. Trust and mutual dependency result in a more rapid flow of information. In textiles, changes in consumer markets are passed quickly upstream to weavers, and technical changes in production also flow downstream rapidly. There is, Dore asserts, a general emphasis on quality. One would not terminate a relationship when a party cannot deliver the lowest price, but it is perfectly proper to terminate a relationship when someone is not maintaining quality standards.

More recently, Dore (1987) has maintained that Japanese economic relations in general do not have the properties (i.e., opportunism, short-term profit-maximization, and distrust) that we commonly associate with capitalist enterprise and on which we build our theories of economic organization (in particular, transaction cost economics). He contends that the costs of doing business in Japan are lower than in Britain or the United States because of concerns for reputation and goodwill and considerations of trust and obligation. Moreover, he argues, this embedding of business relations in moral and social concerns does not reduce economic vitality, it sustains it and provides Japan with a considerable edge.

But is Japan all that unique? Perhaps it is true, as Dore (1987) suggests, that as a nation, Japanese

industry is organized more along the principles of an extended network (see also, Imai & Itami, 1984), but it does not appear to have a monopoly on these practices. Hagg and Johanson (1983), in an analysis of the industrial markets which comprise the core of the Swedish economy, describe a series of long term, stable relationships among industrial producers who share R&D resources and personnel. They suggest that the companies are actually investing in their connections with other companies, and in the process, losing their own identity to some extent. Instead of a competitive environment, there is a sharing of risks and resources and a pooling of information. Haag and Johanson argue that these arrangements eliminate costly safeguards and defensive measures and are better adapted to uncertainty. Competition in intermediate producer markets is not eliminated, rather coalitions of firms compete with other coalitions, not on the basis of price, but in terms of product development and knowledge accumulation.

[...]

It was not all that long ago that notions of industrial districts and spatially concentrated production were largely ignored—both intellectually and geographically. Now, every municipality seems busy at work trying to create their own Route 128 or Modena. The success of these forms of extended trading networks has several key ramifications:

1. One of the main consequences has been to blur the boundaries of the firm—boundaries are being expanded to encompass a larger community of actors and interests that would previously have either been fully separate entities or absorbed through merger;
2. A new constellation of forces is being recognized as crucial to economic success: whether in the Third Italy of Silicon Valley, spatially concentrated production involves the cooperation of local government, proximity to centers of higher education, a highly skilled labor pool, extensive ties to research institutes and trade associations, and cooperation among firms with specialized skills and overlapping interests;
3. The spread of technologically advanced, smaller units of enterprise—a growth that comes at the

expense of larger companies and is not explained solely by the shift from manufacturing to services (Loveman, Piore & Sengenberger, 1987), and occurs without notable direct investment or significant employment increase, but rather as a result of expansion through various cooperative interorganizational relationships (Lorenzoni & Ornat, 1988).

Strategic Alliances and Partnerships

In many respects, partnerships and joint ventures are not new developments. They have been common among firms involved in oil extraction and petroleum refining as a means of spreading risks. Chemical and pharmaceutical firms have long conducted basic research jointly with university scientists. And some of the most complex partnerships have taken place in the commercial aircraft industry. Three major global players—Boeing, McDonnell Douglas, and Airbus Industrie—construct their planes via complex joint ventures among firms from many nations (Mowery, 1987). Boeing and Rolls Royce teamed up to produce the Boeing 757, and much of the construction of the Boeing 767 is done, through joint ventures, in Japan and Italy. Airbus Industrie is a four nation European aircraft consortium, supported in part through loans (or subsidies, if you take the competition's view) from European governments.

There is widespread evidence, however, that experimentation with various new kinds of interfirm agreements, collaborations, and partnerships have mushroomed in an unprecedented fashion (Friar & Hoewitch, 1985; Teece, 1986; Zagnoli, 1987; Hergert & Morris, 1988; Mowery, 1988). Firms are seeking to combine their strengths and overcome weaknesses in a collaboration that is much broader and deeper than the typical marketing joint ventures and technology licensing that were used previously. These new ventures may take the form of novel cooperative relationships with suppliers, or collaboration among several small firms to facilitate research and new product development. More generally, internally-generated-and-financed research is giving way to new forms of external R&D collaboration among previously unaffiliated enterprises. Indeed, in some industries, there appears to be a

wholesale stampede into various alliance-type combinations that link large generalist firms and specialized entrepreneurial start-ups. Nor are these simply new means to pursue research and development; the new arrangements also extend to production, marketing, and distribution. And, in some circumstances, large firms are joining together to create "global strategic partnerships" (Perlmutter & Heenan, 1986) that shift the very basis of competition to a new level—from firm vs. firm to rival transnational groupings of collaborators.³

In the past, the most common way in which large companies gained expertise or products that they were unable to develop on their own was to acquire another company with the needed capability. Mergers and acquisitions in high technology fields have not disappeared, but their track record is generally poor (Doz, 1988). Partnerships are more frequent now because of growing awareness that other options have serious drawbacks. Recent efforts at various kinds of more limited involvement represent an important alternative to outright takeover. Equity arrangements—deals that combine direct project financing and varying degrees of ownership—are an example. A larger firm invests, rather than purchases, primarily for reasons of speed and creativity. The movement in large companies away from in-house development to partial ownership reflects an awareness that small firms are much faster at, and more capable of, innovation and product development. General Motors explained its 11 percent investment in Teknowledge, a maker of diagnostic systems that use a type of artificial intelligence, by noting that "if we purchased the company outright, we would kill the goose that laid the golden egg." Equity arrangements can be quite complex. Some small companies have several equity partners, and large companies find themselves in the novel position of negotiating product development contracts and licensing arrangements with companies that they partly own. Equity investments are typically "complemented by various agreements, such as research contracts from the larger firm to the smaller one, exclusive licensing agreements to the larger firm, and often loan and other financial agreements provided by the larger firm to the smaller one" (Doz, 1988, p. 32).

These developments, not surprisingly, are particularly common in technology-intensive industries (Mariti & Smiley, 1983; Zagnoli, 1987; Contractor & Lorange, 1988). Both the motivations for collaboration and the organizational forms that result are quite varied. Firms pursue cooperative agreements in order to gain fast access to new technologies or new markets, to benefit from economies of scale in joint research and/or production, to tap into sources of know-how located outside the boundaries of the firm, and to share the risks for activities that are beyond the scope or capability of a single organization. The ensuing organizational arrangements include joint ventures, strategic alliances, equity partnerships, collaborative research pacts of large scale research consortia, reciprocity deals, and satellite organizations. There is no clear cut relationship between the legal form of cooperative relationships and the purposes they are intended to achieve. The form of the agreement appears to be individually tailored to the needs of the respective parties, and to tax and regulatory considerations. The basic thrust, however, is quite obvious: to pursue new strategies of innovation through collaboration without abrogating the separate identity and personality of the cooperating partners.

In these process-oriented fields, knowing how to make a product and how to make it work is absolutely critical to success. In recent years, as product life cycles shorten and competition intensifies, timing considerations and access to know-how have become paramount concerns. Teece and Pisano (1987) suggest that, increasingly, the most qualified centers of excellence in the relevant know-how are located outside the boundaries of the large corporation. Fusfeld and Haklisch (1985) argue that corporations are becoming less self-sufficient in their ability to generate the science and technology necessary to fuel growth. [. . .]

Collaborative agreements involve a wide variety of organizations. While the joining together of small firms that possess entrepreneurial commitment and expertise in technology innovation with large scale corporate organizations that have marketing and distribution power represents the prototypical example, these arrangements are certainly not the only option. Many large firms are linking up with other large

companies, particularly in international joint ventures.⁴ These partnerships are unusual in that they involve the creation of dependencies and linkages among very large firms, such as Toyota and General Motors.

[. . .]

There are numerous factors both pushing and pulling U.S. multinationals into global alliances. On the push side are technological constraints. Much sophisticated technological knowledge is tacit in character (Nelson & Winter, 1982) and cannot easily be transferred by licensing. Indeed, it is the unwritten, intangible character of much firm-specific knowledge that has led U.S. firms, particularly the automakers, to form joint ventures with Japanese manufacturers in an effort to better understand their production processes. Similarly, Japanese companies have been attracted to joint projects with U.S. high tech firms because technological innovation cannot be simply purchased, it requires cumulative knowledge of the linkages among design, production, and sales.

On the pull side are financial concerns and the advantages of risk reduction. In joining a coalition with another firm, both partners may enjoy options that otherwise would not be available to them, ranging from better access to markets, pooling or exchanging technologies, and enjoying economies of scale and scope. Risk-sharing is very attractive in industries where each successive generation of products is expensive to develop, and product life cycles are short.

[. . .]

Cooperative arrangements are not necessarily easy to sustain, nor do they always entail success. They can create a host of management problems and they also raise serious questions about effective industrial policy. On the organizational front, Doz (1988) has cautioned that convergence of purpose is often difficult to achieve, consistency of effort can be undermined by parochial subunit goals, and middle managers and technical specialties may not share top management's enthusiasm for cooperation. Similarly, Borys and Jemison (1989) suggest that because partners have not previously worked together, they may misperceive one another's actions. They observe that collaborations often

begin with considerable resources, heavy obligations, and lofty expectations. Thus, the pressures to perform successfully may be considerable.

Collaboration can be fraught with other risks. Parties may bring hidden agendas to the venture. There is an ever-present threat that one party will capture the lion's share of the benefits, or defect with the other party's knowledge and expertise.⁵ Some analysts worry that U.S. partners to global alliances may provide "mundane" services such as assembly, distribution, and marketing, which add little value to the product.⁶ The key development work and the higher-paying, value-added jobs are taken overseas, and the U.S. firm merely completes the final stages. These issues are far from being resolved, but they point out the complex ways in which collaborative networks may or may not contribute to a country's stock of organizational talents.

Vertical Disaggregation

Evidence is accumulating that many firms are choosing to shrink their operations in response to the liabilities of large-scale organization. For example, Mariotti and Cainarca (1986) describe a "downsizing" pattern in the Italian textile industry, where there has been a decline in the number of vertically-integrated firms and growth in "intermediate governance structures." They attribute this development to three failures that plague vertically-integrated firms: an inability to respond quickly to competitive changes in international markets; resistance to process innovations that alter the relationship between different stages of the production process; and systematic resistance to the introduction of new products. Interestingly, in an earlier era, firms actively pursued a strategy of vertical integration in an effort to reap the benefits of administrative coordination, economies of scale, and risk reduction (Chandler, 1977). Today, these "strengths" have results in various weaknesses: structural inertia, slow response times, and decreased employee satisfaction.

Large organizations are designed to do certain things well over and over again. The more that behaviors are repeated, the more predictable they become; thus, the greater likelihood that these actions will become formalized. Child (1972) found

that large organizations tend to be more rule-bound and to require greater documentation of their efforts. For certain kinds of activities, such practices are useful, but for others it can result in informational logjams and a serious mismatch between organizational outcomes and the demands of clients and customers in a changing environment. Thus, the very factors that make a large organization efficient and reliable at some tasks render it cumbersome and resistant to change when it comes to other actions (Nelson & Winter, 1982; Hannan & Freeman, 1984).

The information costs in large organizations are further compounded by motivational difficulties as well. One point that Alchian and Demsetz (1972) and Williamson (1975) implicitly demonstrate is that much of the internal structure of large organizations is designed to prevent collective action by employees. This basic attitude of suspicion may explain the finding by social psychologists that job satisfaction (as measured by turnover, absenteeism, and morale) declines with increases in organizational size and/or centralization (Porter & Lawler, 1965; Berger & Cummings, 1979). The design of organizations can affect the behavior of their members in a number of powerful ways.⁷ In large hierarchical organizations, promotions up the career ladder are a key part of the reward structure. You have, then, little incentive to disagree with the operating decisions made by people above you in rank because they are the people who must decide on your promotion. Research suggests that hierarchical design dampens employee motivation because individuals are likely to be more committed when they have participated in a decision, and much less enthusiastic when they have been ordered by superiors to undertake a particular task (Hackman & Oldham, 1980).

When the pace of technological change was relatively slow, production processes were well understood and standardized, and production runs turned out large numbers of similar products, vertical integration was a highly successful strategy. But the disadvantages of large-scale vertical integration can become acute when the pace of technological change quickens, product life cycles shorten, and markets become more specialized. Firms are trying to cope with these new pressures in a variety of ways:

by explicitly limiting the size of work units, by contracting work out, or through more collaborative ventures with suppliers and distributors. One route leads firms to a rediscovery of the market, to the hostile world of arms-length relationships. Associated with a greater reliance on external contracts are strong efforts at cost-cutting, and greater managerial freedom in the deployment of resources and personnel. Another route leads firms to try to reorganize production, not so much through eliminating jobs, but by searching for new methods of collaboration among formerly antagonistic and/or competitive parties (Walton, 1985; Weitzman, 1984). Both responses entail some form of vertical disaggregation, or the shrinking of large corporate hierarchies.

The U.S. auto industry provides a good example of the crossroads many firms are at as they encounter the limits of vertical integration. The auto industry has undergone a profound shake-up, but the ultimate consequences of these changes have yet to be determined (see Dyer et al., 1987; Quinn, 1987). Prior to the mid-1970s, the big three automakers operated in a comfortable environment with little competitive pressure and scant customer demands for gas-efficient, high quality cars. The auto companies pursued a strategy of tight integration of production, which provided a means to guarantee supplies during periods of peak demand, as well as to protect the secrecy of annual styling changes. Vertical integration also kept down the prices of the independent parts suppliers with whom the companies traded. There was neither any give and take nor trust between the automakers and the subcontractors. Contracts were lost because a supplier bid .01 cents per item higher than a competitor (Porter, 1983). Automakers rigorously inspected supplier facilities, quality control procedures, stability of raw material sources, cost data, and management quality and depth (Porter, 1983, p. 278). They were reluctant to permit a supplier to manufacture a complete system. Instead, automakers preferred a competitive situation in which several firms supplied various components and the final assembly was done in-house.

Today this old system has crumbled in the face of international competition and fallen prey to the contradictions and short-term logic of the regime

of competitive supplier relations. Heightened competition exposed a number of serious defects in this system. Abernathy (1978) has argued that vertical integration in the auto industry led to inflexibility. One consequence of tight technological interdependence is that change in any one part means the entire process must be altered. Pursuit of a cost-minimization strategy also reduced the automakers' ability to innovate. Susan Helper (1987), in an excellent analysis of supplier relations in the auto industry, observes that the old methods prevented suppliers from developing expertise, thereby reducing the skill requirements of their employees. This made it hard for them to develop any nonautomotive contracts and kept them dependent on the auto companies. It also had a chilling effect on innovation. There was neither any incentive nor capability for the suppliers to update equipment, suggest technological changes, or make long-range plans.

Because of their declining market share and lower profits, automakers are experimenting with an enormous variety of new approaches. A complex web of ties has developed among U.S. automakers, their Japanese rivals, American labor, and auto parts suppliers. These changes are transforming the way the U.S. auto industry operates, changing the nature of competition worldwide, and sharply blurring the distinction between domestic and imported cars. Joint venture activity is extensive: between Ford and Mazda, General Motors and Toyota, GM and Volvo, and Chrysler and Mitsubishi. Ownership is also held in tandem: Ford owns 25 percent of Mazda, GM 42 percent of Isuzu and 5 percent of Suzuki, Chrysler 12 percent of Mitsubishi Motors. These relationships involve close collaboration and joint production on some projects, and secrecy and exclusiveness on other models.

Equally extensive tinkering is underway with respect to subcontracting arrangements (Helper, 1987). The length of contracts have been expanded, from one year to three to five. More joint design work is being undertaken and sole-sourcing agreements are becoming more common. These new, more collaborative arrangements involve less monitoring and costly inspections, yet defect rates are much reduced. The automakers are becoming more dependent on the technological expertise of the

suppliers, whose long-run health is now a factor in the automakers' profits.

At the same time, however, the automakers are pursuing a second strategy: outsourcing to low wage areas. They are simultaneously deciding which suppliers are worth investing in a long-term relationship with and determining which components can be obtained on the basis of price rather than quality. In these cases, there is little concern for collaboration or supplier design work; instead, the effort is aimed at finding third-world suppliers that can provide parts at the lowest possible price.

These disparate options graphically illustrate how practices such as subcontracting have a double edge to them: they may represent a move toward relational contracting (Macneil, 1978), with greater emphasis on security and quality; or they could be a return to earlier times, a part of a campaign to slash labor costs, reduce employment levels, and limit the power of unions even further. Hence, many of the current downsizing efforts seem, at the first glance, to be illogical. Some firms are seeking new collaborative alliances with parts suppliers while at the same time they are trying to stimulate competition among various corporate divisions and between corporate units and outside suppliers. Firms are proposing new cooperative relationships with labor unions and in the same motion reducing jobs and outsourcing them to foreign producers.

Are companies really as confused as it seems? Are these various actions merely the faulty experimentation of poor and indecisive managements? Not necessarily. Though many of the efforts at vertical disaggregation appear to work at cross purposes, there does appear to be an underlying theme. Strong competitive pressures within an industry reduce the number of levels of hierarchy within firms and push companies to redefine the boundaries of their organizations. Firms are externalizing the production of highly standardized components, and searching for new collaborative methods to produce components that require highly skilled, innovative efforts. These collaborations may entail new relationships with labor, close relationships with "outsiders" who are no longer viewed merely as providers of a component but rather as sources of technological creativity that large firms cannot duplicate internally, and new

cooperative ventures with competitors to pool risks and to provide access to markets.

[...]

NOTES

1. In his study of the U.S. steel minimill industry, Von Hippel (1987) found the sharing of know-how to be based on professional networks, which develop among engineers with common research interests. When a request for technical assistance is made, the person being asked typically makes two calculations: (1) is the information being requested vital to the health of the firm or just useful, but not crucial? and (2) how likely is the requester to reciprocate at a later date? Even though no explicit accounting is made, assistance is commonly offered. Von Hippel argues that this "economically feasible and novel form of cooperative R&D" is probably found in many other industries as well.

2. While the organizational structure of Italian firms may not seem modern, they are decidedly successful and high-tech in their operations. Benetton, the fashionable clothing company, is an oft-cited example. With some 2,000 employees, the company orchestrates relations backward with more than 350 subcontractors throughout western Europe and forward with some 100 selling agents and over 4,000 retail stores worldwide. The company's spectacular growth from small family business to far-flung empire has not been built on internalization or economies of scale, but on external relations for manufacturing, design, distribution and sales. These extended networks have both advantages in terms of speed and flexibility and liabilities with regard to maintaining quality standards. See Jarillo and Martinez (1987) and Belussi (1986) for detailed case studies of the company.

3. Competition over the marketing of tissue plasminogen activator (TPA), an enzyme may expect to be a major drug in treating heart attacks, is the most severe and complicated in biotechnology today. This competitive struggle illustrates how rival transnational alliances race for global market share. The U.S. firm Genentech is allied with Mitsubishi Chemical and Kyowa Hakko in Japan, while another American firm, Biogen, is collaborating with Fujisawa. Numerous other Japanese and European pharmaceutical alliances, ignoring Genentech's claims for patent priority for TPA, are busy with their own TPA research. This contest shows the intensity of transnational alliance competition, but at the same time that Genentech and Fujisawa are at odds over TPA, they are collaborating in the marketing of another biotech drug, tumor necrosis factor (TNF). Yoshikawa (1988) offers a good road map to the complex, crosscutting terrain of biotechnology strategic alliances.

4. The label "joint venture" implies the creation of a separate organization, but this need not be the case. Rather than form a new entity, partners can agree to a co-production arrangement. This is common in manufacturing, particularly aerospace, where each partner produces a section of the final product. Or firms may agree to a research partnership in which scientists and laboratories are shared. Similarly, exploration consortia in extractive industries need not create a new firm, but rather pool the costs and risks of existing activities.

5. Analysts have cautioned against alliances that involve a relative power imbalance, in which either one partner receives undue benefits or where one partner becomes so dependent on another that they may have no option other than to continue a relationship in which their share is increasingly inferior (see Tecce, 1986). This fear, along with the worry that the partner will not perform according to expectations, explains why most potential partners approach an agreement with trepidation. These are typical and well-founded misgivings about any asymmetric exchange relationship.

6. Many commentators have voiced particular concerns about global partnerships, issues that are contested in the current "manufacturing matters" debate (see Cohen & Zysman, 1987). Reich and Mankin (1986) warn that friendly colleagues often revert to hostile competitors. In the Pentax-Honeywell and Canon-Bell & Howell alliances, Japanese partners took advantage of valuable U.S. technology and know-how only to later discard their American partners. *Business Week*, in its well-known March 3, 1986 issue, cautioned against the growth of "hollow corporations," that is, firms that have disaggregated so radically that they are left without any core expertise.

7. Top-down controls create distance between supervisors and subordinates, between powerful executives and less powerful employees. A vertical chain of command, and its accompanying layers of administration, undercuts management's ability to see its directives implemented and creates an environment in which employees see their work as but a tiny cog in a large impersonal machine. The diffuse control structure in large firms both dampens management's ability to move quickly and labor's sense of commitment to the enterprise.

REFERENCES

- Abernathy, W. (1978). *The productivity dilemma*. Baltimore: Johns Hopkins University Press.
- Alchian, A., & Demsetz, H. (1972). Production, information costs, and economic organization. *American Economic Review*, 62, 5, 777-795.

- Arrow, K. (1974). *The limits of organization*. New York: Norton.
- Belussi, F. (1986). New technologies in a traditional sector: The benetton case. Berkeley Roundtable on the International Economy working paper #19.
- Ben-Porath, Y. (1980). The F-connection: Families, friends, and firms in the organization of exchange. *Population and Development Review*, 6, 1-30.
- Berger, C., & Cummings, L. L. (1979). Organizational structure, attitudes and behavior." In Barry Staw (Ed.), *Research in Organizational Behavior* (Vol. 1, pp 169-208).
- Borys, B., & Jemison, D. B. (1989). Hybrid organizations as strategic alliances: Theoretical issues in organizational combinations. *Academy of Management Review*, 14(2), 234-249.
- Bradach, J. L., & Eccles, R. G. (1989). Markets versus hierarchies: From ideal types to plural forms. *Annual Review of Sociology*, 15, 97-118.
- Braudel, F. (1982). *The wheels of commerce*. New York: Harper and Row.
- Brusco, S. (1982). The Emilian model: Productive decentralization and social integration. *Cambridge Journal of Economics*, 6, 167-184.
- Chandler, A. D. (1977). *The visible hand*. Cambridge: Harvard University Press.
- Child, J. (1972). Organizational structure and strategies of control: A replication of the Aston Study. *Administrative Science Quarterly*, 18, 168-185.
- Cohen, S., & Zysman, J. (1987). *Manufacturing matters*. New York: Basic Books.
- Contractor, F. J. & Lorange, P. (1988). *Cooperative strategies in international business*. Lexington, MA: Lexington Books.
- Dalton, M. (1957). *Men who manage*. New York: Wiley.
- DiMaggio, P., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48, 147-160.
- Dore, R. (1983). Goodwill and the spirit of market capitalism." *British Journal of Sociology*, 34(4), 459-482.
- Dore, R. (1987). *Taking Japan seriously*. Stanford, CA: Stanford University Press.
- Doz, Y. (1988). Technology partnerships between larger and smaller firms: Some critical issues. *International Studies of Management and Organization*, 17(4), 31-57.
- Dyer, Davis, M. S., & Webber, A. (1987). *Changing alliances*. Boston: Harvard Business School Press.
- Eccles, R. (1981). The quasifirm in the construction industry. *Journal of Economic Behavior and Organization*, 2, 335-357.
- Eccles, R. (1985). *The transfer pricing problem: A theory for practice*. Lexington, MA: Lexington Books.
- Faulkner, R. R., & Anderson, A. (1987). Short-term projects and emergent careers: Evidence from Hollywood. *American Journal of Sociology*, 92(4), 879-909.
- Friar, J., & Horwitch, M. 1985. "The emergence of technology strategy: A new dimension of strategic management." *Technology in Society* 7(2/3), pp. 143-178.
- Fusfeld, H., & Haklisch, C. (1985). Cooperative R&D for competitors. *Harvard Business Review*, 85(6), 60-76.
- Geertz, C. (1978). The bazaar economy: Information and search in peasant marketing. *American Economic Review*, 68(2), 28-32.
- Gouldner, A. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review*, 25, pp. 161-178.
- Hackman, R., & Oldham, G. (1980). *Work redesign*. Reading, MA: Addison-Wesley.
- Hagg, I., & Johanson, J. (1983). *Firms in networks: A new view of competitive power*. Business and Social Research Institute, Stockholm.
- Hannan, M., & Freeman, J. H. (1984). Structural inertia and organizational change. *American Sociological Review*, 49, 149-164.
- Hayek, F. (1945). The use of knowledge in society. *American Economic Review*, 35, 519-530.
- Helper, S. (1987). *Supplier relations and technical change*. Ph.D. dissertation, Dept. of Economics, Harvard University.
- Hergert, M., & Morris, D. (1988). "Trends in international collaborative agreements." Pp. 99-109 in F. Contractor & P. Lorange (Eds.), *Cooperative strategies in international business*. Lexington, MA: Lexington Books.
- Imai, K. & Itami, H. (1984). Interpenetration of organization and market. *International Journal of Industrial Organization*, 2, 285-310.
- Jarillo, J.-C., & Martinez, J. I. (1987). Benetton S.p.A.: A case study. Working paper, IESE, Barcelona, Spain.
- Keohane, R. (1986). Reciprocity in international relations. *International Organization*, 40(1), 1-27.
- Lazerson, M. (1988). Organizational growth of small firms: An outcome of markets and hierarchies? *American Sociological Review*, 53(3), 330-342.
- Lorenzoni, G., & Ornatì, O. (1988). Constellations of firms and new ventures. *Journal of Business Venturing*, 3, 41-57.
- Loveman, G., Piore, M., & Sengenberger, W. (1987). The evolving role of small business in industrial

- economies. Paper presented at conference on New Developments in Labor Market and Human Resource Policies, Sloan School, M.I.T.
- Luhmann, N. 1979. *Trust and power*. New York: Wiley.
- Macneil, I. (1978). Contracts: Adjustment of long-term economic relations under classical, neoclassical, and relational contract law. *Northwestern University Law Review*, 72(6), 854-905.
- Macneil, I. (1985). Relational contract: What we do and do not know. *Wisconsin Law Review*, 3, 483-526.
- Mariotti, S., & Cainarca, G. C. 1986. The evolution of transaction governance in the textile-clothing industry. *Journal of Economic Behavior and Organization*, 7, 351-374.
- Mariti, P., & Smiley, R. H. (1983). Co-operative agreements and the organization of industry. *Journal of Industrial Economics*, 31(4), 437-451.
- Mauss, M. (1967, 1925). *The gift*. New York: Norton.
- Mowery, D. C. (1987). *Alliance politics and economics*. Cambridge, MA: Ballinger.
- Mowery, D. C. (Ed.), (1988). *International collaborative ventures in U.S. manufacturing*. Cambridge, MA: Ballinger.
- Nelson, R., & Winter, S. (1982). *An evolutionary theory of economic change*. Cambridge: Harvard University Press.
- Perlmutter, H., & Heenan, D. (1986). Cooperate to compete globally. *Harvard Business Review*, 86(2), 136-152.
- Perrow, C. (1967). A framework for the comparative analysis of organizations. *American Sociological Review*, 32, 194-208.
- Peterson, R. A., & White, H. (1981). Elements of simplex structure. *Organ Life*, 10(1), 3-24.
- Piore, M. J., & Sabel, C. F. 1984. *The second industrial divide*. New York: Basic Books.
- Polanyi, K. 1957. *The great transformation*. Boston: Beacon.
- Porter, L., & Lawler, E. (1965). Properties of organization structure in relation to job attitudes and job behavior. *Psychological Bulletin*, 64(1), 23-51.
- Porter, M. (1983). *Cases in competitive strategy*. New York: Free Press.
- Quinn, D. P. (1987). Dynamic markets and mutating firms: The changing organization of production in automotive firms. Working paper presented at APSA meetings, Chicago.
- Reich, R. B., & Mankin, E. (1986). "Joint ventures with Japan give away our future." *Harvard Business Review* 86, 2: 78-86.
- Sabel, C. F. (1989). Flexible specialization and the re-emergence of regional economies. Pp. 17-70 in P. Hirst and J. Zeitlin (Eds.), *Reversing Industrial Decline?* Oxford, UK: Berg.
- Sabel, C., G. Herrigel, R. Kazis, & Deeg, R. 1987. How to keep mature industries innovative. *Technology Review* 90(3), 26-35.
- Sahlins, M. (1972). *Stone age economics*. Chicago: Aldine.
- Stinchcombe, A. (1985). Contracts as hierarchical documents. Pp. 121-171 in A. Stinchcombe & C. Heimer, *Organization theory and project management*. Oslo: Norwegian University Press.
- Teece, D. (1986). Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy. *Research Policy*, 15(6), 785-305.
- Teece, D., & Pisano, G. (1987). Collaborative arrangements and technology strategy. Paper presented at conference on New Technology and New Intermediaries, Center for European Studies, Stanford.
- Von Hippel, E. (1987). Cooperation between rivals: Informal know-how trading. *Research Policy*, 16, 291-302.
- Walton, R. (1985). From control to commitment in the workplace. *Harvard Business Review* 85, 2: 76-84.
- Walzer, M. (1983). *Spheres of justice*. New York: Basic Books.
- Weitzman, M. (1984). *The share economy*. Cambridge: Harvard University Press.
- Williamson, O. E. (1975). *Markets and hierarchies: Analysis and antitrust implications*. New York: Free Press.
- Yoshikawa, A. (1988). Japanese biotechnology: New drugs, industrial organization, innovation, and strategic alliances. BRIE Working Paper #33.
- Zagnoli, P. (1987). Interfirm agreements as bilateral transactions? Paper presented at conference on New Technology and New Intermediaries, Center for European Studies, Stanford.

26

LEAN AND MEAN

The Changing Landscape of Corporate Power in the Age of Flexibility

BENNETT HARRISON

BIG FIRMS, SMALL FIRMS, NETWORK FIRMS

There are more than 1,200 booths arrayed across the football field-length floor of the David P. Lawrence Convention Center in Pittsburgh, Pennsylvania. The smells and tastes of cigarette smoke, coffee, and Coca-Cola fill the air. Everywhere, people (mostly men, but a surprising number of professional women, as well) are giving lectures, inspecting one another's wares, exchanging telephone numbers, and making deals.

We are attending a trade show of companies in the steel business. Companies from around the

world are advertising their competence in a wide variety of activities. Some actually make steel bars, sheets, and related products. Others manufacture the machinery, parts, or computerized control systems. Still others offer the mill owners services ranging from design and plant maintenance to personnel management. And some specialize in disposing of the hazardous waste materials thrown off in the process of making steel.

As my friends and I pick up brochures and stop to chat with company representatives, we look for the presence of small, high-tech, independent entities. They are hard to find. Either the firms represented have themselves been created by consortia of companies from different countries, or they are branches, subsidiaries, or divisions of foreign

From *Lean and Mean: The Changing Landscape of Corporate Power in the Age of Flexibility*, by Bennett Harrison. Copyright © 1994 by Bennett Harrison. Reprinted by permission of Basic Books, a member of Perseus Books, L.L.C.