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Strategies, Structures and Information Architectures: Toward International Gestalts

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Abstract

Contributions from the international business strategy literature are synthesized and integrated with literature on organizational structure and information system architecture. While international strategies based on the global integration-local responsiveness framework put forth in the 1980s by Prahalad and Doz are well developed, the role of organizational structure and its relationship with strategy are still unclear. The role and impact of information architecture on the strategy-structure relationship are even less understood. Drawing on well developed theory and research in each of these areas, organizational gestalts or configurations are developed. These emerging gestalts, we believe, will provide valuable theoretical tools for integrating different aspects of international strategic actions, and should encourage investigation and debate on the role and impact of strategy, structure, and architecture. We theorize that four distinct gestalts emerge, and we base our arguments on the premise that consistency within gestalts is an important factor affecting performance.

Introduction

Over the last few years, researchers have quite successfully addressed and explicated the various forms of international strategy, and these forms are generally well accepted in the literature. To wit, there is considerable agreement among international business scholars that most firms embarking upon or undertaking international business operations are cognizant of the twin pressures of global integration and local responsiveness. To this end, the integration-responsiveness framework suggested by Prahalad and Doz (1987) has provided a valuable theoretical tool to better understand international strategic behaviors of firms.

Strategic management researchers examining organizational structure have explored structural types (Fredrickson, 1986). Several scholars have examined three dimensions of structure – centralization, formalization, and complexity (Child, 1974; Fry, 1982; Fry & Slocum, 1984; Hall, 1977). More recently, we have seen many successful applications of globally integrated strategies (Parente, 2003; Parente & Kotabe, 2003). According to Yip (2003), global companies have developed more sophisticated and flexible versions of international strategies and organizational processes, which successfully embraced globalization.

What is less understood is the role of organizational structure and its relationship with international strategy. The role played by information systems is even less understood, more specifically the impact different information architectures have on the overall relationship. Our study intends to fill in this gap. We suggest that there exists an important triadic relationship among international strategy, organizational structure, and information architecture, and that each of these plays enabling and constraining roles simultaneously. We argue that assessing international strategies without clearly understanding the role and impact of organizational structure and information architecture provides an incomplete picture of this complex phenomenon.

One contribution of our research is that this paper extends the conceptual issues around international strategy, and suggests that an examination of the triadic relationship that includes organizational structure and information architectures is likely to provide not only a more holistic

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and complete picture, but may allow organizing gestalts to emerge which can be more closely examined. The search for gestalts or configurations is fairly common in strategic management research, and the field has shown a noticeable shift from the atomistic view of strategy – in which each firm is considered as unique in all respects – toward a view that supports the recognition of commonalities that exist among firms (Dess & Davis, 1984). These configurations have been referred to as gestalts (Hambrick 1983; Miller 1981), which are said to represent "tightly integrated and mutually supportive parts, the significance of which can be best understood by making reference to the whole" (Miller, 1981, p. 3).

Our aim here is to develop typologies[1] around the key constructs of international strategy, organizational structure, and information architecture. We take a contingency-like approach[2] in developing a framework that illustrates the interplay of international strategy, organizational structure, and information architecture. Researchers who adopt a contingency perspective accept the organization status quo as given and simply search for regularities to test to predict and control the organization toward greater efficiency and performance (Daft, 1995). We, however, extend the traditional contingency approach and use the concept of consistency among a firm's many discrete activities and its chosen position (Porter, 1991). Porter's sense of consistency implies that a firm's strategy is the manner in which discrete activities and their synergistic interrelationships are configured and linked with other discrete activities of the firm. Consequently, we suggest that consistency among a firm's international strategy, organizational structure, and information architecture constitutes our basic analytical framework (Figure 1).

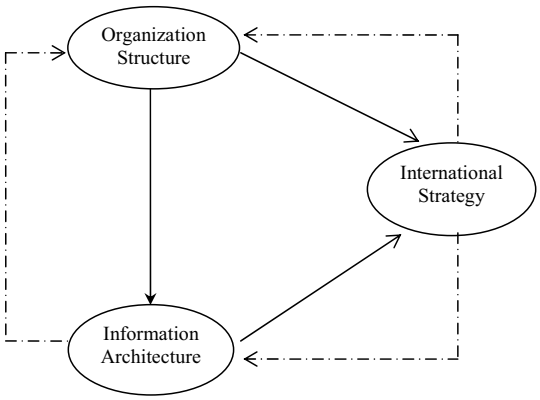

Fig.1. The triadic relationship among organization structure, information architecture, and international strategy

In order to develop organizing typologies, we provide a fairly detailed explanation of the constituents of international strategies, organizational structures, and information architectures. This is followed by a brief explanation of the relationships among the key constructs of strategy, structure, and information architectures. Finally, we suggest and argue why certain types of configurations or gestalts are logically more appropriate than others, and we explore issues of consistency and inconsistency among the three major constructs of our basic analytical framework. We conclude by suggesting that while configurations and typologies are meaningful from a research and a practitioner point of view, in that certain organizational actions are enabled, we also argue

[1] Typologies are an important aspect of scientific research. It is a technique of classifying related subjects into similar groups for study that allows researchers to identify patterns and help extrapolate understanding to wider populations (Fiedler, Grover & Teng, 1995). Typologies classify subjects by forcing deductive assignment into a priori pre-defined groups.

[2] Contingency means that one thing depends upon other things, and for organizations to be effective, there must be a "goodness of fit" (Daft, 1995, p. 24) between their structures and the conditions in their external environment (Pennings, 1992).

that beyond a point, a certain gestalt can have a constraining influence as well. In other words, the very creation of certain "enabling" configurations can create sticky "constraining" conditions, and these issues are discussed at the end of this paper.

Strategies, Structures, and Architectures

International Strategies

International strategies are the forms and types of actions firms follow to fulfill their long-term business objectives. Organizations involved in international business activities usually have two major forces impinging on them. One is the need to standardize products on a global basis, and the other is to respond to local country or local market demands. International strategies may be characterized in different ways, and the integration-responsiveness framework developed by Prahalad and Doz (1987) has extended the conceptualization of industry pressures to incorporate generic strategic responses. The framework suggests that organizations develop their strategies and structures based on the emphasis they place on either one or both forces. Consequently, there are four essential responses that firms can make in terms of international strategies. These can be conceptualized in a two-dimensional space consisting of the pressures for global integration and local responsiveness. While there are neither pure theoretical types, nor clean clusters in a statistical sense, one can conceptualize four (with some degrees of overlap) international strategy clusters arrayed somewhat distinctly. The four types of strategies, according to this framework, are summarized in Figure 2.

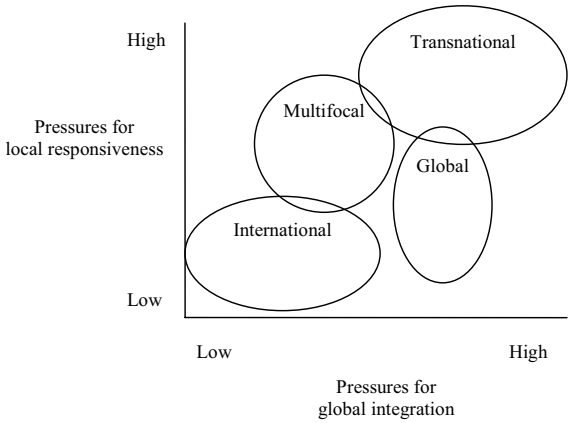

Fig. 2. Four types of international strategies

In addition, the characteristics of each international strategy and their level of commitment and control requirements are summarized and presented in Table 1 according to Prahalad and Doz's (1987) integration-responsiveness framework, which extended the conceptualization of environmental factors and incorporated generic strategic responses.

Table 1

International Strategy Typology

Strategy	Level of Commitment	Level of Control	Market Orientation	Characteristics
International	Low	Low	Fulfillment of customer demand with minimum direct investment	A domestic company seeks sales of its domestic products into foreign markets Usually takes the form of exporting, licensing, or franchising A firm's international activities are considered secondary, and an extension of domestic operations
Global Integration	Medium	Medium	Standardization of products and processes to fulfill global integration	Requires high levels of coordination and control to integrate activities on a worldwide basis Puts emphasis on plant loadings, worldwide logistics, technology transfer, and transfer pricing Characterized by standardized needs, standardized practices and processes, and standardized customer services
Multifocal	Medium	Medium	Customization of products and processes to fulfill local needs	Seeks to satisfy customer local preferences and host government or local market requirements Gives up control for the flexibility to respond to local requirements Involves working with others in implementing joint strategies Reduced resource commitment but with high degree of shared control between the entrant and its partners Associated with customizing products based on local knowledge, adapting to local markets, and providing localized service
Transnational	High	High	High degree of customization with high standardization combined	Seeks to meet local requirements along with a high degree of global integration Very complex strategy that combines high customization with high standardization Provides flexibility to respond in a multitude of ways to changing environments Allows firms to standardize some links of the value added chain and meet the pressures of global integration, and delink others to fulfill pressures of local responsiveness (Kogut, 1989) Leads to reciprocal interdependence among a firm's operations requiring complex coordination and control mechanisms Involves integrated worldwide low cost production of differentiated products sold to market segments, regions, and nations exhibiting different product requirements Involves local marketing like a multifocal strategy, coupled with globally integrated operations typified by a global strategy (St. John, Young & Miller, 1995)

Organizational Structures

Organizational structure refers to an organization's internal pattern of relationships (Thompson, 1967). Structure has been characterized by a number of dimensions and illustrated by using a variety of types, like functional or divisional (Fredrickson 1986). There are, however, three dimensions of structure – centralization, formalization, and complexity – that have received more attention than any others (Child, 1974; Fry, 1982; Fry & Slocum, 1984; Hall, 1977). Each of these dimensions appears to have great implications for strategy and strategic decision making, and are dominant characteristics of well-known structural types (Fredrickson, 1986).

Centralization refers to the degree to which the right to make decisions and evaluate activities is concentrated (Fry & Slocum, 1984; Hall, 1977). A high level of centralization is the most obvious way to control and coordinate organization decision making, but places significant cognitive demands on those managers who retain authority (Fredrickson, 1986). Mintzberg (1979) has discussed this issue by suggesting that an individual does not have the cognitive capacity or information that is needed to understand all the decisions that face a complex organization.

The degree of *formalization* specifies the extent to which an organization uses rules and procedures to prescribe behavior (Hage & Aiken, 1969; Hall, 1977). Therefore, formalization has significant consequences for organizational members because it specifies how, where, and by whom tasks are to be performed (Fredrickson, 1986). A high level of formalization has the benefit of eliminating role ambiguity, but it also limits members' decision making discretion.

Complexity refers to the condition of being composed of many, usually, though not necessarily, interrelated parts. Hall (1977) suggests that there are three sources of complexity – horizontal and vertical differentiation, and spatial dispersion. Therefore, an organization that simultaneously has numerous levels, broad spans of control, and multiple geographic locations would be considered as highly complex (Fredrickson, 1986).

Basing on these three dimensions of organizational structure, we modify Mintzberg's (1979, 1983) five structure typologies into four as suggested in Table 2. The four organizational structure typologies we define are as follows (1) simple structures; (2) divisionalized structures; (3) bureaucratic structures; and (4) networks structures.

Information Architectures

In attempting to understand information systems, the manner of hardware and software development has resulted in unique architectures evolving over time. Computer-based information systems have long since been categorized by their architecture or typology (Burch, 1985), which are a set of interconnections or nodes in a network. Renewed interest in this type of categorization has been spurred by the advent of the Internet, the Web, and the increasing reliance of organizations on electronic communication and collaboration (Kock, 1999, 2002).

Categorizing information systems architecturally is appealing since architectures are relatively high-level abstract entities that are not usually idiosyncratic to particular settings. Further, some architecture-based classifications have long since been fairly well-established and accepted (Durr, 1987; LaPlante, 1987; Leifer, 1988), and have led to refinements of the years. For example, Fiedler et al. (1995) classify information architectures by the intensity of communication, degree of resource sharing, and decentralized processing. Similarly, Kock and McQueen (1997) classify information architectures according to the type of organizational communication they enable; a theme that is picked up and expanded in follow-up studies (see Kock, 2000; Kock and Murphy, 2001). The two dimensions we specifically use in developing information architectures are the degree of centralization and the degree of network connectivity (Ahituv, Neumann & Zviran, 1989; Leifer, 1988). Based on these two dimensions four main types of information systems architectures or typologies consisting of (1) stand-alone; (2) centralized; (3) decentralized; and (4) distributed architectures are discussed.

Table 2

Organization Structure Typology

Structure	Centralization	Formalization	Complexit	Characteristics
Simple	High	Low	Low	Characteristic of young, start-up, entrepreneurial organizations as well as entrenched autocracies Usually small firms operating in market niches in an environment with few rules Highly centralized, usually in the hands of the entrepreneur or key controlling members In the international context, firms may follow simple export strategies
Divisionalized	Low	High	Low-Medium	Integrated sets of semi-autonomous entities loosely joined by an administrative framework referred to as strategic business units (SBUs) Formalization is used as an integrative mechanism across the entire organization and acts as a form of control in the absence of centralization Usually the spatial dispersion of these kinds of firms is high, and the overall degree of complexity is medium Coordination and control across regions is usually not a priority Because of the decentralized and divisionalized structure, the marketing and manufacturing functions are usually located in the same region in order to produce and sell in the same local market In the international context, each unit may pursue different strategies in different international locations
Bureaucratic	High	High	Medium-High	These organizational forms are characterized by standardization, functional structural design, and large size Differentiated both horizontally and vertically, and are generally associated with standardized, routine, and mass production technologies in a stable environment Typically centralized and formalized While the spatial dispersion may be low to enhance control and coordination, horizontal and vertical differentiation is usually high Overall complexity ranges from medium to high The centralized structures ensure high degrees of control and coordination, necessary for plant loadings, economies of scale, transfer pricing, and complex logistics (Prahalad & Doz, 1987) Typically, production capacity is concentrated in a few plants to achieve the twin objectives of scale economies and standardization In the international context, a strategy of global integration is appropriate as such a strategy involves worldwide low cost production of standardized products (Porter, 1986)
Network	Low	Low	High	Associated with Mintzberg's (1979, 1983) definition of adhocracy Characteristics of a young organization, without necessarily being young Mutual coordination and cooperation are critical and cause these organizations to behave like project teams Exists in the form of networks, where responsibility, control, and authority exist in the state of complex flux Usually problem-centered or solution-centered, and the network structure continuously changes to reflect changing priorities Highly organic with relatively little formalization Low levels of formalization and centralization Decision-making authority as well as responsibility may shift in a dynamic form to respond to particular environmental challenges and needs Usually have complex structures, which may exhibit high degrees of horizontal and vertical integration The most complex of all the organizational forms, with complex control and coordination requirements In the international context, this structure may be appropriate to support a transnational strategy, network organizations are highly dispersed spatially, and are able to maintain effective "control and coordination" through their complex networks structures

Stand-alone Architectures

Stand-alone architectures are relatively less common and consist of dispersed and isolated computers. These architectures are typically configured around personal computers (PCs), and are used in individual departments or as information architectures in small organizations. Because of their limited capabilities and low cost, most large organizations do not purposely plan to employ this type of architecture, which is nevertheless used in small operations or peripheral activities. In a sense, stand-alone architectures are scaled-down versions of the type of large mainframe-based architectures seen in and before the 1970s, previous to the emergence of affordable commercial computer networks, and at a time when the cost of computing was very high (which virtually prevented decentralized use of computers by non-experts).

Stand-alone architectures are ones where different computers share few distributed resources. For organizations following an international strategy, such architectures are useful so long as the volume of business in each individual international location remains small, and are usually appropriate to support a number of isolated small-scale international operations. This information architecture is especially relevant where headquarters places a low emphasis on international operations.

Centralized Architectures

The combination of hardware, software, data, and communication form the core of information systems. As each of these dimensions has been developed and integrated, the concept, design, and capability of information architectures have undergone considerable changes. Earlier architectures were the classic centralized ones, which were typically characterized by a mainframe host computer supported by an array of peripherals, including "dumb" terminals, which allowed interactive, information processing activities mostly of a transactional nature. These centralized architectures were modest in size in the earlier generation computers, but grew from small, medium to large centralized mainframe architectures over time. Centralized architectures are characterized by low information processing decentralization, and low network connectivity.

The characteristics of centralized information architectures would make them appropriate for bureaucratic structures that are characterized by high degrees of centralization as well as formalization. Bureaucratic structures also have medium or high degrees of complexity, which make the operations of centrally designed information architectures appropriate. These architectures would be appropriate when following a strategy of global integration that entails high control, coordination, and decision centralization, and when activities are heavily controlled by and centralized in headquarters.

Decentralized Architectures

Centralized architectures have been giving way to decentralized information architectures in the 1980s, and the role of the remote user has in turn become paramount. This trend is continuing through the 1990s and 2000s. One particular type of decentralized information architectures, often referred to as "peer network", has been gaining ground over other types of architectures. Peer networks have no central processor through which communications must pass, and hence there are more degrees of freedom in communication, and communication constraints are substantially less than for distributed architectures (discussed next). With reduced costs of information technology and increased power, end-users have gained increasing use of their computer applications, which has resulted in process migration and the forming isolated islands.

Typically, decentralized architectures are characterized by high processing decentralization, and low network connectivity. Decentralized architectures indicate a movement away from functional control that is essentially centralized toward decentralized control. This has resulted in organizational structures where a division is given complete autonomy, and each division has its functional areas under its control. The head office essentially has a coordinating role, and each division functions with its divisional level corporate setup. Organizations have found that a decentralized setup is, in many cases, better suited to cope with an environment marked with rapid changes. Perhaps the one key reason decentralized structures in organizations could meaningfully

take place is because of the support provided by information architectures that allowed decentralized communication and control. Decentralized architectures would be appropriate for supporting a multi-focal strategy where headquarter and subsidiary operations are managed separately.

Distributed Architectures

When we look back to the period leading to the early 1960s, it is reasonable to argue that the main concern among hardware manufacturers and data processing managers was to achieve computers efficiency, particularly since computers were very expensive relative to human labor then. With increasing demands and sophistication of users of information, and with the availability of powerful personal computers (PCs), data processing activities became more distributed. This gradual shift from information availability in report form to information becoming available on demand, and forming a part of a decision support system (DSS), accelerated the trend from centralized to distributed architectures, consisting of clusters of networked minicomputers and PCs. Distributed architectures are defined as "peer-to-host architectures", and are designed with PCs services as terminals around a central processor or mainframe. In this type of architecture, the PC terminals retain much of their own processing power and storage capabilities.

Distributed architectures typically display high process decentralization and high network connectivity. This allows decentralized operations with a high degree of inter-unit communication on account of network connectivity. Consequently, the isolation of decentralized architectures could be avoided, and a high degree of communication, including the sharing of databases and other resources could be effected. Such a system would be most appropriate in supporting a network-like organization structure. Also in being able to support decentralized operations with a high degree of inter-subsidiary coordination, distributed architectures would be appropriate information architectures to support a transnational strategy.

The Strategy, Structure, and Architecture Relationships

In this section we briefly discuss the relationships among international strategy, organizational structure, and information architecture. While discussing these relationships, we indicate how each of these constructs can be associated with specific configurations or gestalts.

Strategy and Structure

In studying the development of America's dominant industrial organizations, Chandler (1962) observed that major increases in unit volume, geographic dispersion, and vertical and horizontal integration were eventually followed by changes in structural form. Several studies following Chandler's work confirmed an association between these two variables, in that structure generally followed strategy (Fouraker & Stopford, 1968; Rumelt, 1974). In spite of the wide spread acceptance of the structure follows strategy relationship, there is a significant body of literature that suggests that structure has a significant and major effect on strategy (Fredrickson, 1986). Bower, for example characterized structure broadly as the context within which decisions are made, and observed that "structure may motivate or impede strategic activity" (1970, p. 67). This view is also supported by other researchers who contend that structure constrains (or in another set of circumstances, enables) strategic choice (Bobbitt & Ford, 1980; Duncan, 1979; Hedberg, Nystrom & Starbuck, 1976).

To understand why it is logical for strategic action to be affected by structure, one must understand the relationship between decision making and structure (Fredrickson, 1986). March and Simon (1958) address this critical aspect of the relationship by suggesting that an organization's structure imposes boundaries of rationality that accommodate members' cognitive limitations. By delimiting responsibilities and communication channels, structure allows organizations to achieve organizationally rational outcomes despite their cognitive limitations (Simon, 1976). Structure also allows management to control the decision making environment and facilitate the processing of information (Fredrickson, 1986). The structure-strategy relationship is well explained by Bower when he states that "when management chooses a particular organizational form, it is providing

not only a framework for current operations but also the channels along which strategic information will flow" (1970, p. 287).

The strategy-structure relationship, that was previously considered reciprocal, is now recognized as being considerably more complex, and there is some agreement that structure can and does have a profound impact on strategy through its direct effect on the strategic decision making process (Bourgeois & Astley, 1979; Burgelman, 1983; Fahey, 1981; Fredrickson, 1986). In understanding the role of strategy in international business, one must understand that what has essentially changed is the context within which business operations take place. The well developed and complex associations between structure and strategy in classical studies of firms in the US, with appropriate modifications, we argue, are also central to research in international business.

Organization and Architecture

Over the years, evolving information architectures and changing organization structures have exhibited a similarity of form (Kock, 1999), in that both have moved from a centralized to a decentralized design. This shift in both cases can be understood as a distribution of power from one central node to a number of decentralized sources that allowed certain advantages to accrue from such shifts. In both computers and in organizations, such shifts were characterized by a significant reduction in formality, or in computer terms, a reduction in "protocol". In the computer or information system environment, such a shift from a centralized controller or "authority" had many implications. From a relatively rigid system with a single central processor servicing requirements of peripheral units, and handling requests on a rigid set of heuristic or algorithms, distributed architectures distribute both data and processing to multiple machines and results are exchanged (Leifer, 1988).

While both centralized and distributed architectures required varying degrees of central control and authority, distributed architectures had far higher levels of communication and task accomplishment at relatively lower levels within the structure. With decentralized architectures, there is no central controller, and both communication and task responsibilities have been devolved to independently be able to communicate and share resources with relatively high degrees of freedom. Although terminals or other systems communicate through bridges or gateways and require rules for connectivity, these constraints are substantially less than for distributed systems, and this flexibility gives decentralized architectures the capability to cope with a wide variety of information requirements (Leifer, 1988). In other words, the power of decentralized architectures is maximized when protocol or rules are at a minimum. Electronic mail, local area networks, telecommunication systems, group decision-making systems, etc. allow messages to be sent through the network in an interactive mode which results in an increase in the quality, quantity, reliability, and capability of the system to process information (Leifer & Triscari, 1987).

In a conceptual study, Leifer (1988) theorized that there were certain ideal matches between the four information architectures and Mintzberg's (1979, 1983) organizational structure typologies. Leifer suggested that certain architectures and structures were more compatible than others. A mismatch, according to him, would result in inferior performance unless a change was effected onto either architecture or structure, or both. Tavakolian (1989) studied 52 firms to verify if their structure-strategy relationship could be associated with a particular type of information architecture. Using the Miles and Snow (1978) typology, Tavakolian's study indicated that the three strategy types differed significantly in the degree of centralization of their information architectures in line with hypothesized relationships. He had presumed that prospector strategies would be characterized by more decentralized information architectures compared to defenders. Centralization levels in information architectures in analyzer organizations, he found, were somewhere between these two. We have developed organizational gestalts based on the work of Fresdrickson (1986), Leifer (1988), Mintzberg (1979, 1983), and Tavakolian (1989), among others.

Organizational Gestalts

Typologies and taxonomies represent two fundamentally different approaches to classification. Typologies classify subjects by forcing deductive assignment into *a priori* pre-defined

groups, while taxonomies determine membership into *posteriori* categories which emerge from empirical analysis inductively (Fiedler, Grover & Teng, 1995). One important drawback of forcible classifications is that certain existing configurations may have no researcher defined categorization, as the defined typologies may be neither collectively exhaustive nor mutually exclusive leading to increased researcher bias or misconception (Bailey, 1973; Doty & Glick, 1994; Rich, 1992). An important defense against this drawback of using typologies is that fewer typologies provide useful analytical groupings for further study, and have the important distinction of being parsimonious. That is why typologies consisting of generic strategies (Porter, 1980), or organizational types (Miles & Snow, 1978) are usually restricted to no more than three or four, and this number allows for groupings that are both manageable as well as meaningful for researchers.

The discussion so far has analyzed organizations on the three important facets of structure, strategy, and architecture. The aim has been to establish commonalities by which configurations and gestalts may be considered. Organizational structure was analyzed on three dimensions consisting of centralization, formalization, and complexity (Fredrickson, 1986). Based on these dimensions, we identified four types of organizational structures (Mintzberg, 1979, 1983): simple, bureaucratic, divisionalized, and network. International strategy was analyzed along the two dimensions of global integration and local responsiveness (Prahalad & Doz, 1987). Four strategic outcomes were considered as ways organizations would respond to these pressures. The strategies we considered are international, global, multifocal, and transnational.

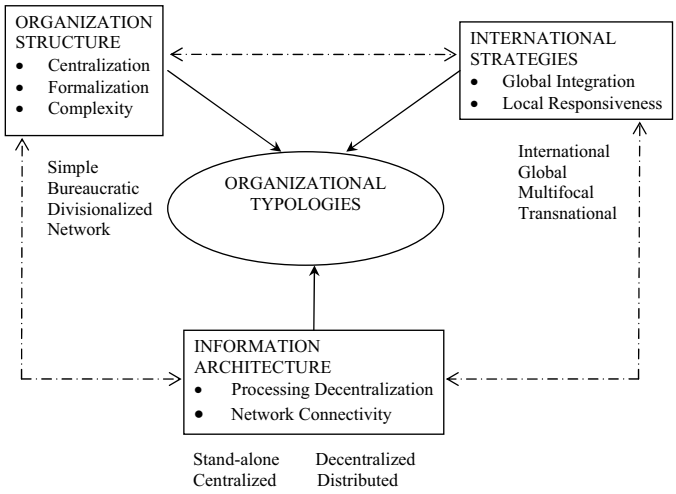

Fig. 3. Organizational typologies

Finally, information architectures were analyzed along two dimensions of processing decentralization, and network connectivity (Fiedler, Grover & Teng, 1995). The four information architectures we consider are stand-alone, centralized, decentralized, and distributed architectures (Leifer, 1988).

There have been some attempts to integrate issues of organizational theory with information systems architectures. The aim has been to better understand the role and impact of information systems on organizations, and vice versa. Those attempts have become more systematic over time, leading to some robust models (Huber, 1990; Leifer, 1988; Mukherji, 1995; Tavakolian, 1989). It is widely recognized that information systems impact and are impacted by organizations. Thus, attempts at integrating organization theory with information theory have created important linkages, and have provided additional directions to better understand the interactions and effects of complex relationships. Our attempts at developing configurations and typologies are based on studies that have attempted to bridge different aspects of the discipline. Specifically, we have at-

tempted to identify commonalities among international strategies, organizational structures, and information architectures in developing gestalts.

In a major effort at integration, Ives and Jarvenpaa (1991) have used information processing theory as the basis for examining alternative organizational design for information technology in globally competing firms. They have extended organization information theory (Daft & Lengel, 1986; Galbraith, 1973; Tushman & Nadler, 1978), which suggests that organizational structures that are required to deal with information requirements are derived from a firm's environments and tasks. The theory implies that an appropriate organizational fit is achieved when the information processing requirements of business strategy are met by the information capabilities of the organizational structure. Based on Ives and Jarvenpaa's (1991) conceptualization of matching organization structures with information technology architectures, we suggest configurations or gestalts as given in Tables 3 and 4. Ives and Jarvenpaa's framework is also based on the general system of decision-making patterns suggested by Bartlett and Ghoshal (1989).

Table 3

Organizational Gestalts in International Business

GESTALT	STRATEGY	STRUCTURE	ARCHITECTURE
Internationalizer	International	Simple Structure	Stand-alone Architectures
Divisionalizer	Multifocal	Divisional Structure	Decentralized Architectures
Controller	Global	Bureaucratic Structure	Centralized Architectures
Integrator	Transnational	Network Structure	Distributed Architectures

Table 4

Matching organization structures and information technology architectures for firms in international business (adapted from Ives and Jarvenpaa, 1991)

TYPE OF GLOBAL ORGANIZATION	INFORMATION TECHNOLOGY ARCHITECTURE
Internationalizer (International) Low emphasis global operations	Applications portfolio contain few, if any, common systems, all operating independently
Divisionalizer (Multinational) HQ and subsidiary operations managed separately	Common centralized systems may be run from a single central site, or from regional centers
Controller (Global) HQ controlled and centralized	May have several global systems locally tailored, and controlled by subsidiary
Integrator (Transnational) Decentralized operations with high degree of inter-subsidiary coordination	Integrated systems approach. High degree of resource and data sharing with decentralized operations

Internationalizers

This is a configuration that consists of an international strategy, which essentially has a low emphasis on international or global operations. *Internationalizers* primarily rely on exporting as a fundamental strategic extension of domestic operations. *Internationalizers* may continue to use exports as a long-term strategic move, or they may use it as a stage to more active involvement in international business. The structure that is appropriate for *internationalizers* is usually a simple one. The information architecture best suited to support this strategy-structure form is the stand-alone architecture. Organizations with simple structures are generally characterized by high centralization, low formality, and low complexity. Consequently, information needs of *internationalizers* are likely to be characterized by being centralized, coupled with low resource sharing. Related information architec-

tures are likely to have to support relatively small volume operations that may exist in several international markets, and are likely to be controlled by the local subsidiary.

Divisionalizers

This configuration for *divisionalizers* consists of a multifocal strategy where headquarter and subsidiary operations are managed separately. The main international activity for *divisionalizers* is to address local market needs by producing and selling in the same market area or segment. The most appropriate organizational form to support this type of strategy would be a divisionalized structure where there is a high level of independence of individual units from other ones. There is limited communication between various units of the organization, except for the headquarters, which undertake a coordinating role. This configuration for a *divisionalizer* is characterized by low centralization, high formalization, and low to medium complexity. Information needs are likely to be characterized by low inter-unit communication, low resource sharing, and low centralization. The ideally suited information architecture for a *divisionalizer* is a decentralized one. Here application portfolios contain few, if any, common systems, which operate independently. Such firms are characterized by high communication within units, low communication across units, low centralized processing, and limited resource sharing.

Controller

The configuration for a *controller* consists of a strategy of global integration that aims to produce standardized products with high scale economies. The strategic requirements for *controllers* are those of centralization and control of operations. Consequently, *controllers* have high headquarter control and centralization. A bureaucratic structure is most supportive of this type of strategy. *Controllers* are characterized by high centralization, high formalization, and medium to high complexity. To support these requirements, common centralized systems may be run from a single central site, or from regional centers. The nature of the information architecture best suited for *controllers* is likely to emphasize high communication, limited resource sharing, and high centralized processing.

Integrators

This configuration consists of a strategy that involves low cost production of differentiated products undertaken in response to simultaneous pressures for global integration and local responsiveness. The strategic requirements for *integrators* are decentralized, but highly coordinated, operations of subsidiaries with activities that call for high degrees of reciprocal interdependence among different units. To support this complex form of control and coordination, a network structure is considered to be most appropriate for *integrators*. *Integrators* are characterized by low centralization and low formalization, but are highly complex. The information architecture best able to support the requirements of *integrators* is a distributed architecture characterized by high communication, high sharing of resources, and decentralized information processing.

Discussion & Implications

What we have suggested in developing gestalts is that there is considerable logic and theoretical rationale behind the four principal groupings. We have argued that a reasonably strong relationship should exist among international strategy, organizational structure, and informational architecture. We also make the assertion that markedly inappropriate or inconsistent groupings of strategy, structure, and architecture are likely to be less coherent than those that appear to be more congruent. While we have not explicitly stated propositions that are associated with specific outcomes in cases of consistent and inconsistent gestalts, we do expect that inconsistent groupings of strategy, structure, and architecture are likely to be rewarded by lower levels of some criterion performance when compared to consistent groupings.

Wolf and Egelhoff (2002) found empirical support for the traditional fits of international strategy-structure theory using a sample of 95 German firms. One major contribution of our research is that our framework extends traditional theory by incorporating information architectures

and proposing organizational gestalts as strategic configurations that describes how organizations would respond to global integration and local responsiveness pressures in today's dynamic global environment. Besides, our study should have important implication to managers of multinationals by better explaining the fit involving international strategies, organization structures, and information architectures.

While a desired combination of strategy-structure-architecture is considered as an important objective to aim for so that long-term objectives are enabled, the downside is that a particular configuration may increase overall rigidity, and a firm's ability to reconfigure itself under changing circumstances. In another context, Giddens (1983) has suggested that social action operates in the form of a duality, such that human actors are enabled and constrained by the environment at the same time. This duality is of particular importance as both practitioners and researchers must become aware of the enabling and constraining aspects of social action.

Of special interest are the cases of a firm that make a strategic decision to reconfigure itself. What may appear to be an inconsistent configuration, and therefore a misfit, may in reality be a transition when a firm changes its strategy, and, consequently, is in the process of recreating a more supportive organizational structure and information architecture. The order in which it changes is difficult to predict as sometimes strategy may follow structure, or the other way round. The role of technology in creating new possibilities in communication and information sharing may also drive changes in strategy or structure, or both. This flux of constant change is the very essence of human life and social action. Having mentioned that, we do expect that when analyzing a large sample of firms, there should exist the four gestalts as we have theorized, and we do expect consistent strategy-structure-architecture gestalts to perform better than inconsistent ones. Since our typologies are neither collectively exhaustive nor mutually exclusive, we may have created a bias toward a specified criterion set in our method of classification. We do, however, believe that this paper addresses a number of important issues in organization theory, and it does so by synthesizing and integrating previous work, and by addressing and explaining critical gaps. To borrow Fredrickson's phrase, "this paper is the first step to encourage investigation and debate" (1986, p. 280) on how strategy, structure, and architecture are interrelated in the context of international business.

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