CHAPTER

10 INTERORGANIZATIONAL DYNAMICS: MARKETS, HIERARCHIES, AND NETWORKS

Rather than dwindling away, concentrated economic power is changing its shape, as the big firms create all manner of networks, alliances, short and long-term financial and technological deals—with one another, with governments at all levels, and with legions of generally (although not invariably) smaller firms who act as their suppliers and subcontractors.

Bennett Harrison, *Lean and Mean,* New York: Basic Books.

This chapter will consider a number of central questions in organization theory related to the structural and spatial relationship among organizations. Continuing our discussion and analysis of interorganizational dynamics, we confront the strategies organizations use to gain access to resources, organize their relationship with other firms, control environmental uncertainty, and locate activities across geographic space. Addressing these issues will take us from the literature on markets and hierarchies to the work on the globalization of production.

The common theme in all of this work is the recurring tension between the differentiation of production activities, or the social division of labor, and the coordination and integration of these interdependent activities. Some of the most exciting work in organization theory today is grappling with this persistent tension.

The Markets and Hierarchies Approach

Chapter 2 introduced the "social division of labor" to describe the differentiation of economic activities across organizations and firms. This can be thought of as a case of specialization. Firms devote their resources and energies to their

core competencies or capabilities. Specialization and differentiation of economic activities create interorganizational dependence. Organizations must turn to other organizations to secure the resources they need, but do not themselves control or produce. This raises a central question: What is the most cost-effective way to gain access to the resources needed for production?

Markets and Transaction Costs

The last chapter considered some corporate strategies suggested by resource dependence theory to deal with this problem, such as bridging and buffering. Here, a slightly different approach is taken, beginning with the idea that all resources can potentially be obtained through *market transactions.* In this scenario, a wide range of organizations own and control resources that are bought and sold in a market. The market is the arena where organizations—the buyers and sellers—meet. In these market transactions, price is the primary determinant of supply and demand. If an acceptable price is established, the supplier sells and the demander buys the required resource. After the market exchange, the relationship is terminated.

The economist Ronald Coase raised the question in his now famous article, "The Nature of the Firm" (1937), of whether this is the best way to access resources. He directed attention to the *transaction costs* that are incurred with market exchange. These costs of conducting business arise in a market when (1) the parties are driven by self-interest and (2) there is uncertainty about the quality, reliability, and long-term availability of the needed resource. If firms are driven by self-interest, one firm alone cannot rely on the good will of other firms but must establish contracts to ensure that all parties meet their obligations. Negotiating, writing, and enforcing contracts is costly. If there is uncertainty, firms must collect information on the value, price, quality, and availability of resources. This is also a costly process. A firm, or organization, may decide to reduce these costs by producing the resource itself or acquiring the firms that do. This would be an alternative to obtaining it through the market. Once the activities are controlled by a single organization, market transactions are replaced by directives and commands. Transaction costs associated with obtaining information about prices, or establishing contractual obligations, are eliminated.

This abstract discussion of firms and markets can be illuminated with a few examples. Some writers have argued that the relationship between an owner and a worker could be conducted as a simple market transaction. The owner purchases the labor services of a worker in a market whenever those services are needed. In this example, the owner may have some capital facilities, like machines and a factory, and the worker possesses labor power. They could negotiate on a daily basis about hours and wages, determine a fair price, maybe write up a contract, and then commence a certain production process.

This represents a market transaction between an owner who "demands" and a worker who "supplies" labor services. Alternatively, the firm could hire a worker as a "permanent" employee at a set wage and, once the worker is hired, direct and command the worker to do this or that without having to negotiate on the price and terms of the labor service. This would presumably reduce the transaction costs associated with negotiating and bargaining. In this example, an *externalized* market transaction is replaced by *internalized* control and command.

Another simple example can be represented by a craftsperson and a toolmaker. A craftsperson can purchase the tools in the market when needed. Alternatively, the craftsperson might simply hire a toolmaker as a permanent employee and internal provider of the hardware. The toolmaker will then make tools as part of his or her job for the craftsperson's firm.

In both of these examples, it is important to emphasize that the move to the firm establishes an employment relationship. From a Marxist perspective, it establishes a social class relationship that will inevitably entail exploitation of the worker by the owner, or the toolmaker by the craftsperson/capitalist. Replacing a market transaction with administrative fiat or a social class relationship parallels, in many respects, the rise of the factory system presented in Chapter 3. It raises the issue of management, the supervision of workers, and the agency problem.

Hierarchies and Transaction Costs

In this chapter our primary interest is in the relationship between interdependent production units or organizations rather than between individuals within an organization. Coase's conceptual framework can be extended to address the interorganization dynamic. The most significant application is found in the work of Oliver Williamson (1975; 1985), most notably in his *Markets and Hierarchies* (1975).

Williamson employs a transaction-cost logic to explain the nature of relationships between firms, and the kinds of organizational structures that might arise to deal with these relationships. What makes his analysis especially interesting is the use of additional organizational theories and concepts with which we are now familiar. These include the environmental conditions of certainty/stability compared with uncertainty/instability (see Chapter 9) and the human factor condition of bounded rationality (see Chapter 5).

Williamson's model and argument is best explained with reference to a hypothetical example. Let's begin with two organizations called Autos Inc. (AI) and Parts, Inc. (PI). AI manufactures automobiles. PI produces parts or components for automakers like AI. AI buys parts from PI that it uses to build and assemble automobiles. This transaction might take place in a market. When AI wants parts, it meets with PI and negotiates an agreeable price.

AI pays PI money, PI hands over the parts, and the two parties go their separate ways. This resembles a kind of one-time market transaction, similar to walking into a store, finding a product at an agreeable price, purchasing the product, and terminating the "relationship." This is called a "spot market" transaction. There are no extended obligations or relationships between buyer and seller. In this scenario, market transactions may, according to Williamson, be the most cost-effective means to obtain needed resources.

However, Williamson noted a common fact of organizational life; that is, many if not most transactions are not one-time exchanges but long-term arrangements. Returning to AI and PI, suppose that AI needs a variety of parts and components from PI over an extended period of time, in certain quantities, delivered at different times, and meeting particular specifications. Because the future cannot be predicted with any certainty, the relationship between AI and PI is now much more complicated than a spot market transaction. AI and PI will now have to sit down and establish how much, for how long, in what size and shape, and at what price. A delivery schedule will also be needed. All of this will likely require the writing of contracts that stipulate the conditions and terms of the relationship.

An environmental variable—certainty/stability versus uncertainty/instability—can now be introduced. If AI knows exactly what the demand for its automobile models will be over a five-year period (certainty/stability), it can order the exact quantity and specification of parts that will be used for that duration. But what if the environment for AI is much more uncertain? Rather than stability, there is a great deal of instability in the demand for automobiles. Further, a variety of models will have to be developed over the five-year period to meet rapidly shifting consumer tastes. Moreover, the kinds of parts needed will also change as innovations or product designs are brought to the manufacturing process. Based on this increasingly complicated and uncertain environment, it is almost impossible for AI to establish, with any level of confidence, a rational long-term contract that can stipulate, in writing, everything that is needed.

This is a case of Simon and March's bounded rationality running headlong into Lawrence and Lorsch's contingency theory. More specifically, *as the environment becomes increasingly uncertain, rationality becomes increasingly bounded.* Bounded rationality is based on the fact that humans can neither have full knowledge about nor anticipate future events. The inability to predict the future in an uncertain environment means that contracts must contain an increasing number of contingency clauses. There is also a greater likelihood that the contract will need to be rewritten or broken because of changing conditions. All of this requires more time, energy, lawyers, meetings, and possible legal actions to enforce or escape from contracts that, over time, are no longer in the interest of one of the two parties. Thus, transaction costs steadily increase.

A second environmental variable that comes into play is what Williamson referred to as "small numbers." In this situation PI is the only, or one of a few, suppliers of the parts needed by AI. This places AI in a highly dependent position vis-à-vis PI. Under this condition, according to Williamson, PI is likely to exercise "opportunism"; that is, PI will take advantage of its relatively stronger bargaining position to extract concessions from AI, increase its price, or try to impose its own terms on the transaction. To summarize, *as the environmental condition of small numbers increases, the likelihood of opportunistic behavior also increases.* Bounded rationality also plays a role here since imperfect information provides the opportunity for one firm to take advantage of another.

The question now posed is: Does it make sense for AI to secure needed resources from other firms, in particular PI, using market transactions? Is there a less costly alternative? Under environmental conditions of uncertainty and small numbers, Williamson believed it is more cost-effective to use hierarchical command rather than market exchange. In our example, this means that AI would buy up PI and make it a part of AI. PI is now a parts-producing unit within the AI corporate organization. Parts and components are now produced as needed, when needed, with the correct specifications and quality requirements. None of these things have to be negotiated contractually. Parts components are produced and delivered on command. This reduces transaction costs and may increase profit.

What Williamson described as a *hierarchy* is more commonly known as *vertical integration.* This is the process of joining sequentially related and interdependent production units and processes under the control of a single organizational authority system. Note that the integrative or hierarchical "solution" is a way to manage the fundamental fact of differentiated but interdependent production units. Williamson saw the cost of market transactions between the different specialized organizations as the problem with differentiation. With the hierarchy, the value of having independent firms specializing in their core competencies is sacrificed for greater integration and control of the different activities. The costs associated with market transactions are replaced by the costs of hierarchical administration. Thus, vertical integration will make sense when the cost of hierarchical administration is less than the cost of market transaction (Teece 1976).

The practice of vertical integration has a long history in American industry. It has been documented most comprehensively in the work of Alfred Chandler (1962). The hypothetical example of the auto industry is more than a coincidence as Chandler devoted considerable space to the case of General Motors. The logic of vertical integration applies well to this industry. Many of the arguments associated with transaction cost theory, advocating the vertically integrated form, were formulated by Chandler. In particular, Chandler identified the problems faced by large firms such as General Motors, which

needed to establish economies of scale. To ensure a steady supply of needed parts and inputs, as well as sufficient marketing and distribution of the final product, the firm would extend ownership control backward and forward. Ownership extended backward to parts suppliers because they could not be relied upon to make the necessary capital investments nor assume the risk required to achieve scale economy. Ownership extended forward because the products, once produced, required a reliable marketing and distribution network if the goods were to be sold. These were some of the primary reasons, according to Chandler, for the rise of the vertically integrated firm.

Chandler is also known for his analysis of the multidivisional structure (multidivision form, or M-Form). The establishment of this organizational structure stems less from vertical than *horizontal integration.* This involves the merging of firms engaged in similar lines of production. In the case of the auto industry, for example, one firm would buy out or merge with several independent car producers. The auto firm could then produce a more diverse number of models. The different models would represent the multiple decentralized divisions existing within the larger centralized hierarchy of a single firm.

Problems with the Vertically Integrated Hierarchy

In each of these cases—vertical and horizontal integration—the organizational strategy is aimed at managing and controlling the interorganizational environment. Both forms are also consistent with the logic of resource dependency theory and the strategy of bridging (Pfeffer and Salancik 1978).

Before considering alternatives to the vertically integrated firm, it is worth examining some of the criticisms of this strategy. One obvious criterion on which to evaluate the hierarchy is cost. Presumably, the rationale for instituting the vertically integrated structure is to reduce costs, specifically transaction costs. Is it conceivable that this arrangement can actually increase transaction costs? Perrow (1986:241–46) identified a number of possibilities. First, it is possible that transaction costs will increase if, after buying out the supplier, you now have to establish market transactions and contracts with the firms that supplied the supplier. In the example of AI and PI, PI is likely to have an assortment of organizations upon which it depended for various resources. These transactions must now be handled by AI. The net number of market transactions might therefore increase.

Second, suppose AI experiences a sharp downturn in demand and no longer needs to produce the PI parts since it is unable to sell its automobiles. In the past, PI would have to bear the costs of a termination of production and idle facilities in the parts sector. Under the hierarchy, AI is now saddled with this unused capacity and must bear the cost of slack demand. In both of these examples, the vertically integrated solution increases costs to the firm.

Third, it is conceivable that PI will operate less efficiently under the hierarchical arrangement. PI is no longer in a competitive environment which might have stimulated efficiency and innovation. As part of the vertically integrated structure, PI operates with what is essentially a guaranteed market. Further, the managerial and production workers in the PI unit may have a weaker commitment and attachment as a result of exercising less autonomy and discretion over the direction of the firm.

Finally, a more general criticism of the hierarchical solution is the problem of administrative costs. As an increasing number of pieces are added to the organization, management must integrate them structurally and socially. Administrative coordination of the new production or distribution units requires management, supervision, coordination, and planning. Workers in the new production unit may also require training, socialization, and cultural indoctrination. Labor costs also increase. All of this adds costs—in time, personnel, and administration.

Taken together, these critical observations indicate that vertical integration is not an unequivocally cost-reducing strategy. Like a great deal of management strategy, it poses the familiar dilemma of trade-offs. Does the reduction in transaction costs from internalizing transactions compensate for the increase in new transaction and administrative costs? Ironically, this dilemma is compounded by the very informational limits on human rationality that suggest the hierarchy in the first place—bounded rationality. It is often impossible to anticipate the costs of hierarchy. Future conditions can potentially negate the intended gains.

Between Market and Hierarchy: Theoretical Rationales

Socially Embedded Economic Action

Several other critical analyses of the market versus hierarchy, or transaction cost, model also suggest a fundamentally different way of posing the problem. The first was advanced by the sociologist Mark Granovetter (1985) in his well-known piece, "Economic Actions and Social Structure: The Problem of Embeddedness." Granovetter argued that Williamson's model, and the choice between market or hierarchy, is based on empirically inaccurate views of behavior taken from sociological and economic theory. These assumptions about human motives and behavior provide the rationale for the hierarchical solution, but are they accurate or warranted?

At one end of the spectrum, economic theory assumes that humans are self-interested and profit-maximizing creatures. Accordingly, people and firms enter and transact in markets with the objective of getting the best possible deal

by any means possible. In this environment, suppliers and distributors are driven by selfish interests. They will take advantage of any opportunity to maximize economic gains. The parts supplier will jack up prices if it believes it is the only source of parts. The parts supplier may also produce cheap and low-quality parts if it believes you will not know the difference. A distributor is driven by the same motives. It might offer you a lower price for your finished goods if it believes you have no alternative outlet. The distributor might also try to cut costs in marketing and promoting your products. In this kind of market environment, there can be little trust. All kinds of legal contractual mechanisms will have to be established to ensure that suppliers and distributors meet their obligations. However, contracts cannot specify every possible contingency and they cannot provide an ironclad guarantee that firms will act in your best interests.

Granovetter labeled this the *undersocialized conception of economic behavior.* This conception assumes that humans and organizations will cheat, lie, steal, and engage in opportunistic behaviors in the pursuit of material gain. It also assumes that economic actors have not been "socialized" in the sense of internalizing moral, ethical, and social values that would constrain such selfish behavior. If a firm subscribes to this undersocialized view, it will be driven to establish all kinds of contractual safeguards to ensure that suppliers and distributors meet their obligations. As a consequence, transaction costs will rise and market transactions will appear increasingly unattractive.

However, the vertically integrated solution is also based, according to Granovetter, on an equally fallacious assumption. He labeled this the *oversocialized conception of economic behavior.* This conception assumes that organizations can control and program all human activities that fall within the legal boundaries of the firm. He found this to be equally problematic. The extreme assumptions of undersocialized actors in markets and oversocialized actors in the vertically integrated firm create the appearance of a solution in hierarchies. People and organizations cannot be trusted to do the right thing in markets, so they must be controlled and socialized by vertically integrated authority.

Granovetter argued against both the under- and oversocialized conceptions of behavior. His alternative approach is captured by the concept of *embeddedness.* This means that the behavior of people and their organizations is constrained, shaped, and influenced by social relationships that can generate norms of obligation, trust, and reciprocity. In this view economic behavior lies more realistically somewhere between the undersocialized market and the oversocialized hierarchy. While Granovetter viewed humans as having the freedom and capacity to act and make choices (closer to the market but further from the hierarchy), these actions are always embedded in social relationships, norms, and institutions (closer to the hierarchy but further from the market) that constrain purely self-interested behavior. All of this suggests that hierarchies are neither required nor a solution because market

behavior is always socially constrained and hierarchies are incapable of exerting complete effective control. Furthermore, in the real world, relationships between firms are not governed by pure opportunism nor do they require hierarchical coordination.

Dynamic Transaction Costs

A second approach to the markets and hierarchies questions also suggests a third path toward managing the social division of labor. Richard Langlois and Paul Robertson (1995) advanced what they called a "dynamic theory of the boundaries of the firm." It is dynamic and less static than the transaction-cost approach because it assumes that degrees of uncertainty and bounded rationality vary over time. If this is true, then the arguments supporting hierarchy and vertical integration may also be less compelling at one point in time than another.

Much of Langlois and Robertson's theory rests on the notion that hierarchy is based largely on insufficient information and knowledge about other firms. Lack of information about the motives, quality of goods and services, and long-term reliability of other firms encourages the vertically integrated structure. It is a way to control uncertainty and ensure the integration of production in the absence of confidence in one's trading partners (the suppliers and distributors).

Langlois and Robertson made the important distinction between ownership integration and coordination integration. Generally, *ownership integration* is the assumed outcome of hierarchy. One firm buys up another firm, owns its assets, and presumably integrates its production activity into its own. *Coordination integration* implies coordinating the activities of legally independent entities. Langlois and Robertson correctly emphasized that ownership does not automatically create tight coordination, cooperation, or structural and social integration. It is conceivable that higher levels of collaboration and cooperation can exist between two legally independent firms. This suggests that control and certainty can be established without resorting to a vertically integrated arrangement.

Langlois and Robertson based the likelihood of the nonhierarchical outcome on the information gathering and learning process. They wrote:

> [O]ne cannot have a complete theory of the boundaries of the firm without considering the process of learning in firms and markets. The reigning transaction-cost theories of vertical integration provide illuminating snapshots of possible responses to momentary situations but they do not place those responses in the context of the passage of time (1995:30).

Over time, organizations are able to learn about other firms, develop relationships, gain confidence and, in turn, reduce transaction costs associated with incomplete information. Consistent with the logic of their model, Langlois and

Robertson referred to *dynamic transaction costs* as the "costs of persuading, negotiating, coordinating, and teaching outside suppliers" (p. 35). These costs can decrease substantially over time and therefore reach the point in which a "market" transaction is more effective and potentially less costly than vertical integration. As knowledge and information spread, and as uncertainty is reduced, market-based transactions become more attractive. This suggests that, over the long run, vertical disintegration may become an increasingly common tendency (Langlois and Robertson 1995:43).

Granovetter and Langlois and Robertson offered interesting arguments that would lead to expectations of alternatives to pure market or pure hierarchical arrangements between organizations. For Granovetter, the emphasis is more sociological, focusing on trust and obligation in social relationships. For Langlois and Robertson, the analysis is grounded in a more microeconomic approach to information and decision making. However, the arguments are not mutually exclusive, and both are likely to play a role in existing and emerging interorganizational configurations.

To Vertically Disintegrate or Not to Vertically Disintegrate: GM and Delphi

The calculus and trade-offs involved in the organizational decision to vertically integrate or disintegrate are nicely posed in Malcolm Salter's (1996) analysis of General Motors and its parts division, Delphi Automotive Systems. GM has a long history, chronicled in the work of Chandler (1962) and others (Sloan 1972), of vertical integration and the acquisition of upstream parts and components producers. At the time of Salter's writing, Delphi was a wholly owned subsidiary of GM producing a variety of automotive components—chassis, interior and lighting, electric, energy and engine management, steering, and thermal. With more than 170,000 employees in 31 countries, and over $26 billion in sales, Delphi represented a huge and critical unit in the GM production chain. The high level and long-term dependence on parts and components would suggest the appropriateness of this vertically integrated (or hierarchical) approach. On the other hand, the trend toward—and rationale driving—the lean and flexible approach adopted by many of GM's more successful competitors might encourage spinning off (or disintegrating) the Delphi operation. The options facing GM at that time related directly to several larger theoretical questions which Salter (1996:3) posed.

> To what extent is vertical ownership superior to external contracting as a way of governing exchanges between suppliers and end-product manufacturers?

What competitive advantage does vertical ownership offer that external contracting with suppliers does not?

What forces tend to encourage vertically integrated firms to contemplate divesting formerly owned operations?

What barriers exist to changing the ownership and governance of formerly integrated operations, and how can these barriers be overcome?

In addressing these questions, Salter introduced some additional factors and considerations that have not yet been discussed here. The first involves *scale advantages.* If an integrated supplier, by virtue of the huge and constant demand for its parts, can achieve significant cost savings, the end-product manufacturer, in this case GM, might be hesitant to allow these scale economies to be shared with competing auto firms. Thus, the parts unit would be retained within the administrative hierarchy of the larger firm. On the other hand, if GM has a significant number of other parts producers of comparable size and scale to which it might turn for components, the case for divesting the parts unit would be strengthened. The number of large-scale parts producers has increased, while the market for GM products has decreased. The GM product line has also become increasingly fragmented. Thus the advantages associated with scale economy have diminished. This led Salter to conclude that the scale economy argument does not support retaining the vertically integrated arrangement with Delphi.

A second factor is the importance of *coordination and technology transfer.* If there are special coordinating processes required between the supplier and manufacturer, or distinct technology and knowledge sharing, a tight, ownership-integrated linkage may be required. On the other hand, if coordination and information sharing can be accomplished through some intermediate arrangement (between market and hierarchy), the need for vertical integration is weakened. Salter argued that coordination of information and technology is not only established between GM's competitors and its suppliers *without vertical integration,* but that Delphi itself has established such relationships with non-GM manufacturers. Thus, integration and coordination does not require formal hierarchical ownership.

A third consideration in deciding about vertical disintegration is *switching costs* and *"hold up."* Does the supplier produce such a manufacturer-specific asset that the manufacturer would be unable to locate an alternative supplier, if necessary? How great would be the costs of switching to an alternative supplier? Would switching costs be so significant that the original supplier can leverage its privileged position, exercise opportunism, and increase selling prices? These considerations are directly related to the problem of "small numbers" discussed previously. On this criteria, Salter also believed that the evidence indicates an increasing number of high-quality alternative suppliers who could produce to GM specifications. Thus, the need to own and control the supplier is diminished.

A fourth and final factor we can consider is *proprietary knowledge* and *end-product differentiation.* If the supplier controls special proprietary knowledge about a particular set of components or component systems, and these effectively differentiate the final product from that of the competition, vertical ownership of the supplier would be strategically advantageous. On the other hand, if the components and their features are widely available from other suppliers, these component systems will not serve to differentiate the end product or translate into any major market advantage; again, there will be less need for formal ownership and control.

In the case of Delphi, Salter saw a number of minor advantages in Delphi's modular systems, such as cockpits and doors, that arrive as fully assembled units. The supply of these units reduces manufacturing assembly time. However, this advantage is not entirely unique to Delphi and, therefore, it can be accessed or nurtured through other suppliers. This factor, considered alongside the others, led Salter to conclude that

> [T]he limited opportunities for end-product differentiation do not seem to outweigh the substantial financial gains of divestiture, and the economic case for reversing GM's long-standing vertical ownership of a broad array of component suppliers looks stronger than ever before. Delphi is another prime candidate for divestiture and should be considered such by GM's most senior strategists (1996:33).

In 1996 these were prescient words. Two years later, GM officially announced that it would be spinning off Delphi Automotive Systems Corporation as an independent company effective January 1, 1999. This represented a "dramatic shift" from the legacy of vertical integration. GM executives indicated that the move would make it easier to develop relationships with other automakers that had been reluctant to work with a wholly owned GM parts supplier. The spin-off would also make it easier for GM to use independent and potentially lower-cost suppliers for parts and components.

Another significant factor that came into play in the GM decision was GM's relationship with the United Auto Workers (UAW). The UAW strongly opposed the divestiture of Delphi because Delphi workers were represented under the general collective bargaining agreement with GM and were paid the same wages as automobile assembly plant workers. The UAW viewed the spin-off as part of a larger effort by GM to outsource a greater proportion of parts production to nonunion suppliers. There was also fear that Delphi, as an independent firm, would close several of its U.S. plants that it considers uncompetitive or unprofitable. In its future negotiations with GM, the UAW will request that GM insist on UAW-based standards in its continued contractual agreements with Delphi suppliers. Since the formal breakup, Delphi has secured $4 billion in new contracts with GM as well as $2 billion with non-GM firms.

Vertical Disintegration and Alternative Arrangements

The theoretical arguments for alternatives to the market or hierarchical relationship have been given a major nudge by real-world events. As documented in Chapter 6, organizations are moving in the direction of leanness. This suggests a trend from hierarchical organization and toward vertical disintegration. In this chapter, our interest lies in the impact of this trend on the larger external environment of the organization and subsequent interorganizational relations. Several issues shall be considered. First, why the shift toward leanness? Second, what kind of interorganizational form will result from the process of vertical disintegration?

Why Disintegrate?

The first question has already been considered in some detail. It begins with the argument that the vertically integrated, Fordist-style form, whatever its past or static cost advantages, is today a structural liability. It is a highly rigid and inflexible arrangement in what has become a highly uncertain and turbulent economic environment.

There is an irony here. The environmental characteristic that at one time supported vertical integration—uncertainty—is now used to argue for vertical *dis*integration. Are organizational theorists confused, or has something changed? Probably both. But what may have changed most dramatically is the type of uncertainty, or dynamism, in the contemporary environment. It rewards *economies of scope* as much as, if not more than, *economies of scale.* The ability to produce a wide range of different products for diverse markets and to innovate rapidly in product designs and process technology are hindered by the vertically integrated structure. The coordination of, and costs sunk in, production units becomes less advantageous when designs, models, markets, and production techniques are changing rapidly. For these reasons, less vertically integrated structures emerge as corporations shed units and divisions, and focus on core competencies. However, vertical disintegration comes with a greater number of externalized transactions that must be established. Does this return us to the market-based transaction approach or is there an alternative?

Embedded Networks

Most theorists believe many industrial organizations now occupy a middle ground between markets and hierarchies that will be referred to as *embedded networks* (Gereffi and Hamilton 1996). This term connotes aspects of interorganizational relations that defy the market-hierarchy duality. Network

relations imply some structural interdependence; embeddedness implies that the relations are situated in a social normative context. More specifically, Gary Gereffi and Gary Hamilton (1996:24-25) defined embedded networks as

> the patterns of relationships among economic participants; some of these may be heads of firms, others owners of capital, others possessors of labor, and yet others skilled in the use of special technologies . . . participants interrelate in ways that are, in addition to their economic content, patterned by relations that have a societal content as well. The content may be legal, sociological, political, or, more likely, some combination of these.

An embedded network is the most general way to describe the myriad interorganizational arrangements that defy the market-hierarchy duality and which have become increasingly common. Embedded networks can include temporary alliances, arrangements, or agreements designed to combine the core competencies and capacities of different firms for the purpose of research, design, and production for a particular market. The network is characterized by cooperation, collaboration, and the sharing of information. Thus, it is unlike a pure market transaction.

On the other hand, the firms participating in the network are legally independent production units. The network strategy is a particularly appropriate adaptation to the demand for the rapid deployment of economic resources to meet changing environmental conditions. Firms can produce for and participate in a wide range of markets—enhancing economies of scope—without the enormous investment that would be required to establish all the necessary forms of production and expertise in a single corporation. The network reduces the problem of sunk costs in capital, inventory, and labor.

Competitive Advantages of the Network Form

Recall from Chapter 6 the comparison between the "just-in-case" and "just-in-time " approaches. Under the old just-in-case approach, firms would integrate vertically to control resources "just-in-case" they were needed or difficult to obtain. Under the network system, resources are accessed and brought together "just-in-time" to respond to particular market opportunities. After the opportunities have been exploited, the network may dissolve with individual members forming new networks or later reforming old networks to pursue a new project.

In an aptly titled article, "Neither Market nor Hierarchy," Walter Powell (1990) argued that networks represent a "distinct form of coordinating activity" that can be compared with the market and hierarchy arrangements. A comparison of Powell's central elements is shown in Table 10–1. Most generally, the network combines the flexibility of independent nonvertically

TABLE 10–1 Markets, Hierarchies, and Networks

Features	Organizational Form		
	Market	*Hierarchy*	*Network*
Normative basis	Contract-property rights	Employment relationship	Complementary strengths
Means of communication	Prices	Routines	Relational
Methods of conflict resolution	Haggling—legal contractual enforcement	Administrative fiat	Norm of reciprocity—reputational concerns
Degree of flexibility	High	Low	Medium
Amount of commitment among parties	Low	Medium to high	Medium to high
Tone or climate	Precision and/or suspicion	Formal, bureaucratic	Open-ended, mutually beneficial
Actor preferences or choices	Independent	Dependent	Interdependent

Source: Table 1, in Walter Powell, "Neither Market nor Hierarchy: Network Forms of Organization," in Barry M. Staw and Larry L. Cummings, eds., *Research in Organizational Behavior* (Greenwich, CT: JAI Press, 1990), p. 300.

integrated firms in a market with the tighter connections found in hierarchies. As Powell (1990:303) explained it:

> 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.

Manuel Castells (1996) offered another version of this argument. He argued that the difficulty in breaking into new markets, and keeping up with technological changes, has encouraged greater cooperation and networking. It allows the sharing of costs and risks, and a greater capacity to stay technologically current.

> In other words, through the interaction between organizational crisis and change and new informational technologies a new organizational form has emerged as characteristic of the information/global economy: the *network enterprise* (Castells 1996:168–71).

In Castells's analysis, information technologies play a key role. They facilitate the rapid transmission of information between firms—through computer networks and telecommunication systems—and permit the integration of differentiated production units. One of the key attributes of the successful network is its *connectedness*—"its structural ability to facilitate noise-free

communication between its components"—and *consistency*—"sharing of interests between the network's goals and the goals of its components" (Castells 1996:171). Connectedness and consistency correspond to our concepts of structural and social integration, respectively. Connectedness implies communication and coordination while consistency implies shared goals and objectives.

Connectedness and consistency also facilitate another advantage of networks and alliances: the exchange of information and knowledge. Some forms of knowledge can be accessed without necessarily creating an alliance with other firms. This is *migratory knowledge* (Badaracco 1991). "It can move very quickly and easily because it is encapsulated in formulas, designs, manuals, or books, or in pieces of machinery. If an individual or organization with the appropriate capabilities gets the formula, the book, the manual, or the machine, it can get the knowledge" (1991:9).

Other forms of knowledge, more accurately described as *embedded knowledge,* "resides in relationships, usually complex social relationships. A team, a department, or a company sometimes 'knows' things that none of its individual members know, and some of its knowledge cannot be fully articulated" (1991:10).

Embedded knowledge cannot be easily codified or formalized in written documentation. It exists in processes and emerges synergistically. If firms want to gain access to this knowledge, they must form more than a simple transaction, or product link, and instead establish what Joseph Badaracco termed a *knowledge link.* These are "alliances through which a company sought to learn or jointly create new knowledge and capabilities . . . Many of these alliances reflect the special character of embedded knowledge . . . For one organization to acquire knowledge embedded in the routines of another, it must form a complex, intimate relationship with it" (1991:12). Thus, in Badaracco's formulation, strategic alliances are based on the desire to establish knowledge links in order to gain access to embedded forms of knowledge. Or, as Powell (1990:304) put it, "The open-ended, relational features of networks . . . greatly enhance the ability to transmit and learn new knowledge and skills."

In considering alliances, the analysis of interorganizational relations can be extended to include not only interdependent firms connected in a production chain but also alliances between competing firms. These are becoming increasingly common. For example, IBM and Toshiba compete in the laptop computer market, but they also have formed a strategic alliance to develop and produce a key component of this product—the liquid crystal display (LCD) monitors. Think of this as a *horizontal alliance* or a form of horizontal cooperation. David Teece (1992:12–13) discussed the rationale for this arrangement:

> [I]nnovation and commercialization of new products and processes are often high cost activities. The scale and scope of assets needed will often lie beyond the capabilities of a single firm. This cooperation—both horizontal and vertical—may be the only viable means for moving forward. In addition, cooperation will reduce

> wasteful duplicate expenditures on research and development. Innovation also entails significant risk. . . Indeed, when risk is particularly high because the technology being pursued is both expensive and underdeveloped, cooperation may be the only way that firms will undertake the needed effort.

Teece (1992) has been a strident advocate for strategic alliances that advance innovation and technological progress (Jorde and Teece 1990). It is worth noting that political-economic environmental forces influence the likelihood that these cooperative corporate arrangements will occur. Most notable are the legal policies that either encourage or restrict the formation of alliances between firms in the same industry. Teece argued that "antitrust policy in the United States is likely to remain a barrier to innovation because it has the capacity to stifle beneficial forms of interfirm cooperation" (1992:23). This is one of the central environmental factors in the U.S. business system that tends to promote decentralized relationships among firms in comparison to other industrialized nations (Whitley 1994).

Alliance Capitalism: The Rise and Demise of the Keiretsu

Highly successful organizational arrangements tend to serve as models for other organizations. The process of mimicry and replication has played a significant role in the rise of network and alliance interorganizational structures. Again, as was the case with various *intra*organizational strategies such as lean production and quality circles, the Japanese industrial organization has served as a model.

Michael Gerlach's (1992) study of Japanese business enterprise identified a distinct form of capitalism based on the particular interorganizational arrangement employed by the largest Japanese corporations. He used the term *alliance capitalism* to describe the institutional pattern of relationships between corporations and other organizational actors. At the center of this capitalist system is the *keiretsu,* an intercorporate alliance characterized by "institutionalized relationships among firms based on localized networks of dense transactions, a stable framework for exchange, and patterns of periodic collective action" (Gerlach 1992:3).

The Japanese keiretsu possess several distinct traits. First, the alliance enterprises are connected by *affiliational ties* that promote preferential exchange. However, there is no singular chain of command as one might find in a hierarchy or vertically integrated firm. Relationships between affiliated organizations within the keiretsu exist in the space between the market and the hierarchy.

Second, the relationship between firms has developed over a long period. This engenders informal but strong mutual normative obligations that facilitate trust, reciprocity, and continuous interaction. High trust and shared norms

reduce the need for contractual compliance and enforcement and, in turn, transaction costs. The relationship between firms in this scenario fits the model of the "normative clan" (Ouchi 1980). It is characterized by informal relations, familial-like interactions, a common culture, trust and loyalty, obligation and responsibility, and a moral dimension.

Third, the relationships between the member firms of the keiretsu are characterized by *multiplexity.* Interorganizational linkages extend beyond production-related transactions and include "overlapping transactions" in the form of equity investments and personnel interlocks. Equity investment takes the form of *cross-shareholding* (or interlocking shares). Each company within the keiretsu is a shareholder and debt holder of other firms in the group. This arrangement is viewed as advantageous because it solidifies common interest, takes pressure off firms to achieve short-term profit at the expense of long-term investment, and reduces the likelihood of a hostile takeover. This serves to further strengthen and consolidate economic ties among the firms.

Fourth, the firms in the keiretsu make up an *extended network* comprised of a family of affiliated firms that share information and equity capital.

Last, the interorganizational alliance is infused with *symbolic signification* based upon a common culture, organizational mission, and set of objectives that further preclude the need for legal contractual arrangements. According to Gerlach, these distinctive features of the keiretsu have contributed to the economic success of the Japanese organization and larger economy.

The best known Japanese keiretsu is Mitsubishi (see Figure 10-1). As one of the largest industrial groups in the world, it reported revenue of $115 billion in 1999. The core of Mitsubishi lies in its 36 factories and 15 research facilities. Approximately one-third of the firms engage in "process manufacturing"—the production of materials such as cement, chemicals, plastics, and synthetic fibers—that supply the manufacturing units. Another third are devoted to "fabrication manufacturing"—the production of products such as automobiles, computers, and air conditioners. The remaining organizational units are engaged in various "circulation activities" such as financial management, banking and investing, insurance, and marketing.

Mitsubishi's organizational arrangement was described in *Business Week.*

> The Mitsubishi group is not a single corporate entity with a central "brain." The cross-shareholdings, interlocking directorates, joint-ventures, and long-term business relationships—all underpinned by common educational and historical links—create a family of companies that do not depend on formal controls, but rather recognize their mutual interests . . . In a keiretsu no single company predominates. Since one core member of a keiretsu rarely owns more than 10 percent of another, it doesn't do business with another unless it makes economic sense. . . But the financial cross-holdings among companies in a keiretsu do weave a dense

FIGURE 10–1

The Mitsubishi Group

Mitsubishi Paper Mills 32%	Mitsubishi Estate 25%
Mitsubishi Kasei 23%	Mitsubishi Oil 41%
Mitsubishi Plastic 57%	Kirin Brewery 19%
Mitsubishi Petrochemical 37%	Mitsubishi Warehouse 40%
Mitsubishi Gas Chemical 24%	Asahi Glass 28%
Mitsubishi Steel Manuf. 38%	Tokio Insurance 24%
Mitsubishi Cable 48%	Mitsubishi Rayon 25%
Mitsubishi Metal 21%	Mitsubishi Electric 17%
Mitsubishi Aluminum 100%	Mitsubishi Trust and Banking 28%
Mitsubishi Mining & Cement 37%	Mitsubishi Motors 55%
Mitsubishi Construction 100%	Nikon Corp. 27%
Nippon Yusen 25%	Mitsubishi Kakoki 37%

Note: Percentages refer to shares of each company held by other members of the group.
Source: *Business Week,* September 24, 1990, p. 99.

> fabric of relationships that can be exploited when mutually beneficial. In effect, companies in the keiretsu enjoy a family safety net that encourages long-term investment and high-tech risk taking. ("Mighty Mitsubishi Is on the Move." *Business Week,* September 24, 1990, p. 98.)

One of the major aspects of the keiretsu alliance is the privileged position of member firms in the supply of parts and components to the manufacturing units. This is not only the case within Japan but also for Japanese transplants. For example, Mitsubishi's Diamond-Star Motors, located in Illinois, receives the air-conditioning units from Mitsubishi Heavy Industries, starters from Mitsubishi Electric, springs from Mitsubishi Steel, and ball bearings from its affiliated firm of United Globe Nippon. Many of these suppliers have set up facilities in the United States to serve the just-in-time needs of the manufacturing unit.

Mitsubishi is an example of a *horizontal* or *intermarket keiretsu* that manufactures a wide range of functionally unrelated products and materials. *Vertical keiretsu,* such as Toyota, include a network of suppliers and distributors that exist in a hierarchical relationship with an industry-specific manufacturing unit. Several vertical keiretsu can exist within a single horizontal keiretsu.

In 1990, *Business Week* wrote of "mighty Mitsubishi" as an "international dynamo" and the keiretsu as "a distinctively Japanese form of capitalism with

built-in advantages over independent Western companies" based on the characteristics cited above. Eight years later, when Japan experienced its worst recession in the post–World War II period, the keiretsu was viewed as both an organizational liability and a source of economic crisis. The tight and familiar relationship among keiretsu firms is now deemed problematic: "The web of personal connections in politics is reproduced in corporate practices. In the notorious keiretsu system of cross-shareholdings, related companies hold shares in each other, propping up stock values. Banks belonging to the keiretsu keep lending to weak members" (1998a). A 1998 report on Japan's economic crisis listed the keiretsu as one of Japan's "crumbling pillars":

> They used to provide cheap capital, steady management, reliable partners, and friendly shareholders for big Japanese companies. But the system has dulled Japan Inc.'s competitiveness and created unsustainable levels of debt. ("Japan: Wanted: A New Economy." *Business Week,* November 30, 1998, p. 66.)

The system of cross-shareholding that provided low-cost capital for long-term projects is being abandoned to free up funds. The chairman of Mitsubishi now describes the shareholding arrangements as a "waste of precious capital." Keiretsu members are also trying to break out of agreements with other alliance partners.

One especially dramatic indication of the erosion of the keiretsu-style alliance can be seen in the rise of outsourcing with non-keiretsu companies. In 1998 Mitsubishi announced it was outsourcing its U.S. cellular phone production to a California-based firm with production facilities in Georgia.

The tightening financial pressure on Japanese firms has also prompted a greater openness to external partnerships. A growing number of U.S. firms are forging alliances with Japanese keiretsu. Toshiba and IBM are sharing the cost of a memory chip facility; GM's Delphi parts division supplies components to Toyota; Mitsubishi and Caterpillar are jointly designing excavating equipment (" Keiretsu Connections," *Business Week,* July 22, 1996, p. 52). These are additional examples of both vertical and horizontal alliances.

These newly formed strategic partnerships suggest that the alliance structure remains a viable interorganizational form. The keiretsu is just one version of an alliance configuration, but it may be an insufficiently flexible arrangement because of its long-term obligations and commitments within the keiretsu. The insular keiretsu structure, protected from market pressures, may have also discouraged efforts to contain costs. These are some of the now widely noted unintended negative consequences of the keiretsu system. However, one must be careful not to overgeneralize from the temporary Japanese economy crisis. The keiretsu is likely to reemerge as a global organizational model, albeit in a somewhat modified form.

The Spatial Dimension

Thus far, the discussion of differentiation and integration has been confined to the relationships among firms and production units; that is, what is the best interorganizational structure? Should interdependent production units exchange in markets, combine into a vertically integrated hierarchy, or form a network alliance? Much of the criteria on which to base a decision rests with the relative cost advantages of the various strategies.

Bringing Geography Back

However, cost advantages and disadvantages are due not only to the *structural configuration* of production units but also to the *spatial configuration.* This refers to the geographic location of economic activities that are sequentially or mutually interdependent. Should they be concentrated in close proximity or dispersed to take advantage of geographic variations in costs? A familiar tension reasserts itself at this level as well. How will geographically (rather than structurally or administratively) differentiated units be integrated into a productive, efficient, and cost-effective process?

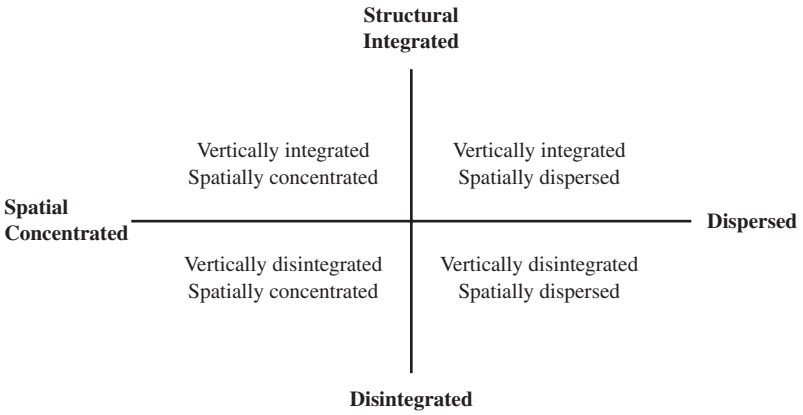
Historically there has been a desire to concentrate related and associated organizational activities spatially. This would address two major considerations: transportation costs and communication. The movement of physical components of a production process from one location to another will be less expensive if the different activities are in close proximity. Similarly, the integration and coordination of activities will be easier if the organizations are able to interact and communicate on a regular basis.

Each of these factors produces tendencies toward what economic geographers describe as *agglomeration*—the geographic concentration of economic activity. This widely cited phenomenon involves not only the clustering of firms connected by a single production process, but also firms that may provide some service (e.g., financial information) or retailers attempting to gain access to the income stream generated by the primary economic sector. Agglomeration also can include firms interested in sharing knowledge and ideas. The concentration of human population in urban areas is a by-product of this agglomeration process.

At the other end of the spectrum is the geographic *dispersal* of economic activity. Related production activities may take place in different geographic areas because some of the activities depend on an immobile natural resource (e.g., iron ore), attempt to exploit particular political-economic advantages that can affect cost (e.g., labor costs and the business climate), or develop in a remote location for historically accidental reasons (e.g., the firm's owners just happened to live in Maine). Recent trends suggest a greater overall dispersal of economic activity driven primarily by the political-economic advantages but also facilitated by

FIGURE 10–2

Spatial and structural organizational configurations



emerging information technologies (Castells 1996). This process has been variously described as disagglomeration, deterritorialization, or globalization.

In cross-classifying the spatial and structural configuration of organizations, four possible interorganizational arrangements emerge (see Figure 10–2). The upper left-hand quadrant combines a vertically integrated structure with geographically concentrated production activity. The upper right-hand quadrant describes firms that retain hierarchical control over production units but disperse the units across geographic space. The lower right-hand quadrant illustrates vertical disintegration combined with geographic dispersion while the lower left-hand quadrant shows vertically disintegrated production that is geographically concentrated. Each of these four structural-spatial combinations will be considered.

Vertically Integrated and Spatially Concentrated

Fordism was characterized as a vertically integrated structure that also sought to geographically concentrate sequentially interdependent activities. One notable example is Ford's River Rouge industrial complex. In 1915 Henry Ford acquired a 2,000-acre site on the Rouge River in Dearborn, Michigan. This site became the most fully integrated automobile manufacturing facility in the world. Every production unit required in the production of a car was located on the site, including a blast furnace, an open hearth mill, a steel rolling plant, a glass plant, a devoted power plant, and the assembly line. It was once described as "the greatest industrial domain in the world."

The fully integrated production system was designed to ensure that all aspects of the manufacturing process would fit together smoothly, including

such minute details as screw threads and nut and bolt sizes. The objective was to eliminate the wasted time and excess cost due to incompatible components, defects, and rework. Total control and integration of the upstream and downstream production and distribution requirements were a means to accomplish this objective. Spatial proximity also eliminated transportation costs and ensured direct and immediate communication between the production units.

Prior to the construction of the River Rouge complex, the Detroit region had been established as a major steel producer, supplying steel not just to automakers but also to shipbuilders and stove makers. As a hub of steel production with access to the Great Lakes transportation system, the region generated powerful agglomeration effects.

Vertically Integrated and Geographically Dispersed

Why Disperse Geographically? What kind of logic would encourage a more dispersed or "disagglomerated" configuration of related economic activities? We can begin with a simple example taken from economic geography (Clark 1981). Suppose we have a vertically integrated computer company that is engaged in two primary activities—(1) research and development of new products and software, and (2) the manufacturing and assembly of personal computers. Because the firm owners were educated at the Massachusetts Institute of Technology (MIT), they decide to start their business which they called COMPTECH close to their college stamping grounds in the Boston area. COMPTECH'S central office, research and development operations, and assembly facility are all located in an organizational complex just outside Boston. The economic activities are spatially concentrated. Long-term strategic planning, however, suggests these activities should be geographically dispersed. What is the rationale for this proposal?

First, and most important, the two primary activities of COMPTECH have very different organizational and labor market requirements. Research and development employs highly educated and technically skilled engineering and computer science workers. These employees exist in relatively small numbers given the scarcity of credentials and skills. However, they are most likely to be found, and to live in greater numbers, in regions that have major technical research universities, such as Boston with MIT. The Boston area also possesses the lifestyle amenities that would attract qualified personnel from other locations.

The computer assembly operation, on the other hand, might be located most cost effectively in a different geographical area. There is no shortage of the semiskilled labor required for the assembly operation. The skills are not scarce, nor does the labor force exist in "small numbers." Therefore, it might be more economical to find a location where supply greatly exceeds the demand.

Retaining COMPTECH'S assembly unit in the Boston metropolitan area has a number of additional disadvantages. First, the cost of living is higher in metropolitan areas, which tends to push up wage costs. Second, the high salaries, generous benefits, and job security provided to the research and development employees may influence the demands made by the assembly workers. This "*demonstration effect,*" often reported in regional economies, results in efforts and negotiations by lower-paid workers to obtain the levels of compensation provided to more highly skilled employees. The demonstration effect is strengthened when the different groups of workers exist in geographic proximity to one another. A third potential disadvantage, from the perspective of production costs, is the strength of labor unions and the tradition of labor militancy in Massachusetts.

For each of these reasons, COMPTECH decides to relocate the assembly operation to North Carolina. This geographic location may possess several advantages from the perspective of COMPTECH'S owners. Labor is cheaper, the cost of living is lower, the demonstration effect is eliminated, unions are weak or nonexistent, and there is no legacy of worker militancy. The end result of the geographic shifting of the assembly operation is a *spatial division of labor* (Massey 1984) within a single firm. In this particular case, the geographic distribution of economic activities is based on a calculation of labor-related cost differences in research and development compared with manufacturing activities.

More generally, this example recalls an earlier discussion of the political-economic environment and the spatial variation in social structures of accumulation (Chapter 9). These spatial variations in standards of living, regulations, legal requirements, and social class relations can influence the geographic configuration of the social division of labor within and among organizations.

Globalization. There is no reason to limit the spatial option to the national level. Even wider variations and cost advantages exist globally. The global distribution of production activities is a further instance of spatial dispersion. While production has always taken place in different parts of the globe, the globalization of today is presumably a qualitatively distinct interorganizational development. Peter Dicken (1992:1) distinguished between *internationalization* and *globalization:*

> [E]conomic activity is becoming not only more internationalized but . . . it is becoming increasingly globalized . . ."Internationalization" refers simply to the increasing geographical spread of economic activities across national boundaries—as such it is not a new phenomena. "Globalization" of economic activity is qualitatively different. It is a more advanced and complex form of internationalization which implies a degree of *functional integration between internationally dispersed economic activities* (emphasis added).

Dicken added that the traditional patterns of exchange between industrialized and less developed nations, such as the exchange of raw materials and agricultural products for manufactured goods, have given way to a "highly complex, kaleidoscopic structure involving the *fragmentation* of many production processes and their *geographical location* on a global scale in ways which slice through national boundaries" (1992:4). Or, as Philip McMichael (1996:90–91) explained, "Instead of countries specializing in an export sector (manufacturing or agriculture), production sites in countries specialize in a constituent part of a production process spread across several countries." The capacity for spatial dispersion is enhanced today because "shifts in technology, transportation, and communication are creating a world where anything can be made anywhere on the face of the earth" (Thurow 1996:9).

All of this suggests a social division of labor that is increasingly spatially differentiated beyond national borders. If we return to the logic of the upper right-hand quadrant of Figure 10–2 and extend geographic horizons across the globe, we can consider some organizational techniques employed by transnational corporations.

The first, *global Fordism,* indicates a vertically integrated ownership structure with facilities and factories distributed in different parts of the globe. The shift from the upper left-hand to the upper right-hand quadrant corresponds to a chronological movement from a vertically integrated firm that is spatially concentrated to one that is spatially dispersed across national boundaries. The vertically integrated configuration, coupled with Fordist production techniques but situated in a location aimed at cost advantages, conforms with the early notions of a *spatial fix* (Harvey 1982). This strategy was used by Fordist-style firms in the 1970s and 1980s to contain costs and reestablish shrinking profit rates by moving facilities and factories to low-wage production sites. This has already been described as a "low road" organizational strategy but one that does *not* entail significant innovations in productivity enhancements or production processes. Instead, this is driven purely by cost considerations and the search for cheap, unregulated, social structures of accumulation.

The global Fordist strategy is visible in the use of wholly owned maquiladora plants located along the U.S.-Mexican border. The maquiladoras are the assembly plants located on the Mexican side of the U.S.-Mexico border that are able to import components and materials duty-free and export final products to the U.S. and Canada under preferential tariff rates. Production is labor-intensive—typically manufacturing and assembly—with cheap labor the primary cost advantage. Other organizational activities, such as research and design, are located elsewhere. The Mexican maquiladora offers transnational firms some additional "advantages" such as lax environmental regulations and weak enforcement of labor and occupational health and safety provisions. Transnational corporations taking the "low road" approach might be attracted to these features.

A second and related technique that falls under the vertically integrated, spatially dispersed, category is *foreign direct investment.* In this case, corporations buy up firms in other countries or they establish a branch or subsidiary operation in that country. In either case, some piece of the vertically integrated hierarchy is geographically dispersed.

Foreign direct investment can conceivably be directed toward any location in the world. Maquiladora facilities are one form of direct investment that benefits from particular advantageous arrangements in tariffs, taxes, and duties. Bilateral agreements between Mexico and the United States, extended with the passage of the North American Free Trade Agreement (NAFTA), have stimulated and are designed to attract further direct investment by transnational corporations.

Another measure stimulating the spatial dispersion of production is the *export processing zone.* These are designated areas or regions, usually within a less developed nation, that are explicitly designed to attract export-oriented direct foreign investment by offering incentives such as the duty-free importation of components, exemptions from legislative regulations, and the provision of physical infrastructure. In China, for example, the Shanghai Jinqiao export processing zone boasts a favorable geographic location, complete infrastructure, consultation services, and tax incentives. Again, the most common activity in these zones is labor-intensive assembly and manufacturing. The finished products are usually destined for export markets in the developed industrial nations.

As production has become increasingly globalized, and vertically integrated firms have become spatially dispersed, new concepts have emerged to describe these organizational arrangements. One of the most useful and widely employed concepts is the global commodity chain (Gereffi 1995). *Global commodity chains* (GCCs) are transnational production systems that link firms and networks around the economic processes of developing, manufacturing, and marketing specific commodities (Gereffi 1995:113).

The four main dimensions of GCCs are:

1. A value-added chain of products, services, and resources linked together across a range of relevant industries.
2. A geographic dispersion of production and marketing networks at the national, regional, and global levels, comprised of enterprises of different sizes and types.
3. A governance structure of authority and power relationships between firms that determine how financial, material, and human resources are allocated and flow within a chain.
4. An institutional framework that identifies how local, national, and international conditions and policies shape the globalization process at each stage in the chain (Gereffi 1995:113).

Global-level commodity chains are by definition spatially dispersed. Item 3, however, pertains to variations in the structural characteristics. The vertically integrated unit is one type of governance structure that controls and directs the geographically far-flung units of production. This pattern of coordination conforms most closely with *producer-driven commodity chains* which are large transnational industrial enterprises that coordinate and control a production system through the administrative headquarters of the enterprise (Gereffi 1995:115). Producer-driven commodity chains can include a vertically (ownership) integrated structure or a partially or fully disintegrated structure with a lead manufacturer, such as an automotive or aircraft firm, directing the production of international subcontractors or entering into strategic alliances with other firms.

Vertically Disintegrated and Spatially Dispersed

As commodity chains have become increasingly disintegrated, we can shift our attention to the lower right-hand quadrant of Figure 10–2. There, a vertically disintegrated structure combines with spatially dispersed links in the production chain. The disintegrated-dispersed arrangement takes a wide variety of forms. These can include producer-driven commodity chains that rely more on subcontractors than subsidiaries, cross-national strategic alliances, and the wide variety of flexible networks joining vertically and horizontally related firms.

The other major form of commodity chain—*the buyer-driven commodity chain*—can also be included here. Buyer-driven commodity chains are led by large retailers and brand-name merchandisers who arrange for production among an array of decentralized producers, usually in less developed nations, who produce or assemble a final product that meets the specification of the retailer or merchandiser (Gereffi 1995:116).

The major players in buyer-driven commodity chains are the familiar athletic footwear companies such as Nike and Reebok, apparel companies like The Gap and Liz Claiborne, and retailers like Wal-Mart Stores that purchase large quantities of the bonded merchandise.

What is distinctive about the buyer-driven commodity chain is that the central companies do not own or control any production facilities. They devote their energy toward product design, marketing, and integrating the firms into the chain. The actual production of sneakers, a garment, or a toy is carried out in independent factories overseas. These buyer-driven companies that only design and market the products are often referred to as "hollow corporations" because they do not engage in the core manufacturing process that creates the product with which they are most closely associated.

These firms are akin to the "commercial" or "merchant" capitalists who buy cheap and sell dear. They are totally detached from the conditions or methods of

production. As long as they can obtain what they need at a low price, they remain largely indifferent to working conditions or manufacturing processes employed to produce the goods. The "industrial capitalists" in this system are the local entrepreneurs in less developed nations who own the factories, organize the production process, and produce the final product.

This represents a significant change in the nature of global capitalism. More importantly, the most powerful and profitable links in the production chain are not the industrial units that manufacture the product, but the commercial units that design, brand, and market the goods. In buyer-driven commodity chains this is where the greatest value is added and profits are realized. The manufacturing link of the chain, on the other hand, is highly labor intensive and highly competitive. These factors make it a likely candidate for global outsourcing and place enormous downward pressure on costs, which are primarily labor.

The net result of this global arrangement is the well-documented "slave wage" rates and substandard working conditions in many global factories producing sneakers, toys, and clothing. It also raises the issue of who is ultimately responsible for these conditions: the buyers (merchant/commercial capitalists) who do not own or control the factories but order and purchase the goods? the domestic capitalists in less developed nations who own and manage the firms? or the governments in these countries who fail to institute and enforce labor and employment standards?

In the United States and elsewhere, labor and consumer campaigns and boycotts of major buyer-driven firms place pressure on the network of independent subcontractors to improve labor conditions (Gereffi and Hamilton 1996). A number of organizations, such as the Fair Labor Association, have formed to monitor wages and working conditions in these global factories ("Sweatshop Reform: How to Solve the Standoff," *Business Week,* May 3, 1999, p. 186–90).

Vertically Disintegrated and Spatially Concentrated

The final quadrant in the two-dimensional analysis from Figure 10-2 combines disintegrated companies or independent specialized firms with spatial concentration. This arrangement can be the product of vertical disintegration along with the desire or necessity to stay geographically close to former suppliers and distributors. It can result from a very unique set of agglomeration forces that cannot be replicated or easily relocated. It can also be due to a decision by vertically disintegrated and spatially dispersed organization to return to a more geographic concentrated environment. Each of these will be considered in turn.

Structurally Embedded Concentration. A vertically integrated firm may decide to eliminate and shed various units (disintegrate) but keep transactions with other firms in a concentrated geographic area. A firm may have long-standing ties

with a particular region or community. The firm may also have long-standing ties with particular suppliers and distributors in the region who are highly trusted, reliable, and not easily replaced. In this scenario, business decisions about the spatial location of facilities are "structurally embedded" (Romo and Schwartz 1995). Instead of basing interfirm relationships purely on comparative costs associated with different geographic locations, such "relationships congeal into long-term dependencies that constrain the migration behavior" (Romo and Schwartz 1995:880).

Again, one can see how the concept of embeddedness is used to offer an alternative to a strict market or cost-based decision-making calculus. While these actions may seem economically irrational, they are designed more for the purpose of reducing uncertainty than reducing cost. Suppliers and distributors that are "known quantities" and have established a record of reliability are often preferable to lower-cost but unknown quantities.

There is also the issue of establishing just-in-time (JIT) inventory and delivery systems that benefit from close proximity to suppliers and distribution networks. The just-in-time system has already been discussed as it pertains to the internal organization of production, but equally, if not more, critical is its relationship to suppliers who are expected to deliver parts and components as needed or "just in time."

The objective of the just-in-time system is to ensure that all materials, resources, and other elements required for production will be available at the necessary place and time for immediate deployment. This system eliminates the cost and management of inventory stockpiles. It also places pressure on the production process and personnel to eliminate errors and waste. The reason this system might encourage some spatial coordination is that it requires close coordination between suppliers and customers. In addition, with deliveries of supplies occurring—often several times daily—transportation time and cost become major considerations. One might wonder whether these challenges could be handled by returning to the old-fashioned vertically integrated and spatially concentrated industrial complex. However, it is widely assumed that a disintegrated JIT arrangement provides many of the same benefits without the costs and financial obligations associated with formally managing the integrated units.

The various arguments for and against disintegration and dispersion point to the fundamental and ongoing tension between differentiation and integration. Differentiated and specialized production activities must be integrated and coordinated to constitute a single articulated production process. Tight vertical integration enhances coordination but is costly and prohibits flexibility. Disintegration enhances flexibility but sacrifices tight coordination. Now the just-in-time production system seems to require high levels of coordination. But firms have not returned to the old vertically integrated solution. Rather, embedded networks are formed as a way to transact, exchange,

and coordinate independent firms. Some of the activities might be conducted most cost effectively in particularly advantageous geographic locations that spatially disperse the network. However, the network may employ just-in-time supply and distribution systems that would benefit from geographic concentration. These various pros and cons make it difficult to settle on a final interorganizational arrangement. There are tendencies and countertendencies that encourage a wide range of possible configurations.

Agglomeration and Milieus of Innovation. The territorialization of economic activity and the geographic clustering of organizations may also result from powerful agglomeration forces. These forces can extend beyond the obvious functional and resource dependencies that might characterize, for example, the gravitation of auto parts producers to the Detroit region. They can include the less formal or tangible exchanges that are common in fields of rapid innovation and take place between people and firms facing similar problems and challenges. One example are the *milieus of innovation* common in the information technology sector. Silicon Valley in California is the prime case. Castells (1995:56) described the key elements:

> [T]he development of the information technology revolution contributed to the formation of the milieus of innovation where discoveries and application would interact, and be tested, in a recurrent process of trial and error, of learning by doing; these milieus required . . . spatial concentration of research centers, higher education institutions, advanced technology companies, a network of ancillary suppliers of goods and services, and business networks of venture capital to finance start-ups. Once a milieu is consolidated, as Silicon Valley was in the 1970s, it tends to generate its own dynamics and to attract knowledge, investment, and talent from around the world.

It is important to point out that the spatial clustering in this milieu of innovation consists of independent firms, start-ups, entrepreneurs, venture capitalists, and spin-offs. Rather than involving firms that are sequentially integrated in a production chain, the milieu of innovation first involved firms that were interested in advancing a basic technology—the semiconductor—and then developing myriad applications of this technology. The milieu facilitates processes of learning, exchanging tacit knowledge, diversification of applications, and informal information flows. Firms and individuals seek to expose and embed themselves in this organizational and cultural environment. This is one example of a positive externality, or external economy, that attracts firms, provides cost-free benefits, and reinforces spatial concentration and agglomeration.

Those who have closely studied interorganizational relations in Silicon Valley believe that sustained economic viability and innovation of the region

has been based on the gradual shift toward greater collaborative networks both regionally and globally (Gordon and Kimball 1998; Castells 1998).

> The most striking development since the [mid-to-late] 1980s has been the absolute *centrality of collaborative partnerships* in the innovation process. Strategic alliances have become nearly ubiquitous as a region legendary for its embodiment of Schumpeterian individualistic entrepreneurialism has shifted, in the space of a decade, to more collective forms of innovation organization. Entrepreneurialism has shifted its focus from one organizational principle—self sufficiency, aggressive competition, and proprietary technologies—to a radically different principle: participation in collaborative production chains, interfirm cooperative networks, and open standards (Gordon and Kimball 1998:14).

This description of the dynamics of Silicon Valley indicates that a dense geographic concentration of organizations can exist under both a highly competitive or highly cooperative interorganizational relationship. The shift from the former to the latter is consistent with the more general trends outlined for interorganizational dynamics.

The two primary activities in the milieu of innovation are product conception and research and development. A dispersed spatial division of labor may still apply because the actual production of semiconductors, wafers, and technical devices can be located elsewhere. In the case of Silicon Valley, production takes place both locally and offshore, and the division of labor between assembly and production versus research and development manifests itself in sharp differences in working conditions, wages, and salaries (Fuentes and Ehrenreich 1983).

Concentrating Manufacturing and Research. We can now consider some of the arguments for a greater spatial concentration of these different activities. One rationale for geographic concentration hinges on the distinction between product and process technology (Thurow 1992) and the necessity to tighten the link between the innovative and production activities. *Product technology* refers to the activities of research and development, product design, and application. *Process technology* refers to the development and application of technologies used in the production process. Activity in the milieu of innovation is devoted primarily to product technology; process technology is relegated to the assembly and manufacturing units.

According to Richard Florida and Martin Kenney (1990) organizations should pursue a strategy of *structural flexibility* that involves a more tightly linked and integrated relationship, both structurally and geographically, between development and manufacturing. This allows for a more rapid flow of information and interaction between product design and process technology. Rather than confining innovation and research and development exclusively to

product design, they also should be applied to production processes. Synergies between innovation and production are more likely to occur when the activities are in closer physical proximity. Together, they should contribute to higher levels of efficiency, productivity, and quality. Presumably, this will also facilitate the ability to retool production facilities more rapidly based on changes in product markets and customer needs.

David Angel (1989) provided similar arguments in his analysis of the semiconductor industry. According to Angel, the necessary conditions for maintaining competitive advantage rest on the notion of *continuous innovation.* This has been difficult to achieve because research, development, and design tend to be driven by different pressures than production and assembly. The latter are driven by cost considerations while the former are driven by technological innovation and creative synergy. This has resulted in a segmented and spatially divided production system with "innovation and product development in high-tech complexes, routinized high-volume fabrication facilities dispersed in low-wage sites outside metropolitan areas, and labor-intensive assembly in low-wage locations offshore" (Angel 1989:12). A problem of "manufacturability"—design proceeds without sufficient input from production engineers—has been created by this tripartite spatial and international division of labor. This makes it difficult to codevelop new products and new production techniques. Reconnecting the functionally integrated units would also encourage greater contacts and interaction with major end users and customers.

This organizational logic suggests that high-technology industry would be engaged in a reintegration and desegregation of production and research facilities, giving rise to a greater concentration of organizational units in a single geographic location or region. This contradicts the general trend toward the spatial dispersion of organizational units and functions. However, these potentially new forms of functional integration do not necessarily require ownership integration as much as coordination integration (Langlois and Robertson 1995) through vertically disintegrated alliances and networks. This is more consistent with recent interorganizational developments.

Recent Developments: Supply Chains and Real Options

The analysis of the structural and spatial dimensions of the social division of labor has uncovered a variety of trends and logics. Over the past 10 years, there seems to be a concentrated effort by most firms to structurally disintegrate. This results in outsourcing and a greater number of interfirm transactions that must be managed. A return to a more differentiated and disintegrated social division of labor places even greater pressure on the functional integration and

coordination of interdependent activities. "Getting lean" has meant relying on other organizations to carry out functions formerly controlled by the firm. While management consultants advocate the shedding of peripheral activities, it is not without its downside. Some predictable problems with outsourcing have been reported. "An errant supplier can delay a key product launch and anger customers . . . Some companies have found themselves locked into long-term contracts with outside suppliers that are no longer competitive" ("Has Outsourcing Gone Too Far?", *Business Week,* April 1, 1996, p. 28).

While each of these difficulties are the precise reason for the erection of vertically integrated hierarchies, there is little evidence that firms are reversing the disintegration process. Instead, the emphasis is on managing these interfirm relations. This has spawned a new industry: *supply chain planning and management* (Fisher 1997; Poirier 1999; Ross 1997). The supply chain is

> a network of facilities that procure raw materials, transform them into intermediate goods and then final products, and deliver the products to customers through a distribution system (Lee and Billington 1995:43).

In managing and planning this chain, organizations seek to realize the seemingly timeless goal of getting resources in the right quantities, at the right place, at the right time, and at the lowest cost. This is, again, an organizational challenge that stems directly from the tension between differentiation and integration.

In relating organization theory to management practice, the emphasis here has been on the contradictions, tensions, and trade-offs inherent in any decision about organizational strategy. Much of the current theory and practice has rested on the assumption that flexibility in an uncertain world requires an organization that is lean and devoted to its core competencies. This process of vertical disintegration is a direct reflection of this principle.

However, if there are perpetual tensions and trade-offs, this strategy cannot be unequivocally successful. As is common in organization and management studies, an increasingly popular theory now argues for a diametrically opposed strategy. This is called *real options theory* (Amran and Kulatilaka 1998).

Real options is an approach to corporate finance that has significant implications for the structure of the organization. Rather than shedding all units, or avoiding heavy investments in the sunk costs of long-term projects, this perspective argues for a systematic assessment of these options. An uncertain environment offers opportunity as well as peril. When things change rapidly, it is best to have some options available to exploit the uncertainty. These options can come in the form of investment projects in certain activities that might, at time one, appear to have greater costs than benefits. At time two, however, under a different set of conditions—which are constantly changing anyway—the options can provide an opportunity to provide enormous benefits.

The following example was reported in *Business Week:*

> This June, Envon Corp. will open three gas-fired power plants in northern Mississippi and western Tennessee that are inefficient—deliberately so. They will generate electricity at an incremented cost 50 percent to 70 percent higher than the industry's best. Most of the time, the production costs of these spanking new plants will be too high to compete.
>
> Envon hasn't gone crazy. By building less efficient plants, it saved a bundle on construction. It can let the plants sit idle, then fire them up when prices rise. Last June 25, the price of a megawatt-hour of electricity in parts of the Midwest soared—briefly—from $40 to an unprecedented $7,000. With such volatility, Envon executives figured they can make money from their so-called peaking plants even if they operate only a week or so per year ("Exploiting Uncertainty," *Business Week,* June 7, 1999, p. 118).

Real options represents a "just-in-case" rather than "just-in-time" logic; that is, because of the possibility that a highly profitable opportunity will emerge, it is important to have the resources on hand just in case. This approach introduces a high-risk, speculative edge to corporate decision making. This option is unlikely to be adopted by a wide number of firms because it requires a resource base and level of security that most firms do not possess. It is an interesting development and example of the contradictory theories and strategies that can emerge from the same empirical reality.

Summary

1. The social division of labor and economic specialization between production units poses the fundamental organizational problem of how to control and gain access to required resources. The traditional choice has been between *market* transaction or vertically integrated *hierarchy.* More recently, a third intermediate option has gained in theoretical prominence and strategic importance. This is the *network* or *alliance* among interdependent organizations.
2. One of the prime examples of the network model is the Japanese *keiretsu.* This intercorporate configuration includes a large number of independent but affiliated firms that exchange resources and share stock ownership. Once touted as singularly responsible for Japanese economic dynamism, the keiretsu are now regarded as problematic with the crisis in the Japanese economy. The organizational arrangement, once a model for the rest of the world, is now in the process of radical restructuring.

3. In addition to the *structural configuration* of interdependent production units, there is the equally important *spatial configuration.* This refers to the geographic distribution and location of production activities. As firms shift production to new locations or enter into transactions with firms across the globe, geographic differentiation and dispersal increase. This prompts the development of means to functionally integrate the geographically dispersed but interdependent activities.
4. The cross-classification of the structural configuration (vertically integrated or disintegrated) and spatial configuration (concentrated or dispersed) yields four interorganizational arrangements. While there has been a clear shift toward the vertically disintegrated and spatially dispersed option (or quadrant), some countertendencies suggest the existence of an emerging logic of structural disintegration alongside relative spatial concentration in certain economic sectors.