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The Multinational Corporation as an Interorganizational Network

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A multinational corporation consists of a group of geographically dispersed and goal-disparate organizations that include its headquarters and the different national subsidiaries. Such an entity can be conceptualized as an interorganizational network that is embedded in an external network consisting of all other organizations such as customers, suppliers, regulators, and so on, with which the different units of the multinational must interact. Based on such a conceptualization, the present authors draw on interorganization theory to develop a model of the multinational corporation as an internally differentiated interorganizational network. They propose hypotheses that relate certain attributes of the multinational, such as resource configuration and internal distribution of power, to certain structural properties of its external network.

As pointed out recently by Kogut (1989), the late 1980s have witnessed a significant evolution of academic interest in the multinational corporation (MNC). An important element of this shift has been a change in the focus of research away from the dyadic headquarters-subsidiary relationship in MNCs, or the specific decision of a company to invest in a foreign location, to the coordination tasks of managing a network of established foreign subsidiaries and analysis of the competitive advantages that arise from the potential scope economies of such a network.

This new research focus demands new theoretical, conceptual, and methodological anchors. Analysis of international competition, for example, has already embraced a range of new theories such as those of multiplant production, multipoint competition, and valuation of options to explore the costs and benefits of the MNC's geographic scope of activities (e.g., Kogut, 1983; Ghemawat & Spence, 1986; Teece, 1980). The present authors advocate a similar adoption of interorganizational theory for future MNC-related research, albeit with some modifications to reflect the ownership-based intraorganizational ties that exist between the MNC headquarters and its different foreign subsidiaries. We believe that interorganizational theory, properly adapted, can provide new insights about a complex and geographically dispersed organizational system like the MNC, and our main objective here is to propose an initial formulation regarding how the concepts and tools of interorganizational analysis can be applied to fit this slightly different but analogous case.

To frame the context of our discussions, it may

be useful to begin with an illustration. Figure 1 shows the simplest possible representation of N. V. Philips, a multinational company headquartered in the Netherlands. The company has its own operating units in 60 countries as diverse as the United States, France, Japan, South Korea, Nigeria, Uruguay, and Bangladesh. Some of these units are large, fully integrated companies developing, manufacturing, and marketing a diverse range of products from light bulbs to defense systems. Such subsidiaries might have 5,000 or more employees and might be among the largest companies in their host countries. Others are small, single-function operations responsible for only R & D, or manufacturing, or marketing for only one or a few of these different businesses. Some such units might employ 50 or fewer people. In some cases, the units have been in operation for more than 50 years; a few began their organizational lives less than 10 years ago. Some of these units are tightly controlled from the headquarters; others enjoy relationships with the headquarters more akin to those between equal partners than those between parent and subsidiary.

With only minor alterations, Figure 1 could also be a representation of an American multinational such as Procter & Gamble, or another European company such as Unilever, or a Japanese company such as Matsushita Electric (see descriptions of these companies in Bartlett & Ghoshal, 1986 and 1987). In many ways our description of Philips is a generic account that characterizes many large MNCs. As suggested by a number of authors, MNCs are physically dispersed in environmental settings that represent very different economic, social, and cultural milieus (Fayerweather, 1978; Hofstede, 1980; Robock, Simmons, & Zwick, 1977); are internally differentiated in complex ways to respond to both environmental and organizational differences in different businesses, functions, and geographic locations (Bartlett & Ghoshal, 1986; Prahalad & Doz, 1987); and, as a result of such dispersal and differentiation, possess internal linkages and coordination mechanisms that represent and respond to many different kinds and extents of dependency and interdependency in interunit exchange relationships (Ghoshal & Nohria, 1989).

We believe that an entity such as any of these large multinational corporations can be more appropriately conceptualized as an interorganizational grouping rather than as a unitary *organization;* also, valuable insights can be gained on the internal structures and operations of such entities from the concepts of organization sets and networks that are more commonly used for exploring interorganizational phenomena (Aldrich & Whetten, 1981; Evan, 1967). In particular, we believe that the concept of a network, both as a metaphor and in terms of the tools and techniques of analysis it provides, reflects the nature and complexity of the multinational organization and can provide a useful lens through which to examine such an entity. We propose here a framework that conceptualizes the multinational as a network of exchange relationships among different organizational units, including the headquarters and the different national subsidiaries that are collectively embedded in what Homans (1974) described as a structured context. Further, continuing the thinking of Tichy, Tushman, and Fombrun (1979), we visualize this context as an *external network* consisting of all the organizations such as customers, suppliers, regulators, and competitors with which the different units of the MNC must interact. Our main proposal is that different attributes of a multinational such as the configuration of its organizational resources and the nature of *inter*unit exchange relations that lead to such a configuration can be explained by selected attributes of the external network within which it is embedded and on which it depends for its survival.

A note of caution must, however, be sounded at this stage. Because network analysis is a rapidly emerging and highly complex field of study and because of the considerable divergence on definitions and approaches that exists within this field, it is unlikely that this initial attempt to apply network concepts to the study of MNCs

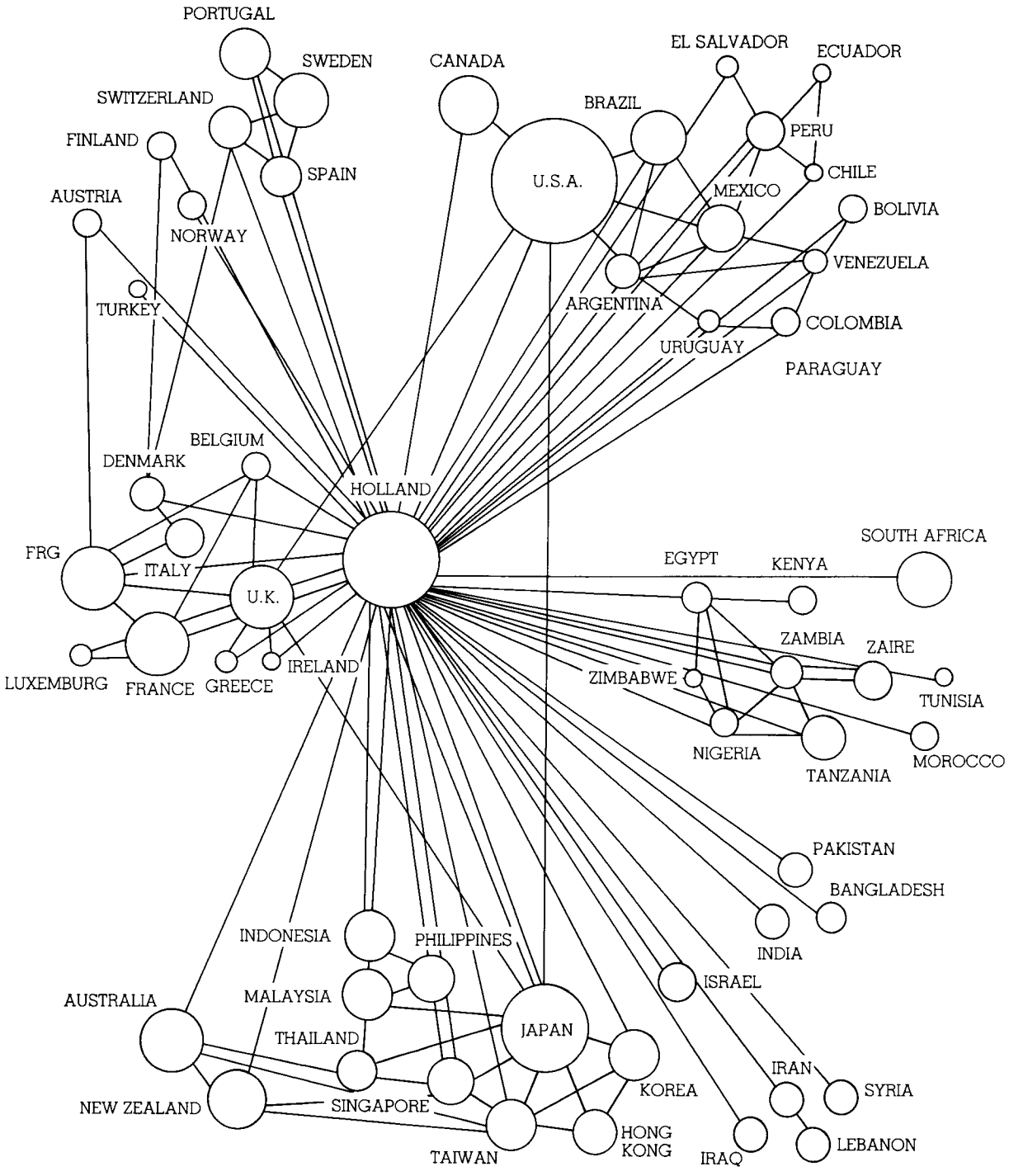


Figure 1. **Organizational units and some of the interlinkages within N. V. Philips.**

will be either complete or above reproach. In the concluding section of our article, we discuss some of the limitations of the present effort and suggest how these might be overcome through future conceptual and empirical research. This article must be viewed, therefore, as an initial attempt to identify the possibility of developing a *network theory of the MNC*, rather than as a rigorous presentation of such a theory.

Although the attempt to formally apply the interorganizational network perspective to the study of MNCs is relatively new, it should also be noted that the conceptual foundation for such an approach already exists in the international management literature. For example, Perlmutter's (1969) scheme for categorizing MNCs as ethnocentric, polycentric, and geocentric organizations is clearly consistent with a network theoretic view. Similarly, the stylized models of MNC organizations developed by Bartlett (1986) and Hedlund (1986), the concept of a *coordinated multinational system* proposed by Kogut (1983), and the application of the resource dependency model by Herbert (1984) for explicating strategy-structure configurations in MNCs have all been implicitly or explicitly grounded in the conceptualization of MNCs as interorganizational systems. Although it builds on this foundation, the article also differs from these earlier pieces in two important ways.

First, in most of these proposals, the structure and attributes of the MNC were explained as arising from the technical and economic rationality and constraints in resource allocation (Kogut, 1983) or from the administrative heritage (Bartlett, 1986) and cognitive orientation (Perlmutter, 1969) of its managers. Our explanation focuses instead on the social and institutional structure of the environments in which the MNC operates. As institutional theorists have argued, the relational networks in the institutional environment play an important role in influencing the structure and behavior of organizations (Meyer & Scott, 1983; Zucker, 1988). The uniqueness of the MNC as an organizational form arises from the fact that its different constituent units are embedded in different national environments in which the structures of these relational networks can be and often are very different (Westney, 1989). Further, in an era of expanding transnational linkages among individuals and organizations, these relational networks in the different countries are also increasingly interconnected among themselves in complex ways. These differences in national industry systems and the interconnections among them are central to our explanation of both economic action and administrative coordination within the dispersed system of the MNC.

Second, the concept of a network has so far been used in this literature mostly as a metaphor to describe and categorize MNC structures and to support normative arguments on the importance of lateral relationships, shared values, and reciprocal task interdependencies for effective management of MNCs. Even though we believe that such a metaphorical use of the term has been useful for descriptive and normative purposes, this paper represents an effort to move to the next step of theory building by using network concepts to explain specific structural attributes of multinational organizations.

Interorganizational Theories Applied to the Multinational Corporation

Much of the existing theory and almost all empirical analyses of interorganizational networks have focused on interorganizational groupings that are not connected by ownership ties (e.g., Pfeffer & Salancik, 1974; Bacharach & Aiken, 1976; Van de Ven & Walker, 1984). Before applying any of the concepts or empirical findings from such studies to the analysis of MNCs, it is first necessary to make a prima facie case that the ownership ties that exist within the multinational do not necessarily preclude the entire range of discretionary behaviors that are possible among interacting organizations that are not so connected.

A number of authors have argued that the

linkage between ownership and hierarchical power ("fiat") in complex organizations is much weaker than is often assumed (e.g., Granovetter, 1985, p. 499). We believe that this link is particularly weak in the case of MNCs because of the large physical and cultural distances between the owned and the owning units. Case histories of extreme subsidiary autonomy have been well documented in the literature on multinationals: the refusal of North American Philips to sell the V2000 video cassette recorder developed by its Dutch parent, preferring instead to purchase from a Japanese archrival, is a good example. Even more dramatic, however, is the case of the British and German subsidiaries of Ruberoid that unilaterally severed all ties with the parent and, with the support of local financial institutions, ultimately secured complete legal independence. Such situations are relatively more common for MNCs headquartered in small countries, many foreign subsidiaries of which often control more resources and contribute more revenues than the parent company. However, many such cases also have been observed in companies such as ITT and Unilever, even though the parents were headquartered in large countries such as the United States and the United Kingdom (Bartlett & Ghoshal, 1989).

The efficacy of fiat is particularly limited in the case of multinationals not only because some of the subsidiaries happen to be very distant and resource-rich but, more so, because they control critical linkages with key actors in their local environments, particularly the host government. To cite but one illustration, the Australian subsidiary of Ericsson, the Swedish telecommunications company, accumulated a very high level of R & D resources primarily because of a coalition between the local management and the Australian Post and Telegraph authorities that had as its principal goal the creation of a major R & D center in Australia. Subsidiary company links with local customers, suppliers, and investors also contribute to the local management's automony. For example, following deregulation of the U.S. telecommunications industry, the influence of the American subsidiary of NEC expanded significantly within the company, despite its relatively small size and short organizational life. This was so because of its role in building the company's relationships with the Bell operating companies, which came to be viewed by NEC not only as major potential customers but also as its main contacts for joint development of new products.

We do not claim that the relationships among the parent company and the national subsidiaries in an MNC are identical to those among an interacting group of universities, or social service organizations, or regulatory agencies. Some anecdotal evidence of extreme subsidiary autonomy notwithstanding, the parent company of a multinational typically enjoys considerable hierarchical authority. However, we suggest that the existence of such hierarchical authority does not necessarily lead to fiat as the dominant or even the "last resort" mechanism of control. Typically, in such large, dispersed, and interdependent organizations, hierarchical authority coexists with significant local autonomy and such a situation, we believe, is not inappropriate for the application of interorganizational theories.

For example, in one of the seminal articles on the topic, Warren (1967) developed a typology of interorganizational relationships that distinguished four ways in which members of an organizational field could interact: unitary, federative, coalitional, and social choice. Table 1 summarizes the different attributes of each of these different contexts of interorganizational interactions. In our view, the multinational organization lies somewhere between Warren's unitary and federative structures, both of which admit some level of hierarchical decision making at the top of the inclusive structure. Further, even though the formal structure of MNCs may often resemble the unitary form or what has been described in the literature as *mandated networks* (Aldrich, 1976; Hall, Clark, Giordano, Johnson, & Roekel, 1977), the actual relationships between the headquarters and the subsid-

Table 1
Different Contexts of Interorganizational Interactions

	Type of Context			
Dimension	**Unitary**	**Federative**	**Coalitional**	**Social Choice**
Relation of units to an inclusive goal	Units organized for achievement of inclusive goals	Units with disparate goals, but some formal organization for inclusive goals	Units with disparate goals, but informal collaboration for inclusive goals	No inclusive goals
Locus of inclusive decision making	At top of inclusive structure	At top of inclusive structure, subject to unit ratification	In interaction of units without a formal inclusive structure	Within units
Locus of authority	At top of hierarchy of inclusive structure	Primarily at unit level	Exclusively at unit level	Exclusively at unit level
Structural provision for division of labor	Units structured for division of labor within inclusive organization	Units structured autonomously; may agree to a division of labor, which may affect their structure	Units structured autonomously, may agree to ad hoc division of labor, without restructuring	No formally structured division of labor within an inclusive context
Commitment of a leadership subsystem	Norms of high commitment	Norms of moderate commitment	Commitment only to unit leaders	Commitment only to unit leaders
Prescribed collectivity-orientation of units	High	Moderate	Minimal	Little or none

iaries and among the subsidiaries themselves tend to be more federative because, contrary to the case of both unitary and mandated networks, issues of competency and power tend to be contested within the MNC and interdependencies among the units tend to be reciprocal as well as sequential (Ghoshal & Nohria, 1989). This claim is consistent with Provan's analysis of different kinds of federations and his observation that the network characteristics of divisionalized firms generally are similar to those of independent federations (see Table 1, p. 83 in Provan, 1983). As demonstrated by Provan, Beyer, and Kruytbosch, (1980), the interorganizational approach can be particularly useful for analyzing such federated relationships among units when the participants have only limited option for discretionary behavior and no opportunity to terminate the relationship.

Despite the broad theoretical scope of the interorganizational perspective as shown in Warren's classification of the field, empirical applications of this perspective have so far been limited to contexts that range from federative to social choice and interaction contexts that range from unitary to federative have been excluded from the domain of interorganizational inquiry and placed in the domain of intraorganizational analysis (Cook, 1977). As such, the relationships between the diverse units of a multidivisional or

a multinational corporation have rarely been examined from an interorganizational perspective.

Meanwhile, the limitations of applying traditional intraorganizational theory to the analysis of such complex and dispersed business organizations have become increasingly clear. As summarized by Nohria and Venkatraman (1987), the most critical of these limitations stem from the need in such analysis to provide a relatively clear separation between the "organization" and its relevant "environment." As a result, "the environment is typically viewed as an exogenous entity and is reified as a source of undefined uncertainties (e.g., volatility, resource scarcity, etc.) as opposed to being seen as a field of specific interacting organizations which locate the source of those contingencies" (Nohria & Venkatraman, 1987, p. 2). The organization is seen as a well-defined collective and is assumed to be internally homogeneous, coherent, and consistent. "Therefore, it is typically described in distributional (e.g., organization chart, division of responsibility, authority, etc.) and categorical (e.g., centralized versus decentralized, mechanistic versus organic, differentiated versus integrated, etc.) terms as opposed to relational terms that focus on the actual interaction patterns based on both internal and external flows of products, information, and authority" (Nohria & Venkatraman, 1987, p. 2).

In contrast to these limitations of traditional intraorganizational analysis, a dominant construct in most interorganizational theories is an exchange relation (e.g., A_x and B_y) that is defined as consisting of "transactions involving the transfer of resources (x, y) between two or more actors (A, B) for mutual benefit" (Cook, 1977, p. 64). The term *resources* as used in this context includes "any *valued* activity, service or commodity" (Cook, 1977, p. 64, emphasis added) and therefore includes not only the flows of finances and products but also the flows of technology, people, and information. Furthermore, as Cook observed, "the term actor in the theory refers not only to individuals but also to collective actors or corporate groups [thus making] it uniquely appropriate when organizations or subunits of organizations are used as the primary unit of analysis" (1977, p. 63). It is this suggestion of Cook that we adopt and develop in this article.

The Multinational as a Network: Constructs and Terminology

Let us consider a multinational corporation M with operating units in countries A, B, C, D, E, and F and a focal organization in the corporate headquarters H. For the purpose of analytical simplicity, let us assume that all the units of M are engaged in a single and common business (i.e., M is a single-industry company). Note that H serves as a coordinating agency and plays the role that Provan (1983) described as belonging to the Federation Management Organization (FMO) and, therefore, must be distinguished from the organizational unit, say A, that is responsible for operations in the home country of M, even though the two may be located in the same premises. By the term ***multinational network*** we shall refer to all the relationships and linkages that exist among the different units of M (i.e., among A, B, C, D, E, F, and H).

Each of the national operating units of M is embedded in a unique context and, for any specific type of exchange relationship, has its unique organization set (Aldrich & Whetten, 1981). For example, the unit A can have existing or potential exchange relationships with a specific set of suppliers [s_A], buyers [b_A], regulatory agencies [r_A], and it competes for resources with an identifiable set of competitors [c_A]. Collectively, the group consisting of [s_A, b_A, r_A, c_A, etc.] constitutes what we call the organization set of A and denote by the symbol [OS_A].

Different members of the organization set [OS_A] can be internally connected by exchange ties. In keeping with Aldrich and Whetten's thinking (1981) we can define the density of [OS_A] as the extensiveness of exchange ties within the elements of the organization set of A. Density measures the extent to which actors

within the set are connected, on average, to one another (i.e., the mean relation from any one actor to any other actor). As suggested by Aldrich and Whetten, such a construct of density can be operationalized in different ways. For present purposes, we can choose the simplest of these ways and define it as the percentage of actual to potential ties among members of [OS_A]. The concluding section of this article includes a more detailed discussion on identification of boundaries and measurement of densities for the different local organizations sets.

The density of such connections within the different local organization sets of *A*, *B*, *C*, and so on may vary. For example, it has been noted by many authors that the level of connectedness among different members of an industry group is significantly higher in Japan in comparison to some Western countries (e.g., see discussions and the quotation from Lohr cited in Granovetter, 1985, p. 497). Similarly, it has been shown in the management literature that within the same national environment, the level of cohesiveness among customers, suppliers, competitors, and so forth may be higher in certain businesses such as construction (Eccles, 1981), publishing (Powell, 1985), textiles (Sabel, Herrigel, Kazis, & Deeg, 1987), and investment banking (Eccles & Crane, 1987), compared to others.

The different organization sets of the different units of *M* may themselves be interconnected through exchange ties. For example, one of the supplying organizations in the local environment of *A* may be an affiliated unit of another multinational company, and it may have exchange linkages with its counterpart in the local environment of *B*. Similarly, the actions of regulatory agencies in one location (say, r_C) may influence the actions of their counterparts in other locations (say, r_D). Such influence may be manifest in actions such as retaliation by r_C to what is seen as protectionist action of r_D, or deregulation by r_D to reciprocate or just emulate similar action by r_C (Mahini & Wells, 1986). Such linkages also may exist among suppliers and competitors. In fact, much of the current literature on global strategy considers such cross-border linkages among customers, competitors, and other relevant organizations as a key factor that does or should influence the behaviors of MNCs (e.g., this is a focal issue for a number of essays in Porter, 1986).

Because of such linkages among the different local organization sets, all members of all the organization sets of the different units of *M* collectively constitute what we shall call the ***external network*** (Tichy, Tushman, & Fombrun, 1979) within which the multinational network is embedded. In the same manner as we defined the construct of density for each of the different organization sets of the different units of *M*, we can also describe the density of this external network as the ratio of actual to potential ties among all its constituents. To differentiate between these two densities, we shall refer to the density of ties within each of the local organization sets as ***within density*** and the density of ties within the total external network, that is, across the different organization sets, as ***across density.***

The main thesis in this article is that different attributes of the MNC can be explained in terms of selected attributes of the external network within which it is embedded. Following the arguments of Benson (1975), the interactions within the different organizational units of the MNC are best explained at the level of resource exchange. This suggests two attributes of the MNC as particularly relevant to our analysis: (a) the distribution of resources among its different affiliated units and (b) the structural characteristics that mediate internal exchange relationships within the MNC and continually restructure the resource configuration (Zeitz, 1980). These two characteristics of the MNC and how they relate to within and across densities will provide the focus of our attention for the remaining part of this article.

Resource Configuration in MNCs

Resources such as production equipments, finance, technology, marketing skills, and management capabilities may be located in any one or more of the different units of *M*. By the term

resource configuration we refer to the way in which the resources of *M* are distributed among *A, B, C, D, E, F,* and *H.* (We use the word *resource* in the sense of Cook [1977, p. 64] to refer to "any valuable activity, service, or commodity".) In some companies that Bartlett (1986) described as "centralized hubs," most of such resources may be concentrated in any one location, typically the parent company. For example, 90 percent of the manufacturing investments of Matsushita, the Japanese consumer electronics company, and 100 percent of its research facilities are located in Japan. In contrast, in companies such as Philips, Matsushita's European competitor and one that Bartlett categorized as a "decentralized federation," over 77 percent of total assets are located outside the company's home, which is in the Netherlands, and no single national subsidiary has more than 15 percent of the company's worldwide assets. This difference illustrates one aspect of resource configuration in MNCs that is of analytical interest, namely, ***dispersal,*** by which term we refer to the extent to which the company's resources are concentrated in one unit versus dispersed among the different units.

However, although both Philips and Electrolux (the Swedish home appliances company) have a relatively high level of dispersal in the sense that both companies have significant parts of their total assets distributed in a number of countries, the pattern of distribution of such assets is very different in the two cases. Let us consider their resources within Europe. For Electrolux, even though the resources are dispersed, they also are very specialized, that is, the resources and associated activities located in any one country are of sufficient scale to meet the company's worldwide or, at least, regional requirements for that activity, thereby avoiding the need for carrying out the same activity or task in multiple locations. For example, Electrolux's washing machine factory in France produces top-loading washing machines only and it meets the company's requirements in that product category for all of Europe. Similarly, the washing machine factory in Italy produces only front-loading models to meet Europe-wide demand. Its research centers, product development laboratories, and component-producing units are all similarly differentiated and specialized. By contrast, despite considerable recent efforts to increase such specialization, Philips owns five factories in Europe that produce identical or near-identical models of television sets, each basically for a local market. In other words, the resources of Philips are dispersed on a local-for-local basis (Ghoshal, 1986)—they are dispersed but undifferentiated, with identical resources being used by each unit to carry out essentially similar tasks in and for its own local environment. We refer to this dimension of resource configuration as *specialization,* and it represents the extent to which the resources located in each unit are differentiated from those in others.

Resource configuration in MNCs traditionally has been analyzed from an economic perspective, typically under the assumption that resource location decisions are based on rational, self-interested considerations such as needing increasing profitability, gaining access to new markets or desired factors of production, protecting competitive position, and minimizing costs and risks (for reviews, see Buckley & Casson, 1985; Caves, 1982; Dunning, 1981; Hennart, 1982). Explanations of both dispersal and specialization have therefore focused on factors such as differences in costs of inputs (e.g., Stevens, 1974), potential scale economies in different activities (e.g., Porter, 1986), impacts of transportation and other "friction" costs (e.g., Hirsch, 1976), imperfections in information and other intermediate product markets (e.g., Magee, 1977; Rugman, 1980), defense against opportunism (e.g., Teece, 1986), and potential benefits of risk diversification (e.g., Lessard & Lightstone, 1986).

Following from Granovetter's (1985) ideas, much of this analysis can be criticized as *undersocialized* or *oversocialized* conceptualizations that ignore the important and ongoing effects that surrounding social structures have on economic behaviors of organizations. We present

here an alternative framework that relates dispersal and specialization to the densities of interactions both within and across the different local organization sets of the company. As suggested in the introductory section, our conceptualization is strongly influenced by the work of institutional theorists who have argued that the structure and behavior of organizations are influenced by both technical and institutional factors (Meyer & Scott, 1983) and that "organizations compete not just for resources and customers, but for political power and institutional legitimacy, for social as well as economic fitness" (DiMaggio & Powell, 1983, p. 150). Although Meyer and Scott have been cautious in suggesting that business organizations belong to "technical sectors" in which the economic need for efficiency and effectiveness in controlling work processes dominates institutional need for legitimacy, they also have contended that "while the two dimensions (technical and institutional) tend to be negatively correlated, they are apparently not strongly so" (1983, p. 140). As suggested by Westney (1989), we believe that for MNCs, strong needs for legitimacy and local isomorphism in each host country environment coexist with strong demand for efficiency within its worldwide system and, therefore, the institutional structure of the environment (i.e., the attributes of the local organization sets and the external network) plays an important role in moderating the influence of technical and economic considerations. Even though they are different from traditional economic analysis, our arguments are much more consistent with recent work of economists such as Porter (in press) and Kogut (1988), both of whom have shown the importance of interinstitutional structure in determining the competitiveness of different countries and companies in different businesses.

Effects of Within Density in National Organization Sets

As Bower (1987) has shown through his in-depth study of American, European, and Japanese companies in the petrochemical industry, the density of linkages among key players in a national industrial context greatly influences industry performance and company strategy. For a variety of economic, legal, sociological, cultural, and historical reasons, some countries such as Japan are characterized by dense linkages among the suppliers, producers, regulators, customers, and others involved in a particular field of industrial activity (Westney & Sakakibara, 1985). Such linkages among the different actors may involve different kinds of exchanges such as those involving funds, people, or information, and they may be established and maintained through many different mechanisms such as integrating governmental agencies, interlocking boards of directors, cross-holding of equity, institutionalizing systems of personnel flows, using long-term contracts and trust-based relationships, and mediating roles of organizations such as trade associations, banks, and consultants (e.g., the collected essays in Evan, 1976). Bower's study shows how Japanese petrochemical companies were able to capitalize on such linkages, not only to build entry barriers in the local market, but also as a means of restructuring and rationalizing the industry.

In locations in which the local organization sets are densely connected, the implications for local units of MNCs are clear. As argued by Granovetter (1973), strong and multiplexed ties among the existing members of the national organization sets will lead to exclusion from the sets of those who cannot establish equally strong and multiplexed ties with each member. Westney and Sakakibara's (1985) study on the R & D activities of Japanese and American computer companies illustrates this effect of within density in the local organization sets. According to these authors, the Japanese R & D centers of some of the American computer companies could not tap into local skills and technologies because the absence of associated manufacturing and marketing activities prevented the isolated research establishments from building linkages with the local "knowledge networks"

that were embedded in the dense interactions among different members of the organization set for the computer industry in Japan.

Where the linkages within the local organization sets are sparse, no such barriers are created, as shown in the U.S. Department of Commerce's account of the television industry in the United States in the early 1970s (Paul, 1984). Absence of ties among producers because of rivalry and antitrust laws, and their arm's-length relationships with suppliers, labor, and government, created an environment that made it easy for Japanese producers to enter the U.S. market with local sales offices importing finished products from the parent companies. However, when the American companies responded in a unified manner through the Electronics Industry Association, with the support of labor unions and suppliers, they were able to obtain government support on antidumping suits, and the resulting politically negotiated import quotas forced the Japanese companies to establish local manufacturing facilities.

We can, therefore, make the following propositions about the effects of within density on dispersal and specialization in the configuration of resources in a multinational. When interaction densities within the different national organization sets are low, the social context exerts limited influence and intended economic rationality becomes dominant in resource configuration decisions. In this situation, therefore, the MNC will concentrate research, production, assembly, and other similar activities based on consideration of potential scale and scope economies and locate them on the basis of *resource niches* (Aldrich, 1979) that may exist in different countries as a result of their comparative advantages (e.g., R & D in the United States or Japan, manufacturing in Singapore or Brazil). As a result, its overall resource configuration will show relatively low dispersal and high specialization. When within densities are high, however, the company will be forced to fragment its activities and locate more of the different kinds of resources in each market so as to provide the variety that is necessary to match the structures of the local organization sets. Consequently, in this case, dispersal will increase while specialization will decrease.

Effects of Across Density in the External Network

When the linkages across the different national organization sets are sparse, the MNC's resource configuration follows the pattern we have described previously based on consideration of the within densities alone. If there are high interactions across members of the different national organization sets, this situation changes significantly.

Consider first the case of low within density and high across density. We have argued that low within density will lead to low dispersal and high specialization, and the company will locate its resources according to the resource niches in different countries. But, with high across densities, many of these national resource niches are eliminated because of freer flows. If technologies developing in one location can be accessed instantaneously from another, or if excess capital available in one environment can be borrowed in markets located elsewhere, there is no longer any need to locate specific activities in specific locations to benefit from access to local resources. Therefore, with high across density, resource-seeking concentration will decline (though not necessarily be eliminated because regulatory and other barriers may selectively prohibit certain flows of people and products).

Consider now the case of high within densities coupled with high across densities. We have suggested that high within density will lead to high dispersal and low specialization because of the need for matching the structures of the local environments. However, when across densities are high, it is no longer necessary to establish a comprehensive range of resources in each market because exchange linkages can now be established across borders, without the need for complementary facilities on a location-

by-location basis. In other words, if there is high across density, the logic of resource allocation for both high and low within densities becomes inappropriate. Instead, a completely different set of criteria emerges: In this situation, resource configuration is greatly influenced by the nodal characteristics of the complex external network.

Consider, for example, the situation in which customers in locations *A*, *B*, *D*, and *E* are strongly influenced by the standards and preferences of customers in location C. Bartlett and Ghoshal (1986) and Prahalad and Doz (1987) have described the existence of such *lead markets* in many businesses, and this existence is predicted by the *normative systems* that Laumann, Glaskiewicz, and Marsden (1978) proposed as one of the modalities that influence the behaviors of members in a network. In such a situation, the MNC will tend to locate a significant amount of resources in *C* so as to be able to sense the demands of local customers and respond to them in a fashion that attracts their patronage. The level of resources in *C* will exceed what is required to match the needs for membership of the local organization set (OS_C) and will, instead, be targeted to benefit from the greater role of *C* as a central node in the larger external network that is created by the linkages among (OS_A), (OS_B), (OS_C), and so on. Given that for different activities of the MNC, different locations might emerge as the nodes in the relevant external networks, and given that even for the same activity there might be multiple nodes instead of a single node, the consequence of increasing across density for the resource configuration of the company will be one of moderate dispersal (i.e., not as high as in the case of local-for-local distribution but higher than concentration only in countries offering specific resource niches) coupled with increasing specialization. Tasks will be divided into finer and finer segments so that each could be located at the appropriate nodal locations which, however, might well be different from those that would be predicted by the traditional considerations of comparative advantages or resource niches as applicable to those tasks.

Chandler (1986), among others, has documented that because of improvements in communication and transportation infrastructures around the world, increasing across densities has been a dominant trend that has affected a wide range of industries in the recent past. The observed consequences of this trend are entirely consistent with our arguments. For example, until the late 1970s, the telecommunications switching industry was characterized by high within and low across densities. Interactions among members of the industry were high within each country because of its status as a *strategic industry* and the resulting coordinating role of the national governments. However, until the advent of digital technology, the industry was highly regulated in most countries, and the need to synchronize the switching equipment with the ideosyncrasies of local terminal equipments constrained opportunities for cross-border linkages. As a result, the resources of most multinational companies were highly dispersed, and they had low levels of specialization. ITT provides a good illustration: Each of its national subsidiaries in Europe had its own local facilities for product development, manufacturing, and marketing, and the corporate staff including the top management of the company consisted of fewer than 100 employees.

The context of this industry has changed significantly in the 1980s: Although within densities have remained high, across density has increased substantially due to the emergence of digital technology and the growing trends of standardization and deregulation, all of which have facilitated cross-border integration among suppliers, customers, and other industry participants. As a result, resource configurations of the producers have also changed. Even though the overall level of dispersal has been reduced to a limited extent, the level of specialization has increased drastically. Ericsson, for example, has closed only a few of its factories around the

world, but it has converted many of them into focused manufacturing centers that produce a narrow range of components. Similarly, each of the laboratories of Alcatel, the company created by merging ITT and CIT-Alcatel, has now been given the mandate and resources to pursue a specific and well-defined technology or development task in contrast to the earlier situation when most of them operated quite independently, developing the entire range of products for their local markets.

Centrality and Power Within the Multinational Network

Our preceding arguments on resource configuration in MNCs were based on a notion of isomorphic fit with the characteristics of the external network; we did not address the question of how such a fit is achieved. An MNC's configuration of resources at any point in time is the outcome of previous resource flows and, as argued by Benson (1975), the flow of resources within an interorganizational network is influenced by the distribution of power within the network. In this section, we will suggest that within and across densities in the different national organization sets of an MNC predicate the relative power of the headquarters and the national units, and that the nature of resource flows generated by the resulting distribution of power leads to the pattern of isomorphic fit we have described.

Effects of Within Density in National Organization Sets

Applying Zald's (1970) political economy approach to the analysis of interorganizational relations, Benson (1975) suggested that an actor in such a network can enhance its power in dyadic relationships with other actors on the strength of its relationships with other organizational or social networks. Subsequently, Provan et al. (1980) provided empirical support to this proposal when they demonstrated that power relations within the network of United Way organizations were significantly modified by the linkages between the individual agencies and other elements in their local communities upon which the United Way depended for its survival. The dependence of the United Way on the local communities of its different organizations is in some ways akin to the dependence of the multinational on the local organization sets of its different national units: Just as dense linkages with the key elements of their communities enhanced the power of the United Way organizations, dense exchange relationships with the members of their local organization sets can be expected to enhance the powers of the national units of the multinational.

It is inappropriate, however, to draw a direct correspondence between the United Way and an MNC because the central management organization of the United Way lacks the hierarchical power of the headquarters of the MNC. To incorporate this difference in our analysis, it is necessary to consider how hierarchical power might modify the interunit exchange patterns proposed by Benson.

We suggest that the efficacy of the hierarchical power of the headquarters to counteract the linkage-based power of the subsidiary is contingent on the density of interactions among members of the subsidiary's organization set. When this within density is low, the potential power of the subsidiary is derived from its individual dyadic relationships. In this situation, the headquarters is more effective in counteracting the power of the subsidiary because it is potentially easier to have "direct control" over such relationships through mechanisms such as periodic visits by the headquarters staff. However, such direct control becomes more difficult in this case, when the subsidiary's power is not derived from an individual dyadic relationship, but from the web of exchange relations in the local organization set of which it is a part. Remote control loses efficacy when "localness," by itself, is the key requirement for maintaining the relation-

ships. For example, in the case of the Australian subsidiary of Ericsson that we referred to earlier, extensive cross-licensing arrangements among all the producers, and the resulting close relationships among equipment suppliers, customers, and regulators, was a main reason (other than distance) that impeded closer control of the local subsidiary from Stockholm and allowed the subsidiary to build up the high level of research and other resources.

Therefore, the positive relationship between environmental linkages and power of the local unit of an interorganizational network proposed by Benson (1975) will remain operational in the context of an MNC under the condition of high within density. Following the arguments of Emerson (1962) and Cook (1977), the local unit will use this power to reduce its dependence on the other units of the network. Therefore, it will bargain for and obtain a full range of resources so that it will be able to autonomously carry out as many of its functions as possible. If all or most of the units of the MNC are located in environments of high within density, the consequence of this process will be a high level of dispersal of its resources on a local-for-local basis.

Effects of Across Density in the External Network

Existing literature on the distribution of power in social networks reveals two main sources of power in such collectivities (Fombrun, 1983). First, power is an antipode of dependency in exchange relations (Emerson, 1962), and it accrues to members of the network who control critical resources required by others but do not depend on others for resources (Aldrich, 1979; Pfeffer & Salancik, 1978). In keeping with Cook (1977), this might be called *exchange power* to distinguish it from the second source of power that arises from structural rather than exchange dependencies. *Structural power* emanates from the position of a member within the network, as shown by Lazarsfeld and Menzel (1961); it is an attribute that is induced by a member's context.

Our preceding discussions on power-dependency relationships within an MNC were based only on consideration of dyadic exchange between the headquarters and the national units. The situation changes when consideration of structural power is brought into the analysis. Structure of the external network now enters the calculation as an important variable because different members of the multinational network can potentially develop different levels of structural power based on their positions within the larger network of interactions among customers, suppliers, and so forth across different countries.

Ignoring for present purposes the exceptions to the rule pointed out by Cook, Emerson, Gilmore, and Yamagishi (1983), the structural power of actors in a network can be assumed to arise from their centrality within the network (Laumann & Pappi, 1976; Lehman, 1975). As pointed out by Freeman (1979), the term centrality has been defined and used in the literature in many different ways. For this article, we can limit our attention to what Freeman describes as point centrality of the different actors within the multinational network, and we can also define the point centrality of each actor as a function of its degree (i.e., the number of other actors within the multinational network with which it has direct exchange relations). Following the arguments of Freeman, the headquarters enjoys the highest levels of point centrality when linkages among the subsidiaries are minimal. In a situation of extensive interactions among the subsidiaries, the centrality of the headquarters declines relative to those of the subsidiaries, and the centrality of the different members of the network becomes dependent on the actual structure of such linkages. This explanation becomes clear from a comparison of the three network structures shown in Figure 2 (each of which is reproduced from Freeman, 1979).

High across density typically implies a high level of interactions among the subsidiaries of a multinational. As an illustration, consider the case of a manufacturer of automotive tires such as Italy's Pirelli and Company. The company produces and markets car and truck tires in a

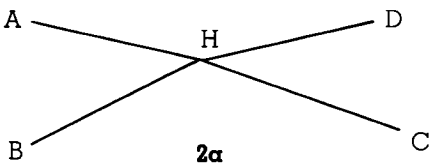
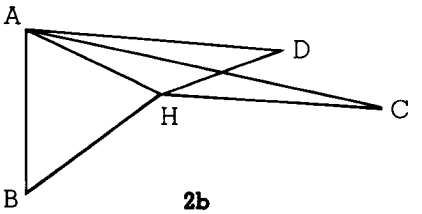
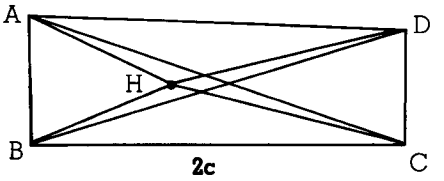
Network Structure	Point Centrality (degree)				
	H	A	B	C	D
 2a	4	1	1	1	1
 2b	4	4	2	2	2
 2c	4	4	4	4	4

***Figure 2.* Centrality measures for three different network structures.**

number of countries including the United States, Italy, and Germany. It also supplies tires to the Ford Motor Company in each of these countries.

Until such time that Ford's local units in these countries operated relatively autonomously, with minimal coordination, there was little need for Pirelli's local units to coordinate their own activities with regard to their supply to Ford. But as the interactions and coordination among Ford's operations in these countries increased, leading to internal comparisons of the prices, quality, and support provided by common vendors (thereby enhancing across density, as relevant to Pirelli), Pirelli's subsidiaries also needed to enhance their internal coordination and communication on issues of quality levels, pricing, service, and so on to prevent customer dissatisfaction (see Terpstra, 1982). In other words, as a general principle, it can be stated that as across density increases, intersubsidiary linkages become more extensive, and the centrality of the headquarters declines, relative to other units.

It is more interesting to note, however, under this condition, multiple points can emerge within the MNC with the same or similar degree of point centrality. Note that for the star-shaped structure (Figure 2c), the headquarters and all the subsidiaries have the same point centrality, whereas in the hub-shaped structure (Figure 2a), the headquarters has a very high level of point centrality compared to the subsidiaries. In Figure 2b, however, whereas one subsidiary has the same point centrality as the headquarters, other subsidiaries have less.

An outcome such as the network structure shown in Figures 2b or 2c will follow from the existence of nodes in the external network. For

example, for Pirelli, the United States, Italy, and Germany may emerge as external nodes because the headquarters for its major worldwide customers may be located in these markets. Further, only one of these external nodes (Italy) may coincide with the location of the company's own headquarters. Normative hierarchy in customer tastes and preferences (e.g., adoption by customers in other countries of a perfume or wine that is popular in France) and the advanced states of certain technologies in certain countries (e.g., ceramic technology in Japan, computer software technology in the United States and the United Kingdom) are some other examples of such external nodes that can affect the point centralities of different units within the MNC. For the different activities of the MNC, different locations can emerge as the nodes of the external network; for any particular activity, a number of different locations can possess such nodal characteristics. Consequently, following the arguments of Burt (1978), the multinational network typically will develop multiple centers that have different internal coalitions and nodes corresponding to the different coalitions and nodes that may exist in the external network.

Therefore, in such a situation, the nodal units of the multinational will develop structural power and use this power to attract resources from within the MNC network. As a result, the level of dispersal in the MNC's resources will be moderate—lower than local-for-local dispersal (because not all units will emerge as nodes) but higher than in the case of concentration in locations of specific resource niches (except for businesses where a specific country enjoys a dominant position in all activities). Further, a high level of specialization also will develop in the resource configuration because nodal positions within the MNC network can be expected to vary by activities and tasks as a reflection of similar variance in the external network. Note that both the process and the outcome aspects of this conclusion resonate with some recent empirical findings such as those of subsidiaries being given *world product mandates* (Poynter & Rugman, 1982) and *global leader* or *contributor* roles (Bartlett & Ghoshal, 1986) for specific activities and tasks.

Large MNCs as Differentiated Networks

Several highly simplifying assumptions were made in the foregoing discussions on resource configuration in MNCs under different conditions of local and global interlinkages. The enormous complexity of several disparate country-level organization sets and the diversity of the heterogeneous international business environment were dichotomized into high-low categories of within and across densities. In reality, the levels of connectedness within and across the national organization sets can be expected to vary across countries and groups of countries. Density of interactions across the national organization sets may be high for the developed countries, or among regional groupings, but low in developing countries, particularly the more regulated and autarchic. Similarly, interactions among members within the national organization sets may be high in homogeneous societies that have a tradition of strong interinstitutional linkages, and it may be low in countries where such linkages are discouraged through legislation, impeded because of societal heterogeneity, or rendered ineffective because of poor communication infrastructures or the absence of linking institutions.

Therefore, the configuration of resources in multinationals engaged in such businesses will be influenced by multiple criteria. In some locations internal interactions within the local organization sets may be high, but external linkages with other organization sets may be low. In such locations, the MNC may provide all the required resources in appropriate measures so that its local unit can build and maintain linkages with key members of its own community. The organization sets in some other countries may be sparsely connected internally, but different elements of the local environment may be strongly connected with their counterparts in other coun-

tries. For these locations, the MNC may create a resource structure that is concentrated and specialized, and in some cases the location of the specialized resources may reflect the desire to access special resource niches, whereas in other cases the location choice may be motivated by the modalities in the external network. Finally, the organization sets in a third group of countries may be characterized by high within and across linkages: In these locations, the MNC may establish all the complementary resources for integrated operations, but it may link these locations with others so as to leverage the resources and achieve economies of concentration and specialization.

The overall resource configuration for a company like Philips, then, will reflect a mix of some resources that are dispersed among some units on a purely local-for-local basis (e.g., product development, manufacturing, marketing, and other resources for the lighting business in India); some that are concentrated in different countries to access specialized local resource pools (e.g., the global scale audio factory in Singapore); and others that are concentrated in lead markets (e.g., development and manufacturing facilities for teletext television sets in the United Kingdom). Elsewhere we have described such a structure as the *differentiated network* and have shown that a number of large multinational companies such as Procter & Gamble, Unilever, Ericsson, NEC, and Matsushita are increasingly converging to this structural form despite the differences in their businesses and parent company nationalities (Bartlett & Ghoshal, 1989).

Such a convergence is consistent with the theoretical arguments we have presented here. Following the arguments of Chandler (1986), one effect of worldwide improvements in communication and transportation infrastructures is the increasing interlinkages among actors, both within and across national boundaries. When such linkages are low, the influence of structural embeddedness is low, and MNCs have a greater degree of freedom to locate their activities and resources to benefit from local resource niches and are in line with the economic and technological characteristics of their businesses. Thus, in such situations, the resource configurations of different MNCs can be expected to differ as a reflection of those differences in their businesses and as a result of their freedom to exercise strategic choices. However, in the context of high within and across densities, such freedom is reduced because of the network influences: Both dispersal and specialization now become essential, at least for the very large companies that have been the focus of our attention in this article. If within density is a country trait and across density is a world-system trait, the pattern of linkages in the overall structure of the external network is going to be increasingly similar for large multinational companies, irrespective of their businesses. In other words, mimetic and normative forces of isomorphism (DiMaggio & Powell, 1983) may be getting stronger as the world jolts along to Levitt's (1983) *global village*, and the observed trend of convergence to the differentiated network structure may be an outcome of these broader societal changes.

Implications for Research

We have proposed a reconceptualization of the MNC as an interorganizational system rather than as an organization. This reconceptualization creates the possibility of applying exchange theory and network methodologies to the study of MNCs and has some important implications for future research on MNC-related issues.

First, at the aggregate level of macrostructural differences among MNCs, traditional analysis has tended to assume internal homogeneity within such companies. This has resulted in generalized conclusions at the level of the overall company based on empirical studies that have focused on individual actors or specific dyadic links. For example, a sampled group of American MNCs have been inferred to be more centralized than their Japanese and European

counterparts based on analysis of the parent companies' relationships with their subsidiaries located in one region (e.g., Hulbert & Brandt, 1980). However, as we have argued, headquarters-subsidiary relations within an MNC can vary widely from subsidiary to subsidiary. The interorganizational network conceptualization can provide new concepts such as graph centrality (Freeman, 1979) or hierarchy (Coleman, 1966), which appear to be theoretically more appropriate for such macrostructural comparisons among internally differentiated and heterogeneous organizational systems like MNCs.

Second, given such heterogeneity, macrostructural analysis alone may not be enough and may need to be complemented with microstructural analyses of these internal differences so as to build a more nearly complete theoretical understanding of the ways in which an MNC functions. For example, in the differentiated network MNC, there is no formal macrostructure that "fits" all parts of the company's heterogeneous environments. Yet, it has to choose a formal departmental structure and might, quite arbitrarily, choose one that appears to be simple and consistent with its own administrative heritage (Bartlett, 1983, 1986). Therefore, not only might macrostructure have become more difficult to predict theoretically—as seems true, given the significant empirically induced modifications to the Stopford and Wells (1972) contingency model proposed by subsequent studies of MNC macrostructures, such as those by Daniels, Pitts, and Tretter (1985) and Egelhoff (1988)—but it might also have become a less interesting attribute to study precisely because of such indeterminateness. For example, contrary to the predictions of structural contingency, NEC, Procter & Gamble, and Unilever have not changed their macrostructures in over two decades despite some very significant changes in their business conditions. What have changed in these companies are the internal management processes; subsidiaries have assumed new and specific roles to respond to changing local conditions, and the headquarters' control mechanisms have evolved from ubiquitous "company ways" to multidimensional gestalts that are applied differently to different parts of the organization so as to respond to shifting global contexts (Bartlett & Ghoshal, 1989). The network perspective is particularly suited for investigation of such differences in internal roles, relations, and tasks of different affiliated units (e.g., through block modeling and analysis of functional equivalence) and of how internal coordination mechanisms might be differentiated to match the variety of subunit contexts (e.g., the papers by Burt on "distinguishing relational contents" (pp. 35–74) and "studying status/role-sets using mass surveys" (pp. 100–118) in Burt, Minor, & Associates, 1983).

The same argument we made for structure can also be made for strategy. Discussions on company- or even business-level generic strategies and how they "fit" generic types of competitive structures are too far removed from the reality of highly differentiated strategic approaches that can be expected in different parts of the differentiated network organization. Instead, it may be more useful to explore the actual content of strategy in such complex organizational systems: Network theoretic analysis of internal flows of resources, products, people, and information might be more relevant for developing middle-range theories on resource commitment, decision making, strategic control, normative integration, and creation and diffusion of innovations in such companies (e.g., the application of network analysis in Carley, 1986; Burt, 1987; and Walker, 1985). In this article we have focused primarily on the hierarchical network relationships between the headquarters and the national subsidiaries of an MNC. Investigation of the lateral network relations among the different subsidiaries can open up avenues for similar fine-grained analysis of both the causes and consequences of horizontal interdependencies and synergy.

Finally, as has been shown in some recent contributions, the interorganizational approach can be particularly useful for the study of an-

other MNC-related phenomenon that is assuming increasing importance (viz., their forming complex webs of alliances and joint ventures with customers, suppliers, and competitors [Ohmae, 1989; Harrigan, 1985]). By focusing on relations among actors, the network analysis approach can provide both appropriate concepts and methodological tools for rigorous and theory-grounded investigation of the strategic and organizational aspects of such alliances (see, for example, the contributions by Walker [pp. 227–240], Westney [pp. 339–346], and Hakausson & Johanson [pp. 369–379] cited in Contractor & Lorange, 1988).

Building a Network Theory of the MNC

The concepts and arguments presented here suffer from a number of shortcomings that should be overcome before the network conceptualization can yield a useful and testable theory of the MNC. The necessary improvement and extension of these preliminary ideas will require both deductive theory building with more sophisticated use of network theory than has been achieved here; empirical studies are also needed to induce and test more fine-grained propositions and hypotheses.

First, our definitions of constructs such as within and across densities are too coarse because, as we point out in the concluding section, these densities cannot but differ for different parts of the total external network of any company. Such differences can be expected along both geographic and functional dimensions. For example, the external organizations relevant for the R & D department of a company may be far more interconnected across national borders compared to those that are relevant for the service department. Similarly, while within density, on average, may be higher in Japan than in the United States, there may be significant differences between the two contexts for different parts of the local organization sets. One of the main attractions of the network perspective is that the implications of such differences can be explicitly included in both theoretical and empirical analyses, and elaboration of these distinctions must be a priority for future research on this topic.

Second, we have considered exchange very broadly to include many different kinds of transactions involving products, information, affect, and so on, without distinguishing among these different flows. As follows from the general arguments of Mitchell (1973) and Kadushin (1978), each of these different kinds of exchanges can have some very different implications for the strategy, organization, and management of an MNC; further, those effects are also likely to be interactive. Therefore, the next phase of theory development must explicate the separate and joint effects of these different kinds of exchanges.

Third, we have focused on density as the key parameter of the external network because density appeared to relate most closely to the implications of social embeddedness described by Granovetter (1985). Further, it is also a relatively simple construct that is easy to conceptualize and to measure once the relevant organization sets and external network are identified (see below). But density is not a complete description of a network, and it is possible that some other characteristics of the external network can significantly influence specific attributes of the MNC. Therefore, for more nearly complete development of theory, it would be desirable to identify a set of parameters that completely and unambiguously define the external network and then to explore the impact of each of these parameters on selected attributes of the multinational. Krackhardt (1989) has proposed four parameters (connectedness, hierarchy, least-upperboundedness, and graph efficiency) as necessary and sufficient descriptors of a network, and his work provides some interesting opportunities for modifying and extending our theoretical arguments.

Finally, besides (indeed, before) such extension and refinement of the concepts, it might also be necessary to improve the specificity and precision in our definition of some of the con-

structs so as to facilitate their operationalization in empirical research. One key issue concerns delineation of the boundaries of the different national organization sets, which is a general and widespread problem in network research (Laumann, Marsden, & Prensky, 1983). As suggested by Aldrich and Whetten (1981), the relevant organization sets may well differ according to different kinds of exchange, and the definition of the boundaries may, therefore, depend on the kind of exchange that is the focus of inquiry. In presenting our ideas here, we have been guided by the belief that these boundaries can be identified either through the naturalistic approach of an a priori commonsense definition, or empirically, through measurement of structural cohesion (DiMaggio, 1986). In the former approach, for example, all relevant suppliers, customers, regulators, and competitors in any country can be prespecified based on expert knowledge of the local structure of the business. In the latter approach, a broader population of potentially relevant members of the local organization set may be identified through a repeated process of snowball sampling until sufficient convergence is achieved, and the organization set can then be identified empirically from this population as the group of organizations that interact maximally with one another and minimally with other members of the population. Once the relevant local organization sets are identified by one or the other method, the external network can be defined as the collectivity of all these local organization sets.

Clearly, the former method for identifying the national organization sets is the more convenient, and it is our belief that experienced researchers should usually be able to prespecify most of the relevant actors with sufficient accuracy. Some researchers, however, may prefer the latter approach for it avoids the arbitrariness of an a priori selection. However, as Laumann et al. (1983) have argued, neither approach is fully satisfactory, and some better way for delineation of the boundaries remains as another important topic for further reflection.

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