THE EVOLUTION OF RESEARCH ON COORDINATION MECHANISMS IN MULTINATIONAL CORPORATIONS

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Abstract. The mechanisms of coordination used by Multinational Corporations (MNCs) are studied, through an exhaustive literature review. A pattern of evolution is found: as time has passed, researchers have concentrated more on subtler and informal mechanisms, abandoning their unidimensional focus on structural issues. It is suggested that the increase in the study of those mechanisms may be due, among other reasons, to the fact that MNCs are indeed making more use of them. That could be explained by changes in the international competitive environment, which force firms to adjust their strategies, requiring ever more multidimensional coordination.

It is now commonplace to admit that the last decade has witnessed a dramatic shift in the imperatives of global competition [Porter 1986a]. The need to disperse activities throughout the world, due to political, technological, and even sheer size-related considerations force managers to partly forego potential economies of scale that would accrue from concentration of activities. But, at the same time, the competitive pressures that impel coordination of the widespread activities of the multinational corporation (MNC) grow constantly. This dual tendency puts to test the organizational abilities of MNC managers to coordinate even more closely operations that tend to be farther apart, not only geographically, but also technologically.

As a result, while managers in those multinational firms easily realize that *what* they have to do is to integrate all the activities of their national subsidiaries under a common strategy, the understanding of *how* to implement such a global strategy has proven to be considerably more difficult

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[Bartlett 1986; Quelch and Hoff 1986]. We can characterize the managerial challenge of the 1980s as to how to coordinate the increasing number of dispersed and yet interdependent international activities. Thus the study of coordination devices is essential to the study of international management.

This paper tries to understand the evolution of the empirical studies on the coordinating mechanisms used by MNCs. It first shows that there is an observed evolution in the study of these mechanisms over time; and then it offers some suggestions as to why this evolution occurs as it does. This is done by reviewing the literature on mechanisms of coordination in MNCs: in all, the review synthesizes the work of more than eighty top scholars in the field.

Two are the article's main points. First, it is found that the study of mechanisms of coordination has evolved from focusing on the more formal tools to an appreciation of the subtler forms of coordination, such as acculturation and the creation of networks of informal communication. Second, the hypothesis is made that, together with other reasons, that evolution *in research* may follow an evolution *in practice*. That could be due to important, documented changes in the international environment which alter the competitive game in many industries, thus forcing a strategic adaptation by MNCs, with the attendant increased coordination demands.

COORDINATION MECHANISMS IN ORGANIZATION THEORY

What is a mechanism of coordination? For the purposes of this paper, it will suffice to say that a mechanism of coordination is any administrative tool for achieving integration among different units within an organization. Therefore, the terms "mechanisms of coordination" or "mechanisms of integration" will be used as synonyms.

Mechanisms of coordination are not exclusive tools of multinational corporations (MNCs). Indeed, by definition, all organizations have a certain degree of specialization or differentiation among their parts, which calls for some sort of coordination effort across them. Large and complex firms competing in multiple markets need coordination among different dimensions. Thus, the mechanisms used to get that coordination are neither original to nor exclusive of MNCs: they are common to all large firms. It is the especial complexity of MNCs that makes their study of interest.

Since the main thrust of this paper is to show an evolution in the study of coordination mechanisms in MNCs, we shall now take a brief look at the major kinds of coordination mechanisms, as outlined by selected *organization theory* scholars, unconnected to their application in an international context. Table 1 synthesizes the findings of these scholars.

According to Table 1, mechanisms of coordination could be divided roughly into two groups: structural and formal mechanisms, and other mechanisms, less formal and more subtle; these two groups are akin to Barnard's [1968] formal and informal organization, respectively.

TABLE 1
List of the Most Common Mechanisms of Coordination

Structural and formal mechanisms

1. Departmentalization or grouping of organizational units, shaping the formal structure.
2. Centralization or decentralization of decision making through the hierarchy of formal authority.
3. Formalization and standardization: written policies, rules, job descriptions, and standard procedures, through instruments such as manuals, charts, etc.
4. Planning: strategic planning, budgeting, functional plans, scheduling, etc.
5. Output and behavior control: financial performance, technical reports, sales and marketing data, etc., and direct supervision.

Other mechanisms, more informal and subtle

6. Lateral or cross-departmental relations: direct managerial contact, temporary or permanent teams, task forces, committees, integrators, and integrative departments.
7. Informal communication: personal contacts among managers, management trips, meetings, conferences, transfer of managers, etc.
8. Socialization: building an organizational culture of known and shared strategic objectives and values by training, transfer of managers, career path management, measurement and reward systems, etc.

The first group contains five mechanisms. The formal structure is the result of the *departmentalization* or grouping of activities within organizational units, following the principle of labor division as a mechanism of "organizational influence" [Simon 1976]. The second mechanism, *centralization* or decentralization, determines whether the locus of decision-making authority lays in the higher or lower levels of the chain of command [Pugh et al. 1968; Simon 1976; Lawrence and Lorsch 1967; Galbraith 1973; Child 1972; Galbraith and Kazanjian 1986]. The third mechanism, *formalization and standardization* is the extent to which policies, rules, job descriptions, etc. are written down in manuals and other documents, and procedures are established through standard routines [Pugh et al. 1968]. [1] This mechanism has received different names: "standard practices" [Simon 1976], "paper system" [Lawrence and Lorsch 1967], "standardization" [March and Simon 1958; Thompson 1967], "rules" [Galbraith 1973; Galbraith and Kazanjian 1986]. The fourth mechanism, *planning*, refers to systems and processes like strategic planning, budgeting, establishment of schedules [March and Simon 1958; Thompson 1967], goal setting [Galbraith 1973; Galbraith and Kazanjian 1986], that intend to guide and channel the activities and actions of independent units. The fifth mechanism, *output and behavioral control* [Ouchi and Maguire 1975; Ouchi 1977], consists of two independent forms of exercising control in organizations. Output control is based on the evaluation of files, records, and reports submitted by the organizational units to corporate management. Other authors call it "bureaucratic control" [Child 1972, 1973]; "performance control" [Mintzberg 1979], or "impersonal control" [Blau and Scott 1962]. In contrast, behavior control is based on direct, personal surveillance. It is also labeled "personal control'' [Mintzberg 1983]: instead of monitoring performance, the supervisor or manager is personally observing and checking the behavior of subordinates.

The second group of mechanisms, informal and subtle, consists of three kinds of managerial tools. First, *lateral relations* that cut across the formal structure, which include direct contact among managers of different departments that share a problem; temporary or permanent task forces; teams; committees; integrating roles; integrative departments, etc. [Lawrence and Lorsch 1967; Galbraith 1973; Galbraith and Kazanjian 1986]. Second, *informal communication* that supplements the formal one [Simon 1976] by means of the creation of a ''network'' [Kotter 1982] of informal and personal contacts among managers across different units of the company; corporate meetings and conferences; management trips; personal visits; transfers of managers; etc. Third, the development of an *organizational culture* through a process of socialization of individuals by communicating to them the way of doing things, the decision-making style, and the objectives and values of the company [Pfeffer 1982]. Thus, a veritable ''system of ideology'' [Mintzberg 1983] is ''internalized'' [Simon 1976] by executives throughout the organization, generating identification and loyalties and, ultimately, ''institutionalizing'' the firm [Selznick 1957]. This process is performed by training corporate and subsidiary managers, transferring them across different units [Galbraith and Edström 1976], managing their career paths, measuring and rewarding them in appropriate ways, etc.

We contend that the mechanisms listed in Table 1 go from structural, formal, and relatively simple tools to more informal, subtle and sophisticated devices, in order to implement increasingly complex strategies. Simple strategies need little coordination and therefore are implemented by using structural and formal mechanisms. Complex strategies (those resulting from interrelated, multiplant, multimarket policies) need an enormous coordinating effort, and so are implemented through both types of mechanisms: structural and formal, plus informal and subtle. Thus mechanisms at the bottom of the list are added to, not substituted for, those high on the list [Galbraith and Kazanjian 1986]. This additional effort of coordination is usually very expensive in terms of executive's time and money. Therefore, an organization usually selects from the list of Table 1 starting at the top and going down only as far as it is necessary to implement its strategy.

COORDINATION MECHANISMS IN THE INTERNATIONAL CONTEXT: A LITERATURE REVIEW

In this section, more than eighty studies on coordination mechanisms in MNCs are reviewed. After a first inventory, where the studies are classified according to the main mechanisms they deal with, they are put in perspective, grouped along three main ''streams of research.''

An Inventory of Empirical Studies

Table 2 presents an inventory of eighty-five pieces of research published in books and academic journals. The papers' selection has followed a multi-step process: the most often quoted articles in the literature have been included and, with them, those on which they are based. Some relevant articles may, of course, have been left out but they were less frequent in the journals, or out of reach of the authors. In any case, it is believed that, although not exhaustive, this list covers all the key studies.

About 74% of the studies are surveys based on large samples of MNCs, which lends them external validity. 21% of the studies are clinical, analyzing in depth a few organizations, thus being exploratory rather than conclusive. The remaining 5% are non-empirical papers that provide some empirical secondary data. Purely conceptual papers, therefore, have not been included. Almost all the papers in the inventory come from separate studies, except for a few that originate in a common research project but deal with different mechanisms of coordination.

The studies are arranged chronologically, from 1953 to 1988. They are classified (by marking an X in the respective column) according to the main mechanism(s) to which they refer. This classification does not imply that the authors cited have omitted discussions on other mechanisms, but only reflects what seems to be their main area of attention. Additionally, the studies that include informal mechanisms of coordination are classified according to the key presented at the bottom of the table.

The inventory in Table 2 reflects what seems to be a clear evolution in the study of coordination mechanisms used by MNCs. It can be seen that, up to 1975, researchers concentrated their attention on structural and formal administrative tools as shown in the first three columns, which are crowded with Xs. Starting in 1976, researchers seem to have begun to enlarge their focus including other mechanisms of coordination, more informal and subtle (86% of the studies on these other mechanisms have been published after that date), while remaining interested in structural and formal tools.

This growing trend in the study of more informal and sophisticated mechanisms of coordination is more clearly appreciated in Figure 1. However, as mentioned before, researchers have not lost interest in the structural and formal mechanisms. Thus, since the mid-seventies, a more multidimensional perspective in the study of mechanisms of coordination seems to have taken hold.

A Review of the Main Streams of Research

The first approach to coordination can be found in Barlow's pioneer study in international management [1953]. In this study, Barlow dealt mainly with structural and formal mechanism in the home operations of twenty-two U.S. MNCs, together with the Mexican subsidiaries of 17 of these firms. He concentrated on general patterns of organizational structure (departmentalization), the degree of autonomy of the subsidiaries, the extent of

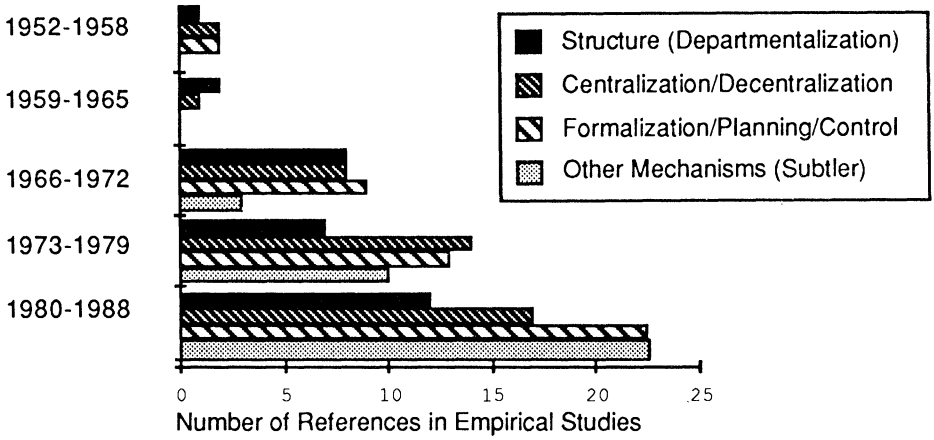
TABLE 2
An Inventory of Empirical Studies about Mechanisms of Coordination Used by MNCs

Author(s)	Year of Publication	Structure (Departmentalization)	Centralization vs. Decentralization of Decision Making	Formalization Planning, Output & Behavior Control	Other Mechanisms, More Informal and Subtler
Barlow	1953	×	×	×	
Dunning	1958		×	×	
Clee & di Scipio	1959	×			
Clee & Sachtjen	1964	×			
Johnstone	1965		×		
Lovell	1966	×			
Safarian	1966		×		
Roccour	1966			×	
Williams	1967	×			
Chorafas	1967				× (2,3)
Fouraker & Stopford	1968	×			
Donnelly & Ryans	1969			×	
Chorafas	1969			×	× (2,3)
Aylmer	1970		×		
Brooke & Remmers	1970	×	×	×	× (1,2,3)
Deane	1970		×	×	
Inckson, et al.	1970	×		×	
Alsseg	1971		×	×	
Franko	1971	×	×		
Negandhi & Prasad	1971		×	×	
Schollhammer	1971	×	×	×	
Stopford & Wells	1972	×			
Steuer, et al.	1973		×		
Johnson & Ouchi	1974		×	×	× (1,2)
Wiechmann	1974		×	×	× (2,3)
Suzman	1975	×			
Yoshino	1975	×			
Sorenson & Wiechmann	1975			×	
Youssef	1975			×	
Franko	1976	×	×	×	
Prahalad	1976	×		×	× (2,3)
Brandt & Hulbert	1976			×	× (1)
Yoshino	1976	×	×	×	× (3)
Tsurumi	1976		×		
De Bodinat	1976		×	×	× (3)
Picard	1977		×		
Sim	1977		×		
Brandt & Hulbert	1977		×		
Edström & Galbraith	1977				× (2,3)
Ouchi & Johnson	1978			×	× (2,3)
Killough	1978			×	
Edström & Galbraith	1978		×		× (2,3)

Garnier, et al.	1979		×		
Heenan	1979	×			
Doz	1979	×	×	×	× (2,3)
Negandhi & Baliga	1979		×	×	
Hulbert & Brandt	1980	×	×	×	× (2)
Goehle	1980		×		
Hedlund	1980				× (1,2,3)
Picard	1980	×		×	× (2)
Welge	1981	×	×	×	× (2)
Hedlund	1981		×	×	
Kagono	1981	×	×		× (1)
Leksell	1981a			×	
Lindgren & Spangberg	1981			×	× (1,2,3)
Otterbeck	1981		×	×	× (3)
Schuit et al.	1981		×		
Leksell	1981b	×		×	× (1,2,3)
Prahalad & Doz	1981			×	× (1,2,3)
Doz & Prahalad	1981			×	× (1,2,3)
Negandhi & Baliga	1981		×	×	× (1,2,3)
Egelhoff	1982	×			
Garnier	1982		×		
Davidson & Haspeslagh	1982	×			
Bartlett	1983				× (1,2,3)
Jaeger	1983			×	× (2,3)
Negandhi & Welge	1984	×	×	×	× (1,2,3)
Gates & Egelhoff	1984		×		
Van Den Bulcke	1984	×			
Van Den Bulcke & Halsberghe	1984	×	×	×	× (2)
Egelhoff	1984			×	
Edström & Lorange	1984				× (3)
Daniels, Pitts & T.	1984	×			
Cray	1984	×		×	
Hedlund	1984	×		×	× (2,3)
Young, Hood & Hamill	1985		×	×	× (2)
Kuwasara	1985		×		
Daniels, Pitts, & T.	1985	×			
Agarwala	1985		×	×	
Quelch & Hoff	1986		×	×	× (1,2,3)
Bartlett	1986				× (1,2,3)
Ghoshal	1986		×	×	× (2,3)
Doz	1986			×	× (1,2,3)
Bartlett & Ghoshal	1987b		×	×	× (1,2,3)
Egelhoff	1988	×			

(1) Lateral relations: Task forces, Teams, Committees, Integrators, Integrative Departments
(2) Informal communication: Informal network, Personal contacts, Intra-Company Visits, Meetings, Conferences & Forums, Transfer of Managers
(3) Socialization and Corporate Acculturation: Key Individuals, Training & Development, Career Paths, Rewards & Punishments, Transfer of Managers

FIGURE 1
Evolution of the Studies on Mechanisms of Coordination, as Used by MNCs



formalization and output control, and the advantages and disadvantages of using national or expatriate executives (behavior or personal control).

In those early years, practically all studies were centered on the formal mechanisms of coordination. Within those, two clearly differentiated streams of research can be traced: one concerned with organizational structure (departmentalization), and the other with the rest of the formal mechanisms.

In the *studies on organizational structure*, researchers concentrated their attention on the search for the "right" structure for the changing international environment. Clee and di Scipio [1959] and Clee and Sachtjen [1964] were the first to claim the need of a global structure—geographic, area or worldwide product—as most of the U.S. MNCs were trying to cope with the increasingly complex international problems by means of a simple international division.

The main body of research on structure, performed during the second half of the sixties and first half of the seventies, came from the Harvard Multinational Enterprise Project, which sought to support empirically Chandler's [1962] "structure-follows-strategy" paradigm in an international context. Among these studies were those by Fouraker and Stopford [1968], Stopford and Wells [1972], and Franko [1976]. In the best known of them, based on a large sample of 187 U.S. MNCs, Stopford and Wells created a framework relating certain types of structure (international divisions, worldwide product and area divisions) to certain elements of a firm's international strategy (foreign product diversity, and percentage of foreign sales). Franko [1976], in his study of 70 large European MNCs in 1971, added another type of structure: the direct reporting to the firm's president by the head of the subsidiaries (labeled "mother-daughter relationship" by the author), an arrangement traditionally used by European firms.

Closer to our days, many scholars have remained concentrated on the fit of strategy and structure [Egelhoff 1982; Daniels, Pitts and Tretter 1984;

1985], with particular interest in global product and global matrix arrangements [Davidson and Haspeslagh 1982], and the change from mother-daughter to more advanced structures in European MNCs [Hedlund 1984]. Even today, the original model proposed by Stopford and Wells is being revised and extended [Egelhoff 1988].

The second stream of research focused on the *study of centralization of decision making and bureaucratic control* (formalization, standardization, reporting and control) as mechanisms of coordination. Since most of the early studies did not make a clear distinction between centralization and bureaucratic control, this review will deal with both types of mechanisms at the same time. These early studies intended to measure the general extent of centralization of authority, or control exercised by headquarters over subsidiaries. The results did not show a clear pattern on the use of these mechanisms in that period, as some of the studies found widespread use of centralization and rather strong control in the headquarters-subsidiary relationships [Dunning 1958; Safarian 1966; Deane 1970; Brooke and Remmers 1970; Alsseg 1971], while others reported a slightly higher degree of decentralization or subsidiary autonomy [Johnstone 1965; Roccour 1966; Schollhammer 1971; Garnier et al. 1979]. Also in this period, several researchers concentrated their attention on measuring the extent of centralization [Aylmer 1970; Wiechmann 1974; Brandt and Hulbert 1977] and standardization [Donnelly and Ryans 1969; Sorenson and Wiechmann 1975; Killough 1978] in marketing activities. Again, there were mixed results about the use of these formal mechanisms of coordination.

These inconclusive results might have led to a change of approach: instead of estimating an overall degree of centralization or autonomy as in the past, more recent work has analyzed the issue in different functional areas of the MNC [Goehle 1980; Hedlund 1981; Welge 1981; Schuit et al. 1981; Van Den Bulcke and Halsberghe 1984; Young, Hood and Hamill 1985]. All of them found that finance and R&D were the most centralized functions, personnel was the least, and production and marketing were in between. Other authors considered the centralization of decision making as the dependent variable, and measured the impact on it of some industry, parent, and subsidiary characteristics as independent variables [Picard 1977; Hulbert and Brandt 1980; Goehle 1980; Hedlund 1981; Garnier 1982; Gates and Egelhoff 1984]. Once again, the results are not consistent across different studies. In the meantime, researchers from the Stockholm School conducted a long project on headquarters-subsidiary relations in six Swedish MNCs. Although they payed special attention to formalization and standardization of procedures and systems, and to output control [Leksell 1981; Otterbeck 1981; Hedlund 1981; Lindgren and Spangberg 1981], some of their work also dealt with the formal structure and with informal and subtler mechanisms, especially Leksell [1981b] and Hedlund [1980].

Finally, in a different vein, a few researchers specialized in large-scale comparative studies about the use of formal mechanisms of coordination in

U.S., German, and Japanese MNCs [Negandhi and Baliga 1981; Negandhi and Welge 1984]. They concluded that U.S. firms exercised more influence on decision making, and relied more on bureaucratic control than Japanese MNCs, while German companies were in between. Earlier comparative studies by Negandhi and Prasad [1971] on U.S. MNCs and firms of developing nations, and Inckson et al. [1970] on U.S. and U.K. firms had also revealed the higher formalization of policies and procedures of American MNCs as compared to companies from other countries.

It is not until the last decade that a *third stream of research, dealing with the informal, subtler mechanisms of coordination*, has taken hold. It does have its roots, however, in some earlier work, for a few authors had dealt with them before. Among these were Chorafas [1967, 1969], who focused on communication problems within MNCs, and training and development programs for international executives; and Brooke and Remmers [1970] who were the first to show a multidimensional perspective on coordination, for they analyzed all types of mechanisms, although dedicating more attention to structural and formal ones.

Wiechmann [1974], in a field research on twenty-seven MNCs in four consumer packaged goods industries, studied the major devices that these companies used to integrate their multinational marketing activities. While his main focus was on centralization as an integrative device, the author concluded that centralization of marketing decision making could be supplemented, if not substituted, by other integrative devices, namely systems transfer, people transfer and corporate acculturation. These four integrative devices are not mutually independent; instead they are closely interrelated. The author argued that in view of these interactions among the integrative devices, the question in multinational marketing management was not just which device to choose to integrate worldwide marketing activities, but rather which combination or "mix" of integrative devices to employ (p. 15).

Several studies on Japanese MNCs dealt with the informal mechanisms [Johnson and Ouchi 1974; Yoshino 1976; Ouchi and Johnson 1978]. Subsequent studies on those firms found that Japanese MNCs employed a kind of "cultural control" (behavior control plus control by socialization) rather than a "bureaucratic control" [Jaeger 1983; Jaeger and Baliga 1985]. This cultural control was based on the use of expatriates, a high frequency of visits, a policy of transfer of managers, and a strong socialization process, and as such allowed a more decentralized decision-making process [Egelhoff 1984].

In a clinical study of four European MNCs, Edström and Galbraith [1977] (see also Galbraith and Edström [1976]) discovered that continued international transfer throughout an employee's career was a key administrative tool for socializing people, and a powerful means for designing the information system for large MNCs because it dealt with verbal information. Extensive transfer of managers, fostering multiple contacts among them, was hypothesized to be a technique for creating a verbal network, making the expatriates a part of it. Therefore, the transfer of managers was used as a coordination mechanism, added to the development of bureaucratic rules and the centralization of decision making; thus the three coordination mechanisms were cumulative, not alternative stages. Each stage represented a higher step in the degree of coordination used to cope with increasing variety, the socialization stage being the most complex.

In a long set of related publications (among them: Prahalad [1976]; Doz [1980]; Prahalad and Doz [1981]; Doz and Prahalad [1981]; Doz and Prahalad [1984]; Doz [1986]; Prahalad and Doz [1987]) Doz and Prahalad have reported the results of various clinical studies in large MNCs. They criticized the traditional approach to the problem of structuring relationships between headquarters and subsidiaries:

> The traditional approach to this task, as depicted in the multinational management literature, has been architectural: a search for the right structure—product, geography, or matrix [Doz and Prahalad 1984, p. 58].

The authors argued that such an architectural view alone can hardly constitute an enduring solution to this problem. Simple unidimensional approaches—product, or geography—do not provide the key to what is essentially a multidimensional problem. Attention to the process of reaching a balance in a matrix organization is more important than the formal structure, and maintaining such balance implies three closely interrelated tasks: 1) ensuring that relevant data are brought to bear on key decisions, 2) creating the conditions for a consensus among managers on key strategic decisions, and 3) managing relative power among managers. To achieve these goals, three sets of coordination mechanisms are employed: 1) data management mechanisms (information systems, measurement systems, resources allocation procedures, strategic planning, budgeting process); 2) manager's management mechanisms (choice of key managers, career paths, rewards and punishment systems, managers' development, patterns of socialization); 3) conflict resolution mechanisms (decision responsibility assignments, integrators, business teams, coordination committees, task forces, issue resolution processes) [Doz and Prahalad 1981, p. 16].

Bartlett [1982, 1983, 1986] also criticized the traditional approach to coordination in the 1960s and 1970s, where the answer to the international challenge seemed clear; managers simply needed to identify key strategic goals and restructure the corporation around them [Widing 1973]. However, after two decades of experimentation, an "ideal international structure" remained elusive. Bartlett [1983] reported that, in a study of ten MNCs, none of them had continually reorganized their operations (each retained for years the same simple international division to coordinate overseas activities) and all were successful. These results should not be surprising, for Davidson and Haspeslagh [1982], in a study of eighty-five U.S. MNCs, had found that those using an international division performed much better in foreign sales than those using global product or global matrix structures.

Bartlett and Ghoshal [1987a, 1987b, forthcoming], in their analysis of the "transnational firm," emphasized the need to simultaneously be responsive to different strategic requirements in order to remain competitive in today's economic and political environment. To do so, however, an MNC must develop an extremely sophisticated set of coordination mechanisms, avoiding the simplistic centralization-decentralization dichotomy. All informal mechanisms (developing informal networks of communication, stressing a corporate culture, managing career paths, etc.) must be used if the firm is to have enough flexibility to remain responsive to local differences and, at the same time, have enough consistency to take advantage of global opportunities, especially of learning and exploiting local expertise at a world level.

REASONS FOR THE EVOLUTION

Table 2 and Figure 1 showed that there has been different emphasis across the years on different mechanisms of coordination. But, as the mere inspection of the table confirms, there has not been just a change: there seems to be an evolution in the focus of the research from the simpler to the more complex devices, a trend to go from unidimensional to multidimensional perspectives. Table 3 bears this out: there is a clear increase in the amount of studies on informal mechanisms while, at the same time, the earlier interest in the formal ones is maintained.

Many factors can account for this evolution. The academic need to do research on "new" aspects of the same problem comes to mind as a possible reason for this shift in focus. But, as has been noted, there is not a simple change: there is an evolution. The growing sophistication of scholars who learn from previous research and can understand deeper, less obvious forms of coordination (the informal ones, not labeled as such in a firm's procedures) is undoubtedly related to this phenomenon, as is the progress experienced by basic disciplines, such as organization theory. We suggest, however, that together with those—and other—reasons there might be another cause tied to the research's underlying reality: there might have been an evolution *in the use* of the mechanisms of coordination by practising managers in MNCs.

Indeed, the evolution of the use of coordination mechanisms can be thought of as following a general pattern, represented in Figure 2: changes in the environment influence the set of coordination mechanisms used by MNCs over time. But, as shown in Figure 2, the effect of changes in the international environment is not immediate and passes through intermediate levels. Changes in the international environment alter the type of competition at the industry level [Porter 1986a]. Companies in each specific industry adapt their strategies to the new pattern of competition in order to survive and grow. The change in strategy triggers modifications in the structural configuration or organizational pattern, which are reflected in the structure, systems, and general coordination mechanisms needed to implement the new strategy [Chandler 1962].

TABLE 3
Number of References in Empirical Studies

	Structure (Departmentalization)	Centralization vs. Decentralization of Decision Making	Formalization, Planning, Output & Behavior Control	Other Mechanisms, More Informal and Subtler
Up to 1975	13	14	15	5
From 1976 on	20	29	32	31
Total	33	43	47	36

	Formal Mechanisms	Informal Mechanisms	Total
Up to 1975	42	5	47
From 1976 on	81	31	112
Total	123	36	159

$\chi^2=5.49$ $p<.025$ (df=1)

Informal Mechanisms	Up to 1975	From 1976	Total
Observed	5	31	36
Expected	18	18	36

$\chi^2=18.78$ $p<.0001$ (df=1)

Informal Mechanisms	Up to 1972	1973-1979	1980-1988	Total
Observed	3	10	23	36
Expected	12	12	12	36

$\chi^2=17.17$ $p<.0001$ (df=2)

Obviously, these aren't fast rules; some companies do not react to the environment but, rather, change it. But for their competitors, the situation is the same, i.e., the environment has changed. Equally, not all firms follow this general company structure-follows strategy-follows industry structure paradigm, as Chandler himself showed: there are structural innovators and there are laggards. Some companies never adapt and disappear. But, again, this does not affect the general validity of the mediated influence of the general environment on the coordination mechanisms of the firm through industry structure and firm strategy.

The evolution of the international economic environment in this century can be divided in four major periods, here called Period-0 through Period-III. Before 1920 (Period-0), many industries went from local or regional to national in scope, and some began globalizing [Porter 1986b, p. 42]: Wilkins [1977] reports that by 1914 U.S. foreign direct investment was already as high a percentage of U.S. GNP (7%) as in 1966. The emergence of scale economies in some industries due to advances in technology, the relative homogenization of product needs in different countries, the

FIGURE 2

Environment	Industry	Strategy	Structural Configuration	Structures Systems and Processes
Changes in International→ Environment	Pattern of International→ Competition	Company's Strategic→ Response	Company's Organizational→ Pattern	Implementation via Coordination Mechanisms

improvements in transportation and communication, and the low trade barriers are among the factors that caused that incipient globalization of markets. (See Chandler [1986] for a series of specific examples of dramatic drops in unit costs—up to 25 times—due to economies of scale.)

The three following periods present a completely different panorama. Table 4a summarizes the relevant elements of those periods. It shows the historical evolution of international competition over the years. Given the self-explanatory nature of Table 4a, just a brief description of each period is needed to emphasize its relation with Figure 2.

Period-I (1920-1950) presented some drastic changes in the international environment that restrained the incipient globalization of the beginning of the century (for evidence on the cartelization phenomenon, see Wilkins [1974]). These changes, mainly political and against free competition, favored a multidomestic pattern of competition developed on a country-by-country basis. Multinational companies, especially European, responded to the new rules of the international game by adopting a country-centered strategy. This strategy was backed by a decentralized organization pattern [Bartlett 1986]: a loose federation of independent national subsidiaries, each focused primarily on its local market. As this strategy intended to be nationally responsive, almost no integration was sought.

Period-II (1950-1980) saw a strong reversal of the interwar trends. The confluence of strong economic and political forces led to the globalization of industries. Global competition forced MNCs to adopt a global strategy with a "centralized hub" organization pattern [Bartlett 1986], concentrating more upstream value activities at home and increasing control over the downstream ones (abroad), particularly in U.S. firms. Therefore, instead of being nationally responsive, subsidiaries had to implement functional strategies decided at headquarters. The most salient of those economic forces were: an increase of the technologically available scale economies [Bartlett & Ghoshal 1987a, pp. 8-9; Doz 1986, p. 20; Porter 1986b, p. 30]; homogenization of tastes and market structures [Hill and Still 1984, p. 101]; lower costs in transportation and communications [Veith 1981; Antonelli 1984]; and the disappearance of international cartels [Hannah 1983; Wilkins 1974]. On the political front, there was a clear reduction in protectionism and nationalism [United Nations Centre on Transnational Corporations 1985a].

Period-III, which began in the late 1970s, presents some gradual but significant changes in the international arena. Economic and political imperatives are rising simultaneously in opposite directions. Economic forces continue leading to globalization of industries [Van der Klugt 1986], while political forces claim for nationally responsive strategies. International competition remains global, but MNCs have to respond with a new strategy that involves a continuous trade-off between the economic and political imperatives. Such strategy has been called "transnational" by Bartlett [1986].[2] MNCs are responding to these opposite forces by following a double-pronged strategy. First, they invest in new production facilities in countries where they used to compete via export-based strategies. This is especially the case of industrialized countries, where world foreign direct investment has been concentrating during the 1980s due to their increasing protectionism [United Nations Centre on Transnational Corporations 1985b, pp. 4 & 17]. The sharp increase of foreign direct investment in the U.S. since 1977 illustrates very well this recent trend, particularly in the automobile industry, where Japanese firms have invested intensively in production facilities since 1982 (see *Business Week* [1988], p. 96). But, at the same time, managers try to integrate all these national units in a complex network of flows of materials, components [Dunning and Pearce 1981; Casson et al. 1986], technology, financial resources, creative ideas, and people. These flows are not only between subsidiaries and headquarters, but also among subsidiaries directly. This integrated network relies on "reciprocal interdependence" [Thompson 1967], the most complex form of organizational interdependence.

According to the model presented in Figure 2, we could expect a corresponding evolution of the mechanisms of coordination as utilized by MNCs over these changing periods (see Table 4b). The interwar period, with its "portfolio" or multidomestic strategic approach, called for very little coordination. Among the few mechanisms employed were the structural ones, especially departmentalization arrangements. Some MNCs used an international division to coordinate their foreign branches, while others preferred the direct personal reporting of subsidiary managers to the president or CEO of the MNC. Centralization of authority was almost not used as a coordination device, as subsidiaries enjoyed a considerable degree of autonomy in this period. In addition to the formal structure as a coordinating device, headquarters used a minimum of output control, asking for periodical financial reports (as subsidiaries were thought of as portfolio investments, headquarters sent capital out and expected dividends back), and behavior control through the use of expatriate executives appointed in charge of those subsidiaries. Besides being a formal mechanism of coordination and control, the use of home nationals allowed headquarters to maintain informal linkages with subsidiaries by means of a corporate culture transmitted to these executives through a long training process while working at home. This mechanism enabled headquarters to ensure the loyalty and identification of these expatriates with corporate values, and to preserve the company's management style even in remote regions of the world. A paragraph taken from Franko [1978] illustrates very well this point:

TABLE 4a
Historical Evolution of the International Environment, International Competition, and Strategy of MNCs

Period and "Labels"	Relevant Phenomena in the International Environment	Pattern of International Competition	Strategic Response of MNCs
Period I 1920-1950 "Multinational" "Multidomestic"	National differences in tastes and market structure Nationalism Protectionism and high tariff barriers Cartels and other contractual agreements Discriminatory legislation for foreign companies Transportation and communication barriers.	*Multidomestic (or country-by-country basis)* Competition in each country is essentially independent of competition in other countries. Firms manage their activities as portfolios of subsidiaries.	*Country-Centered* Direct investment in many countries Self-contained and autonomous branches Differentiated and nationally responsive strategy Competitive advantage in downstream value activities.
Period II 1950-1980 "Global" "Pure Global"	Rise in scale economies due to advancing technology in many industries Homogenization in tastes and market structures among countries, though segmentation within countries Reduction in protectionism and nationalism Great improvement and lower costs in transportation and communications Disappearance of cartels and other contractual agreements.	*Global (or worldwide basis)* Firm's competitive position in one country is strongly influenced by its competitive position in other countries.	*Global* Concentration of production in few plants to achieve scale economies Serve the world from these few manufacturing locations through exporting Centralized control of worldwide marketing activities Standardization of product design Competitive advantage in upstream value activities.

Period III 1980— "Transnational" "Complex Global"	Greater homogenization in tastes and market structures among countries, though segmentation within them Limits reached in economies of scale in many industries Development of flexible manufacturing processes and technologies that reduce the minimum efficient scale in many industries Limits to further decline in transport costs Continuing drop in communication costs Sharp rise in protectionism and in non-tariff barriers Government pressures to invest locally, create employment, improve its balance of trade, and transfer advanced technology.	*Global (or worldwide basis)* Firm's competitive position in one country is strongly influenced by its competitive position in other countries.	*Global with increasing foreign investment* Decentralization of production in many plants in the world, each specialized in processes and/or products, with a strong interdependence among them Interorganizational transfer of technology and ideas Simultaneous response to national interests and local needs, and to economic forces towards globalization Competitive advantage in both upstream and downstream value activities.

TABLE 4b
Historical Evolution in the Use of Mechanisms of Coordination among MCSs

Period and "Labels"	Structural Configuration or Organizational Pattern of MNCs	Main Mechanisms of Coordination Utilized
Period I 1920-1950 "Multinational" "Multidomestic"	*Decentralized Federation* Loose federation of highly autonomous national subsidiaries, each focused primarily on its local market.	*Structural and Formal Mechanisms* International division Direct personal reporting Not much output control, and mainly financial performance Behavior control by using expatriate executives.
Period II 1950-1980 "Global" "Pure Global"	*Centralized Hub* Value activities that provide the company a competitive advantage—normally upstream activities, such as product design or manufacturing—are centralized at headquarters, or are tightly controlled.	*Structural and Formal Mechanisms* International division, worldwide product, geographic, or regional division Higher centralization of decision making at headquarters Higher formalization of policies, rules, and procedures Standardization in planning and budgeting systems Tight output control in U.S. MNCs, behavior (and cultural) control in Japanese MNCs.
Period III 1980— "Transnational" "Complex Global"	*Integrated Network* Physical assets and management capabilities are distributed internationally to country units, thus creating a truly integrated network of dispersed yet interdependent resources and capabilities. Each subsidiary is considered a source of ideas, skills, and knowledge.	*Structural and Formal Mechanisms* Former structures plus global matrix Centralization of decision making but upgrading the role of subsidiaries High formalization Strategic planning Tight and complex output control *More Informal and Subtle Mechanisms* Temporary or permanent teams, task forces, committees, integrators Informal channels of communication and relationships among all managers Strong organizational culture by knowing and sharing objectives and values.

> When European managers described their mother-daughter organizations, they invoked analogies of control systems used in Roman or feudal times. Like Roman proconsuls sent out to govern the colonies after being educated as good Romans, subsidiary managers in many Continental firms were given responsibilities only after years spent absorbing the values and practices of the parent company. The absorption process was facilitated by the fact that many of the foreign managers were of the home-country nationality. (p. 118)

The postwar years, with the advent of globalizing strategies, posed the first serious organizational challenge to MNCs. Coordination mechanisms were much more required than in the former period, and took the form of structual and formal tools. Among the first, international divisions, worldwide product, area, and regional arrangements [Williams 1967; Heenan 1979] were the most common types of departmentalization adopted by headquarters to coordinate foreign subsidiaries. Decision making was highly centralized at headquarters to ensure an integrated response to global competition. MNCs exhibited a rather high level of formalization in processes such as planning and budgeting, and standardized programs in functional areas such as marketing [Buzzell 1968] and manufacturing, while R&D was centrally performed. Tight, but simple output control, and frequent reports of almost all subsidiary functions were also used as coordination devices. In addition, some multinationals used expatriates as behavior or personal control. This was especially the case of Japanese global multinationals, which combined personal control with control by socialization [Edström & Galbraith 1977], thus creating "cultural control," as opposed to "bureaucratic control" [Baliga and Jaeger 1984].

Finally, the current phase of international competition, with its contradicting requests on global strategies and national responsiveness, makes a coordination effort based on unidimensional or even bidimensional perspectives, such as structural and formal mechanisms, too weak. As stated by Lawrence and Lorsch [1967] and Galbraith and Kazanjian [1986], new cross-departmental, informal and subtle mechanisms have to be added to—not substituted for—the existing structural and formal managerial devices to cope with complex environmental conditions. Hence, MNCs adopting the integrated network strategy have to include new coordination tools in addition to earlier mechanisms, such as international-specific departmentalization (the still fashionable global matrix), centralized decision making, highly formalized processes and systems, tight controls, and highly frequent reports. These new coordination mechanisms are rather informal and more subtle than the existing ones. Among them are: first, microstructural arrangements (lateral relations) that cut across the formal lines of the macro structure, such as teams, task forces, committees, individual integrators and integrative departments. Second, informal communication channels, such as direct and informal relations among all managers, without distinction of subsidiaries and headquarters, that supplement the formal information system and improve the communication process. Third, the development of a strong organizational culture that includes both a deep knowledge of the company's policies and objectives and a strong share of organizational values and beliefs. This process of corporate acculturation [Kuin 1972] or socialization involves all managers working at subsidiaries and not just the expatriate ones, as was the case in the interwar years.

Obviously, not all MNCs have passed exactly through the same phases because not all industries have had their competitive structures modified in the same way. It is important to note, however, that this is an ongoing process, and industries which still retain "earlier period" characteristics are fast changing towards globalization [Levitt 1983]. At the same time, there are some MNCs that, despite competing in industries that have passed through these periods, have not followed the path proposed in Figure 2, for not all firms adjust their strategy with the same alacrity. Some never adjust their strategies—and eventually fade away [Chandler 1962]. At the same time, some kind of "reverse causation" is highly likely: the "realized strategies" [Mintzberg and McHugh 1985] of many firms have surely been influenced by the possibilities afforded by their coordination mechanisms.

SUMMARY AND CONCLUSIONS

The study of mechanisms of coordination in MNCs is crucial to international management, for they are at the center of all managerial and strategic problems faced by MNC managers: how to "make the most" of far-flung and diverse activities.

Most of the studies can be grouped into three streams of research: the two early ones, going from the late sixties until today, concentrate on the more formal mechanisms of coordination. The third, fully developed only in the last decade, has analyzed the informal, subtler mechanisms of coordination. In all three cases, an evolution from unidimensional to multidimensional perspectives on coordination can be observed.

This recent emphasis on subtler mechanisms of coordination, together with a multidimensional approach, can be explained, at least partly, by the growing sophistication of scholars, who can understand deeper processes inside large, complex firms, especially as the field of organizational theory progresses.

But it is hypothesized that the observed evolution in research can also be due to a basic increase in the use of subtler coordination mechanisms by MNCs; i.e., there would be a growing sophistication of managers, not only of scholars, forced by strategic imperatives to better coordinate operations within the firm. The existence of such imperatives may be inferred from the general changes experienced by international competition and the accompanying changes in MNCs' strategies, as documented by international strategy scholars.

Evidently, more research is needed to ascertain the extent of that change in the practice of coordination, not just in academic interest. Longitudinal studies could trace the evolution of the use of coordination mechanisms within firms, and relate it to the firms' changing strategies. It is believed that this review of the literature makes it worth of direct study the hypothesis that coordination mechanisms are basic tools for implementing a given strategy, and that their use is therefore influenced by the kind of strategy the firm is pursuing, itself influenced by changes in the global environment.

NOTES

1. In fact, Pugh et al. [1968] consider formalization and standardization as two different mechanisms, but as both were highly correlated ($r=0.83$) in their study, we have grouped them in one mechanism. Child [1972] found a 0.87 correlation coefficient in a similar test.

2. It is remarkable how well the concepts of an early paper written by Perlmutter (1969) about "polycentric," "ethnocentric," and "geocentric" orientations of headquarters towards subsidiaries fit with the concepts of "multidomestic," "global," and "transnational" organizations, respectively. Also, Rutenberg's [1970] "archetype four" fits very well with the transnational concept.

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