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Vertical Group Formation: A Social Process Perspective

Mark Shanley[a] and Margaret Peteraf[b,*]

[a] *Purdue University, USA*
[b] *Dartmouth College, USA*

Vertical groups are a common occurrence that is rarely studied as a group-level phenomenon. This paper brings attention to the vertical group, as a collective actor, and group formation processes. We define the vertical group and describe, in brief, why they exist. We explore the issue of how they form and the social processes under which different types of groups are likely to emerge. These include trial and error learning, social learning, and social identification. We introduce a framework that shows how variation in two more fundamental enabling conditions affects both the group development process and the characteristics of the emerging groups. Copyright © 2004 John Wiley & Sons, Ltd.

INTRODUCTION

The term 'vertical group' is likely to be met with blank stares from organization theorists and strategic management scholars alike. And yet, the phenomenon of stable sets of buyers and suppliers that interact regularly in a persistent pattern of exchange relations is both common and readily observable. Consider, for example, the cluster of suppliers that act in partnership with Marks and Spencer, the well-known British department store, to develop production technologies and to supply the end-customers' needs. The relations within this group are more than a set of dyadic relationships, between individual suppliers and Marks and Spencer. There is a mutual sharing of information and a common pride of being a part of the group. The group has an identity that stems not only from association with the hallowed Marks and Spencer name, but is infused with a sense of English pride as well. This was particularly true of the time when Marks and Spencer's performance was strong (Montgomery, 1991).

*Correspondence to: Tuck School of Business at Dartmouth, 100 Tuck Hall, Hanover, NH 03755. E-mail: Margaret.A.Peteraf@dartmouth.edu

In a similar vein, consider how De Beers coordinates the flow of diamonds throughout its vertical chain. It contracts with a given set of diamond producers, operates its own Diamond Trading Company (which functions as a market maker), works with a hand-picked set of dealers (known as 'sight-holders'), and partners with LVMH at the retail end. This is a very complex vertical group and indeed only one of several to be observed in the diamond industry. The Lev Leviev Group, operating out of Israel, has set up a vertical group to rival that of De Beers. Closer to the retail end, other vertical groups have ties through longstanding relationships, through dealers' member-only clubs, and through regional industry associations, such as New York's Diamond Manufacturers and Importers Association of America.

Coca Cola and its association of bottlers, along with the fountain outlets that serve Coca Cola beverages exclusively, provide another example of a vertical group operating at several stages of the supply chain. So does the vertical *keiretsu*, common in Japan (Eli, 1990). As these examples suggest, vertical groups vary widely in form, size, scope, function, and level of stability. The phenomenon is widespread, yet poorly

understood and little studied at the level of the group itself.

A considerable body of research regarding vertical relations among non-integrated firms exists, of course. Yet, for the most part, the research has been conducted at the level of the dyad, rather than at a group level. This is due, in part, to the deep influence of transaction cost economics, for which the unit of analysis is the individual transaction (Williamson, 1975, 1985). It is attributable, as well, to the focus on the dyad within the literature on the behavior of social systems (Coleman, 1990).

Much research has also been conducted on strategic alliances and social networks, which approximate more closely our idea of the vertical group (Gulati *et al.*, 2000). But even within this literature, the focus has been more on the *firm*, operating within such a group, than on the *group* itself. The emphasis has been on the network as an antecedent to the phenomenon of interest or as a consequence. Very little work has been done at the group level, to explore such questions as how a group forms and how it functions as a collective. With few exceptions (Blois, 1972), collective action approaches to vertical relations have not featured prominently in strategic management research.

This contrasts markedly with the study of firm interactions and collective behavior at the horizontal level. The large body of research on strategic groups attests to the attention given to groups of competing firms (McGee and Thomas, 1986; Thomas and Venkatramen, 1988). Much of this work has been similarly focused on the implications of such groups for firm level outcomes (Cool and Dierickx, 1993; Dranove *et al.*, 1998). But there has also been deep concern with the collective nature of these groups, as well as with the processes that lead to group formation (Bresser *et al.*, 1994; Peteraf and Shanley, 1997b).

One question that emerges from this literature is whether groups along the vertical chain are an analog to strategic groups. At the process level, are the interactions among the firms similar? Do horizontal and vertical groups form in similar ways and under similar conditions? Is their level of stability and persistence determined through similar mechanisms?

This paper is a first attempt to address some of these questions. We define, more formally, a 'vertical group' and describe, in brief, some of the reasons *why* such groups might form. But the real focus of our attention, in this paper, is on *how* they form and, more specifically, on the processes that encourage group formation and a collective orientation. We examine three specific processes and two more fundamental enabling conditions that determine not only the likelihood of group formation, but the characteristics of the groups that form under these conditions as well.

WHAT IS A VERTICAL GROUP?

A *vertical group* is a set of firms connected to one another, directly or indirectly, through on-going exchange relationships along two or more stages of a vertical chain. The term 'vertical chain' refers to the series of linked supplier–buyer relations extending from raw materials to the end usage of a product. While a vertical group could comprise as few as two firms that interact regularly as buyer and supplier, this paper concerns larger and more complex vertical groups. An example of this might be the group consisting of Starbucks and its regular coffee growers. In this group, the relationships extend beyond the dyadic relationship between each grower and Starbucks. The growers themselves are linked together not only by their common supply relationship to Starbucks, but also by common production standards to which they willingly conform, as well as a common identity and pride in being Starbucks' suppliers-of-choice.

An even more complex example of a vertical group is one that includes a buyer, a supplier association, and a set of suppliers. These kind of vertical groups are quite common in Japan. Toyota, for example, has three such regional supplier associations for its first tier suppliers. Many larger suppliers also have associations for their second tier suppliers, such as the Denso Kyoryokukai at Nippondenso (Womak *et al.*, 1990). These associations serve an important role in sharing information among group members, which would not be possible if the group were not a stable, cooperative entity.

Vertical groups encompass a variety of forms, as the examples above suggest. They vary as well in terms of the nature of the ties among the members. Relations among firms in a vertical group may be highly structured, in the form of long-term contracts. They may take the form of less formal,

but equally long-standing relationships based on some form of relational governance (Macneil, 1980). The trust-based exchange relationships among buyers and suppliers in the Japanese textile industry provide an example of this (Dore, 1987). And they include more fluid, less structured arrangements as well.

A final way in which vertical groups vary is in terms of the stability of the group. Some groups, regardless of the degree of formality in the relations among members, are stable and long-lived. Others are of much more fleeting duration. Groups that form for the purpose of a particular project, such as the production of a movie by a new independent producer, may last only for the duration of the project. One of the objectives of this paper is to provide some explanation of why some vertical groups are more stable than others.

WHY DO VERTICAL GROUPS OCCUR?

A Net Benefits Perspective

Vertical groups function in different ways and serve a variety of purposes. What all types have in common is that they offer expected net benefits for each of the members. If they did not, the group would never come together in the first place; members would seek alternative exchange relationships. In general, vertical groups occur and persist because the benefits of membership in the group exceed the opportunity costs of membership. The benefits include psychic and social benefits for members, as well as economic benefits.

Vertical groups provide several types of economic benefits. They facilitate the creation of more economic value than would otherwise be possible, by facilitating the sharing of resources, techniques, or information. This potential for increased value will be more important for more complex products—products that are composed of multiple critical components and whose performance depends on component performance in systematic and non-decomposable ways (Mitchell and Singh, 1996). The value of the group will also be greater when there is a need for precisely coordinated activities, such as those required for just-in-time assembly operations.

Vertical groups also create value through providing a low cost mechanism for coordinating the activities of members. For example, a dominant firm in a vertical group may formulate common sourcing policies or provide standard training for groups of vendors, even if relations with specific vendors are formalized in bilateral agreements. These arrangements could reduce the costs of replicating such services de novo for each dyad. Advances in communication technology make vertical groups an even more attractive means for reducing coordination costs. Consider the ways in which the development of Internet technologies for business hubs has allowed vendors like Verticalnet.com to reduce coordination and supply chain costs in a variety of vertical industry sectors.

Other benefits derived from vertical groups include the attainment of scale economies for specific activities, without sacrificing the advantages of focus or flexibility. For example, consortia like True Value (hardware) or Ocean Spray (cranberries) attain scale economies through cooperative purchasing or advertising, which would otherwise be unavailable to them. Companies like Nike focus their resources on achieving a marketing-based competitive advantage, while coordinating a low cost and flexible group of suppliers.

The control over the supply chain that is afforded by a group can also provide benefits. Nintendo's control over the game developers, chip suppliers, and retailers in the 8-bit video game industry allowed it to revive an industry that had nearly died due to a lack of quality control and consumer confidence (Brandenburger, 1995). Vertical groups can also help members win standards wars, thereby gaining access to and dominance over an emerging market (Shapiro and Varian, 1999). The benefits of group participation may extend to the reduction of entry costs of an established firm into a new market, a decision that would be aided by knowledge of existing buyers and suppliers already serving the proposed market (Martin *et al*., 1998).

Vertical groups serve not only as a mechanism for economic value creation, but as a means of value capture by dominant players as well. The Nintendo case provides a clear example of this (Brandenburger, 1995). De Beer's dominance over the vertical chain in the diamond industry, through its Diamond Trading Company, is another example. Even when the primary purpose of the vertical group is value capture, however, the net benefits to each member of the group must be positive for the group to remain a stable,

well-functioning entity (Spar, 1994). These benefits can include things such as a guaranteed demand for their business and even the psychic benefit of being part of a winning team.

Comparative Governance Considerations

From a transaction cost perspective, the question of why vertical groups occur is a question of why the group provides a better mechanism for gaining the benefits described above over alternative arrangements, such as full vertical integration and arms-length contracting among a changing set of participants. There are several reasons why a vertical group may be preferred to full vertical integration. First, it is difficult for a firm to develop more than a limited set of core capabilities, especially in competitive markets (Penrose, 1959). The ownership and management costs of large vertically integrated firms can outweigh the benefits of greater control that internal organization can offer. In addition, the requirements for components and complementary product offerings may be highly fluid and contingent on changing market and technological factors. This makes it costly to plan and control such offerings and places a premium on the kind of flexibility that vertical groups can offer (Mitchell and Singh, 1996). Finally, vertical groups may be a superior means of producing complementary outputs. Products and services that are complements for customers will not necessarily offer scale or scope economies in production or distribution. That customers might value products together does not mean that it will be efficient to produce them together.

Vertical groups will often outperform arms-length market arrangements among a changing set of participants, since the benefits described above are in most cases not available in the absence of a stable group. Reduced coordination costs, for example, will come from repeated interactions among a given set of participants that mimic an experience curve effect. Such a set of participants constitutes a vertical group, as we have described above. Similarly, the benefits of shared information cannot be gained without the expectation of a continued business relationship. Moreover, products that create high levels of value for consumers often require producers to make investments that are specific to the activities of other parties along the supply chain. The greater these relationship-specific investments required for a product, the less effective arms-length market arrangements will be for overseeing its production (Williamson, 1985).

Why Versus How

The question of *how* vertical groups occur is distinct from the question of *why* they occur. The possibility that a group can provide net benefits for members may provide an inducement for such a group to form. But this alone is no guarantee. Two problems must be solved before a vertical group can develop and persist. First, potential participants must identify the possible benefits of collective action, as well as the form that an effective grouping would take. If the potential benefits are not apparent to would-be members, they will have little motivation to form a group. If the form for effective grouping is not transparent, efforts to form vertical groups will founder from the lack of a clear direction.

Secondly, for the group to function well and persist, there must be an effective means of obtaining the continued cooperation of the members. For vertical groups of any significance, both the identification and cooperation problems are costly to resolve. Moreover, they take time to resolve.

Cognitive factors doubtless play an important role in explaining why and how vertical groups coalesce, function, and persist (Walsh, 1995). This is a rich area for future research. Our interest, however, is more at the group level of analysis than at the individual level. Thus, we turn our attention to the role that social processes play in vertical group formation and persistence.

GROUPING PROCESSES

How is it that independent firms come to form into groups along the vertical chain, with distinct identities, and actions that are consequential for members? In this section, we discuss three general types of processes that encourage the development of vertical groups: trial-and-error learning; social learning; and social identification. We distinguish these processes for conceptual simplicity, although all three may influence the development of a given group. In the section that follows, we discuss a set of enabling conditions that address more directly

the problems identified in the prior section and influence the likelihood of vertical group formation, as well as the characteristics of the groups that form.

Trial-and-Error Learning

In the course of doing business, firms interact with a variety of customers, competitors, buyers, suppliers, and, sometimes, complementors as well (Brandenburger and Nalebuff, 1996). Through these interactions and over time, managers learn about what it takes to succeed in their environment, including how to best position themselves within the competitive landscape Porter (1991). As the term suggests, positioning involves choosing a limited set of activities within the competitive space, which in turn will delimit the firm's interactions as well as the set of actors with which it interacts. Positioning choices in essence determine the group of buyers, rivals, suppliers, and complementors with which a firm will interact on a regular basis.

How a firm positions itself and the resulting group with which it interacts regularly have important economic consequences. Economic value is generated by the joint activities of the set of actors along the vertical chain or within a 'value net' (Brandenburger and Nalebuff, 1996). The firm's ability to capture value from these joint activities will depend upon the relative value-creating capabilities and bargaining power of the other actors in this vertical group.

Thus firms have important mutual interests in making good choices about their interaction partners. This provides a strong incentive to learn about other firms in the chain as they interact with them and observe their behaviors over time. And while some information about other firms is transparent, such as their financial resources and size, other things can be learned only from experience, or by trial and error learning.

Through trial and error interactions, firms learn about the resources and capabilities of other actors, including their innovativeness and capacity to learn and adapt. They learn about the degree to which other firms complement their own activities and whether there are synergistic effects from joint activity. Firms also learn about the behavior of other firms as exchange partners and as competitors for jointly created value. Importantly, they learn about the degree of trustworthiness that can be expected from others in future interactions.

Interactions with those partners that are found to be valuable and/or trustworthy will be maintained, provided that the business need persists, while other less valuable relations will be discontinued. This process of retaining successful partnerships while discontinuing less satisfactory ones is analogous to a process of trust formation (Coleman, 1990; Williamson, 1993; Ganesan, 1994).

As this process unfolds, the emphasis placed on transactional versus relational characteristics in choosing partners will change. Since the firm has no history with other firms initially, its first interactions with others expose it to transaction risk, if the other party fails to fulfill its obligations. The level of trust extended will depend on the level of risk involved in the transaction. As positive experience with a partner accumulates, however, uncertainty is reduced, more trust is extended, and more extensive and valuable transactions are undertaken, leading to longer lasting relationships (Barkema *et al.*, 1997).

If experiences with particular firms are rewarding, a focal firm may come to view its relationships with these other firms as valuable beyond the return from particular transactions. This shift to valuing relationships separately from valuing transactions marks the beginning of a process that cements the relationships into a more persistent group. Lasting groups develop as firms develop persistent relationships and view their performance as interdependent with their partners (Gulati and Gargiulo, 1999). Mitchell and Singh (1996) make similar points in comparing collaborative and independent approaches to commercialization.

If learning from experience were the only process contributing to group formation, however, we would expect that recognizable groups would be slow to develop, infrequent in their occurrence, and short-lived in duration. This is because they would depend on the incremental development of linked bilateral associations among a changing set of actors. Group development of this sort would be a highly path dependent process, since opportunities for new linkages would be limited by past linkages. These linkages would also depend on environmental continuity and would be especially vulnerable to environmental shocks (Mitchell and Singh, 1996; Ahuja, 2000).

There are other processes, however, that make stable group formation more likely. Exogenous environmental shocks, regulatory changes, or the actions of dominant firms can prompt group formation much more quickly than would be expected on the basis of incremental firm interactions. Developments such as these can drive individual firms to common actions or solutions at a group level, provided that managers scan their environments, notes changes, and learn from the actions of other organizations in their environments. This suggests that group formation is encouraged by social learning processes (Bandura, 1986; Peteraf and Shanley, 1997b).

Social Learning

Social learning theory posits that actors model the behaviors of referent others, in order to learn vicariously about their environment (Bandura, 1986). This expands the basis for learning beyond one's experience by including the experiences of others. As an example, in his study of local radio markets, Greve (1998) shows how this type of learning underlies strategic decision-making (the adoption of new market positions) when the environment is highly uncertain and the firm has few prior experiences.

Vertical groups may arise as a result of firms learning vicariously from the experiences of others in their industry or in similar industries. Relative to trial and error learning, social learning is likely to provide a more rapid route to group formation. This will be the case even when it is not provoked by an environmental shock to the system.

Consider the example of Invacare, the leading producer of wheelchairs. Invacare initially positioned itself as a low-cost producer of wheelchairs for the mass market, utilizing a system of what Womak *et al*. (1990) have dubbed 'mass supply'. Moving into the custom wheelchair market required a very different type of supply system and a new set of suppliers for Invacare. While trial and error learning was an option, Invacare had an opportunity to engage in social learning as well. The leading provider of custom wheelchairs, Quickie, had already solved many of the same types of problems that Invacare now faced. By observing Quickie and adapting many of Quickie's solutions to its own situation, Invacare could organize its own vertical chain more efficiently than by de novo trial and error.

As this example suggests, social learning from the experience of competitors provides a basis for the formation of vertical groups. But that basis can also come from many other kinds of opportunities for social learning. For example, through their contacts in professional organizations, managers may identify the types of vertical linkages and groupings that are commonly employed and how they appear to work for the firms involved (Peteraf and Shanley, 1997a). Managers can also go beyond their immediate set of industry contacts to focus on larger and highly visible firms as exemplars, whose activities are publicized through the business media. As members of other firms' boards, managers can examine potential linkages, such as virtual organizations and alliances, in advance of considering such links for their own firms. Informational intermediaries, such as consulting firms, spread information to their clients on which collective activities are possible, what types of groups are formed, and how they affect their members (Peteraf and Shanley, 1997a). Some firms, for example, may not know that supply chain partnering is a viable option until they see it occurring with their competitors or are told about it by consulting firms seeking to sell them a similar solution. Interlocking directorates provide another mechanism for social learning (Davis, 1991; Haunschild and Beckman, 1998).

The size and density of the organizational field in the industry/sector, in terms of the number of potential interaction partners and the observability of the actions of potential partners, will be important in determining whether social learning is operating. This is analogous to effect of concentration in industry studies (Scherer, 1980). If there are too many firms in a sector, it may be difficult for any firm to learn about industry dynamics from others and the learning that occurs may be more haphazard and local. The learning would take the form of trial-and-error, as discussed above. The presence of a limited number of highly visible firms will facilitate more focused learning and imitation, promoting grouping. If the industry/sector is more concentrated around a few firms, then grouping possibilities are limited to those around the dominant firms.

The product and technological complexity of the environment will also influence the need and potential for vicarious learning. In simpler environments, firms can largely accomplish their objectives on their own and any groupings that

develop will be around a few dominant generalist firms. The more complex the product or technological environment, however, the more it will be necessary for firms to partner with others to serve key segments and the more diverse the resulting groupings will be (Peli and Nooteboom, 1999).

Social learning complements trial-and-error learning as a process that encourages vertical groups to form. While social learning can speed up the grouping process through observation and relational modeling, a certain amount of trial and error learning will be necessary to complete the process. This is due to the fact that firms will need to adapt what they learn from others to the unique attributes of their own specific situation.

Social learning differs from trial and error learning, though, in that it is likely to continue and perhaps even increase once a vertical group has formed. In the process of becoming a group, the attention of group members becomes more focused on one another. This in turn promotes more relational modeling among the members. The greater the degree of relational modeling and the more that it takes place on a mutual basis, the more tightly aligned group activities will be and the more persistent the group will become.

A third process, social identification, makes this type of intensified mutual modeling within a group even more likely (Tajfel and Turner, 1985). In addition, it can serve as an independent basis for group formation. We discuss this process below.

Social Identification

To varying degrees, actors derive value from group memberships. Social identity theory explains how attachments to groups develop and provide such value (Albert and Whetten, 1985). Social identification is a social categorization process that organizes the environment for actors, allowing them to define themselves in relation to others (Ashforth and Mael, 1989; Shanley and Correa, 1992).

Firms may have identities that help align them with various reference groups (Dutton and Dukerich, 1991; Fiol and Huff, 1992). Social identification in such a case involves a firm aligning itself with a group of firms, so that its goals come to reflect those of the group to some degree. This process expands the range of actors with which a given firm deals and makes the resulting groups more persistent, since the basis for association is group-wide and not dependent on the survival of particular bilateral relationships.

Group identification can arise incrementally from interactions among group members. It can also arise from external foci. For example, a dominant supplier on the vertical chain could change its policies, stimulating a common identification as a reaction among those affected by the change. A dominant buyer, such as Sears or Microsoft, could bring about similar reactions among a set of vendors. Regulatory changes could significantly affect an entire sector and prompt grouping and collective action. Collective action of this sort could be promoted by industry or trade associations. Informational intermediaries, such as *Verticalnet.com*, could initiate various vertical groupings, sign up new members, and then use group identification processes to further build their business.

Many firms may have institutional requirements for compliance with some larger grouping imposed on them due to their membership in specific transactional networks (Gulati and Gargiulo, 1999). The categorizations inherent in institutional networks serve as exogenous groups that need not develop out of an interaction history, although learning and identification processes may help to maintain them.

Combining the Processes

While these processes can be considered separately, it is more likely that they will operate simultaneously and jointly influence whether groups develop in a situation. Firms continuously have the opportunity to learn from their trial and error experiences. At the same time, managers can learn from other firms by 'benchmarking' against the performance of others. Most firms are also likely to operate within a social and technological context that presents a variety of bases for social identification, in addition to those associated with emergent vertical groups.

The degree to which these processes are present and the strength with which they operate, however, can be quite variable. While firms can learn from their experiences, they can also fail to learn or learn the wrong lessons (DeMichelis, 2001). The ability of firms to learn vicariously will depend on the presence of referent firms and on the degree to which the actions of those firms are observable and imitable. Whether identification processes develop

will depend on which bases for identification are present in a situation. For firms to orient their activities towards a group, they need to believe that there is value in group activities. Moreover, group interactions need to be seen as manageable and likely to yield a net benefit to the participants. Without these conditions, the collective action problem inherent in any group will not be solved and firms will not choose to participate.

ENABLING CONDITIONS FOR GROUPING PROCESSES

The extent to which the processes discussed above are present will depend on the presence of a set of enabling conditions. These conditions relate to two problems that can plague efforts to form groups and impair collective action. The first is that opportunities for effective grouping need to be identified without undue search costs. The second problem is that group participation requires information to manage interactions and monitor the activities of other firms. This is so that desired activities within the group are undertaken and cooperation from other firms is forthcoming. Two general enabling conditions limit the aforementioned problems. They are the *observability* of the actions of other firms in a group, and the presence of an external basis or *focal point* around which grouping may occur.

Observability

Whether a firm can learn about vertical group arrangements or identify with a particular group will be a function of its information about the interactions involved. The observability of the actors and actions on which its judgments must be based will thus be critical to how a potential grouping arrangement develops. Observability concerns not only the collective arrangement per se, but also the direct benefits of a collective arrangement and the governance of that arrangement. Sharing capabilities with partners and coordinating actions requires being able to observe their activities. The realization of synergies along a value chain needs to be verified by observing the results of collaboration. Observability also concerns transaction costs and the possibility of hold-up. Ensuring that partners fulfill their respective obligations and appropriately manage joint investments requires that their actions, or the results of those actions, be observable.

The lack of observability is a limiting factor in trial and error learning if it obscures the results of a firm's experiments along a vertical chain. In that case, it will be difficult for firms to make judgments based on the results of those experiments regarding whether or not to build further vertical relationships. For social learning and social identification, the lack of observability is even more problematic. Social learning and social identification both depend critically on the ability of managers to observe both the actions of other firms and the associated outcomes. The more observable the actions of other firms, the more likely managers will be to learn vicariously from them and gauge the feasibility of potential collective arrangements. Similarly, the more observable a group and its members are, the more likely it will be that a firm can identify with and align its activities more closely with such a group.

What factors influence observability? Observability is a function of the size and structure of the industries involved. Taking a cue from theories of collusion, observability is higher when there are few relatively large firms involved in interactions. Observability is lower in more fragmented sectors. This includes geographically fragmented industries or sectors, such as health care, real estate, newspapers, or retail banking, where proximate firms are observable but firms in other geographic submarkets are less so. Of course, geographic concentration also fosters observability on a local basis. Enright (1995) showed this in his study of geographic concentration in the motion picture, Prato wool textile, and Swiss watch industries.

The amount and types of information produced in a sector, as well as how it is circulated, influence observability. Observability is higher when more information is produced and circulated. Technological change that increases the flow and accessibility of information increases observability. Technological change of this sort has led to a significant increase in observability for the so-called 'new economy' firms and others conducting business through the Internet. An increase in observability has also accompanied the standardization of inter-firm linkages through the proliferation of 'design rules' and open standards for interconnections (Baldwin and Clark, 2000).

In general, observability is higher for public firms, which are required to make information available in standard form to the public and to regulators. It tends to be higher in vertical settings that are regulated, more technology-based, more in contact with the public, or well covered by the business media. Conversely, observability is lower in settings where firms are privately held, unregulated, more service-based, less attended to by the media, or less in contact with the public. It is also lower whenever the reasons for the success of a firm or a vertical group are causally ambiguous (Rumelt, 1984).

Observability is a condition that facilitates group formation, providing the information that firms need to make decisions about how to align themselves with others along a vertical chain. Once a group has formed, observability also aids the process of social learning within the group, which promotes greater alignment of group members and a tighter fit among their activities. This tends to bind the group into an ever tighter coalition, strengthening its identity as a group and promoting its persistence. While the *observability* condition addresses the problem of a need for information, a second enabling condition addresses the need for a low search cost means of finding initial opportunities for grouping, as well as an effective way to organizing vertically. The presence of a *focal point* serves this need.

Presence of a Focal Point

A focal point is something that directs the attention of observers. It can be provided by a central and salient actor, such as an exemplar firm like General Electric that is hailed widely for the excellence of its management practices. The central actor may be a trade association or governmental agency that fosters collective action. Examples of this include the role of the Ministry of International Trade and Industries (MITI) for a variety of Japanese industries and the Swiss government for its watch industry (Odagiri, 1994; Enright, 1995). But an external event, such as a shock to the environment, can also serve as a focal point if it focuses the attention of actors on the need for change and the possible value of realigning themselves vertically.

For example, technological change can focus the attention of firms along the vertical chain on previously unforeseen or underemphasized value creation opportunities. This can stimulate the formation of multi-firm alliances to battle for new standards for a family of products (Farrell *et al*., 1998; Shapiro and Varian, 1998). Regulatory changes can affect an entire vertical chain and produce grouping effects as firms lobby or otherwise adjust to the change. The rise of a firm to a position of dominance can also spur the formation of a vertical group, as suppliers and buyers begin to coordinate with the dominant firm or else organize against its bid for dominance. Spin-offs or divestitures from large firms could also create a grouping of firms whose members share a common identity through their joint history with the former parent.

There need not be a single focal point for grouping. There may be multiple dominant actors along the chain (for example, Sears and GE in major home appliances). In addition, multiple exogenous changes, such as technological innovation and deregulation, may affect an industry setting simultaneously. This is the case, for example, in such sectors as health care or telecommunications. The presence of multiple focal points makes it easier for groups to form but may also make groups less stable, since multiple foci may represent conflicting expectations for how groups should operate and what results members should expect.

An example of mixed focal points can be seen in the case of the US health care. Since the beginning of deregulation in the 1980s, industry, professional, and governmental organizations have been of mixed voice regarding the development of vertical groups. Some have supported the growth of vertically integrated health care systems. Others have strongly opposed such initiatives, arguing instead for increased competition and the use of market-based incentives (Shortell *et al*., 1996).

Focal points in the form of exogenous shocks direct attention to the need for change and may suggest the possibility of a vertical group solution. In this respect, they are likely to prompt firms to engage in the kind of learning processes, such as trial and error learning or social learning, that lead to group formation. Focal points in the form of exemplars or organizations are likely to provide information content as well. In these cases, they will also encourage social learning and social identification. These processes not only precipitate group formation, but they lead to stronger internal ties and greater group persistence as well.

A FRAMEWORK FOR VERTICAL GROUPS

The degree to which the enabling conditions discussed above are present will vary. This in turn will affect the strength of the learning and identification processes by which groups form and persist. In this section, we introduce a framework that suggests how variation in the enabling conditions affects the characteristics and functions of any vertical groups that emerge. The framework is in a form of a simple two-by-two matrix in which observability is either low or high and a focal point is either present or absent. (See Figure 1). The cells of the matrix indicate the type of group that is likely to form, if any, and the nature of its characteristics and function. The remainder of the section discusses each cell in more detail.

Cell 1 (Temporary Groups)

Without a focal point and with low observability, firms in this cell find it difficult to observe the actions of other firms with whom they might group. The firms involved are likely to be relatively small and localized in their operations. Vertical groups are least likely to emerge under these conditions. When groups do occur in this situation, they are likely to result from incremental processes of mutual interaction, during which observability is increased. If observability remains low, trust is not likely to be established. In this case, any groups that form are likely to be temporary, with frequent membership changes. They are likely to function primarily to reduce transaction costs relative to arms-length market transacting.

While these types of groups are unusual, some examples can be noted. Lawrence and Dyer (1983) provide one in their description of construction contractor networks of specialists that expand and contract in response to market demands.[1] The virtual vertical groups that come together for the purpose of a particular project in the recording and publishing industries provide another example.

Cell 2 (Adaptive Groups)

Firms in this cell face conditions in which the actions of other firms are observable, but a focal point for group formation is lacking. This means

		PRESENCE OF A FOCAL POINT	
		ABSENT	**PRESENT**
OBSERVABILITY	**LOW**	**Cell #1: Temporary Groups** Infrequent incremental and short-lived groups **Function**: Reduction of transactions costs/Risk sharing vis-à-vis market uncertainty **Example**: Local construction contractor networks	**Cell #3: Reactive Groups** Varied small firm groupings to respond to larger firms and technological or regulatory change **Function**: Value enhancement and differentiation; Risk sharing; Reduction of transactions costs **Example**: Local market responses to Wal-Mart; local health care systems
	HIGH	**Cell #2: Adaptive Groups** Varied, but unstable groups. **Function**: Adaptation/ Experimentation in response to technology change; product differentiation; reducing transactions costs **Examples**: Geographically focused industries; Biotech ventures; Internet start-ups	**Cell #4: Persistent Groups** Stable groupings around dominant firms; Diversified Business Groups; Valued-Added Partnerships between major firms **Function**: Value Creation; Leveraging of Core Capabilities; Risk Sharing; Reduction of transactions costs **Examples**: GE and Wal-Mart supplier networks; Marks and Spencer supply chain; Keiretsu; SAP vendor networks

Figure 1. Conditions for vertical group formation.

that grouping processes can progress, but that the ultimate basis for group value creation is unclear. As a result, there will be considerable variation in the kind of groups that emerge and local conditions will exert a greater influence. Groups emerging under these conditions can be found in technology driven industries that are still evolving. These groups lack a basis in product identities, scale/scope economies, or institutional structures that otherwise might facilitate the development of a dominant firm or some other focal point. Biotechnology firms, venture capital funded Internet start-ups, and other areas of new technology R&D share these conditions. These sectors are characterized by considerable circulation of knowledge regarding the activities of other firms, as well as frequent experimentation in inter-firm collaboration.

We call these groups 'adaptive' because they provide a vehicle for helping member firms adapt to technological change. They also allow firms to enhance value creation by combining complementary resources along the value chain to produce more efficiently or create more differentiation. This implies a collaborative orientation among group members that suggests a set of functions for the group beyond the mitigation of transaction risk or the adjustment to significant changes in environmental conditions. The lack of a focal point increases the requirement for flexibility. The problem with such collaboration is that the ultimate value of the collaborative project may be unknown.

Just because the actions of other firms are observable, does not mean that interaction with them is free of risks. It only means that there is sufficient visibility to promote grouping. For example, the activities of biotech firms are relatively visible to one another on the basis of common technologies, common scientific bases, and common personnel backgrounds. Visibility is far from complete, however, and contracting costs are high for biotech alliances.

For an example of this type of group, consider the WingspanBank initiative of Banc One. This was a complex vertical group formed in a top-down fashion to develop a complete Internet-only bank. It ultimately foundered not because of its sophistication or technical infeasibility, but because customers were unwilling to move their accounts to the Internet bank in sufficient numbers to justify the large investment per customer for developing and advertising the venture. While the large vertical group needed for the venture could be assembled and complete its tasks, the value of those tasks, and of Internet banking as a substitute for traditional consumer banking, was ultimately unclear.

Arora and Gambardella (1990) provide an example of more successful adaptive vertical groups. They studied formal external linkages among large chemical and pharmaceutical firms, small biotechnology firms, and research universities in the biotechnology sector. These networks were varied and highly changeable. Large firms were not the focus for innovative activity that they had once been. Rather, the network of collaborative relationships itself was more appropriately seen as the locus of innovation. The external linkages of these diverse actors were positive correlated with each other and appeared to target distinct and complementary sets of resources.

One can also find adaptive groups in geographically concentrated sectors, where virtually all firms involved in the vertical chain are in close physical proximity to one another. In such cases, the activities of other firms are very observable. Whether the group remains adaptive or becomes a permanent group, however, depends on whether focal points emerge.

Enright (1995) illustrates what happens when focal points are weakened in his historical analysis of the motion picture industry. The industry initially developed as a cartel, run by the eight major movie studies, with significant collective control over the vertical chain. Following the 1948 Paramount decision by the US Supreme Court, however, the studios were ordered to divest their theater holdings, and cease their controlling practices, such as block booking. This decision weakened the studios as focal points and led to a reorganization and vertical disintegration of the industry. Vertical groups of varying degrees of stability became key to industry dynamics.

Cell 3 (Reactive Groups)

Firms in this cell have a focal point for grouping but find it relatively difficult to observe the actions of other firms in their sector. This will make it more difficult for groups in the cell to manage how they respond to market risks and value creation opportunities. Reactive groups arise more frequently in sectors characterized by localized

market domains where there are also a few dominant firms or some strong regulatory or technological basis for grouping that cuts across the local markets. In such settings, varied groupings of small firms would be expected to form locally.

Like groups found in Cell 2, these groups will serve primarily to add value or lower costs in response to changed conditions. The difference from Cell 2 is that the locus of change here will be clearly identified, such as from industry deregulation or the entry of a dominant national firm with greater brand presence and superior scale and scope economies. Groups under these conditions will be defensive in nature, with the idea of reacting to changed circumstances rather than continually adapting to a turbulent environment, such as in R&D intensive industries.

An example of a reactive group is the type of local supplier and retailer group that sometimes forms in response to the entry of Wal-Mart into its territory. These defensive groups typically involve specialized small retailers who form links with wholesalers to reduce their vulnerability. Another example is found in local health care markets. Here, there are strong national norms and standards regarding the provision of health care and the development of vertical health care systems (Shortell *et al.*, 1996). There are also a few large national firms, whose entry into local markets can prompt defensive groupings reminiscent of the response to Wal-Mart. While there are national focal points for the health care industry, however, observability across local markets is limited, due to state regulatory differences and differences in competitive conditions across markets.

Spar (2001) provides an example of how an initially reactive vertical group can develop into a more stable group in her discussion of the birth of RCA and NBC. These two firms were formed initially from a multilateral alliance of the major early players in the nascent US radio industry, including GE and ATT, and Westinghouse. This alliance brought order to the chaotic radio business, which involved hundreds of small firms, ineffective regulation, rapid technological change, and unclear industry standards. Through intensive lobbying of regulators and negotiations with alliance members, Sarnoff and RCA management was able to obtain a stable industry structure and clear standards that secured the participation of alliance members and mitigated antitrust fears. This structure permitted US broadcasting to grow and dominate the world industry.

Cell 4 (Persistent Groups)

Groups in this cell benefit from both observability and a focal point. This is precisely the situation in which one would expect to find persistent groups that provide significant value for their members. Persistent groups are common in well-developed science and technology businesses and are recognized as having both greater value potential and superior governance characteristics relative to either arms-length market interactions or vertical integration. Observability of science-based businesses is high, in part, due to the role of information technology (EDI; Internet) and the publicity that these sectors attract.

Observability need not depend entirely on high technology controls, however. It can come from investments in conventional information systems and controls as well. DeBeers, for example, assembled one of the most effective vertical groups ever in the international diamond business long before the development of the Internet. DeBeers has combined significant investments in traditional information technologies with direct and indirect control over the supply chain, especially through its Diamond Trading Company, so that the actions of uncooperative producers and distributors will be immediately apparent and subject to retribution (Hart, 2001).

Another variety of persistent vertical group develops around a dominant firm in an established industry. While this type of group may have a technological basis, it is also based in the market power or status of the dominant actor. The presence of a dominant actor changes the orientation of others within the vertical chain as they obtain the benefits of increased business and reflected glory through association with the dominant firm. Examples among US firms can be found in the networks of alliances built up around dominant firms like GE and Ford (Yoshino and Rangan, 1995). Other examples include supplier groups to mass-market retailers such as Wal-Mart and Home Depot. European analogs to these are the groups that have formed around Benetton and Dansk.

Among Japanese firms, a comparable vertical group arises in the *keiretsu*—groups of firms

organized across sectors around a set of dominant firms, often including a bank (Odagiri, 1994, pp. 161–164). Keiretsus often comprise firms that were spun-off or divested from a dominant firm. This makes historical associations among firms an additional basis for maintaining the group. Keiretsus are highly visible examples of the business groups that are common in East Asian economies (Ghemawat and Khanna, 1998).

Another type of persistent vertical group is the extended value-added partnership among actors on a vertical chain that is formed to respond to the demands of critical customers. Faced with customers having high quality standards for complex products, firms on multiple vertical chains can partner to maximize the value they provide to customers. This type of group involves both dominance and peer relationships, such as that between Microsoft and Intel (or 'Wintel'). Under these conditions, the importance (and difficulty) of meeting customer needs, rather than status and market power, provide the focal point necessary to motivate grouping.

The German software giant SAP provides an example in the partnership networks it has formed with hardware manufacturers (IBM), software companies (Microsoft), and consulting firms (Accenture; McKinsey) to provide value-added training and applications for its enterprise information systems software. SAP's approach to grouping is not without its market power aspects, given the firm's interest in obtaining a large installed base for its product and building up customer switching costs.

The Spanish fashion firm, Inditex, provides an example of a vertical group that links the dominant firm with retailers, suppliers, and distributors in an effort to add value through coordination (Stauffer, 2001). This has allowed the firm to come up with 12 000 new clothing designs each year. In addition, new designs take from 10 to 15 days to move from the drawing board to store shelves. Hand-held computers and constant feedback to participants on the performance of particular products help to coordinate this group and permit it to respond quickly to changing consumer demands with large numbers of new designs. With these arrangements, the firm has expanded its distribution to four continents and achieved annual sales of $2.4 billion.

Narus and Andersen (1996) describe similar groups in which dominant manufacturers interact with whole sets of distributors to form integrated relationships around critical customers. For example, the machine tool manufacturer Okuma has developed an integrated inventory and distribution system that links its 46 distributors together around the firm's warehouses so that customers receive their parts shipments within 24 h. This system allows Okuna's distributors to interact with each other, so that they can post and update their inventories, while scanning those of their partners.

Hagel and Singer (1999) move this logic to the prescriptive level to recommend that large vertically-integrated firms must first unbundle their vertical chains and then experiment to find the best way to rebundle their businesses to meet customer demands. They discuss grouping and regrouping within the former Bell System to show how the dissolution of large firms can lead to experimentation and regrouping along the vertical chain to best make use of specialist firm capabilities in meeting customer demands.

Steinbock (2001) provides a case study of Nokia and how it manages its vertical group. Nokia's strategy began with efforts to establish upstream and global technical standards for cellular and multimedia phones in order to stabilize the technical basis for competition and avoid costly standards wars. Nokia then worked to add value downstream with a fashion-based differentiation strategy towards end users.

DISCUSSION AND IMPLICATIONS

While groups along a vertical chain are not new phenomena, little research attention has been devoted to them *as groups* or to the issue of how they emerge. We have presented a framework to address this gap and motivate more theoretical and empirical research on vertical groups. Our discussion and framework raises basic issues for subsequent research.

A first issue area concerns group identification. What defines the boundaries of a vertical group? Out of the possible vertical groups that could be identified by researchers, which ones are most appropriate to focus upon and which ones are inconsequential? For groups to be 'real' in some sense, they likely need to influence the behavior of member firms and affect outcomes in some consequential manner (Dranove *et al.*, 1998).

What does it mean for a firm to be a member of several vertical groups, one focused around suppliers, one around distribution, and another around lobbying? Given the various possible groupings in which major firms could be involved, is it reasonable to study large samples of groups that cross traditional industry/sector boundaries or should research designs be more focused?

How do vertical groups differ from horizontal groups? On the surface, they appear to consist of different mixes of firms and solve different problems for their members. On the margin, however, the differences between vertical and horizontal groups may blur. Competitors often buy and sell from each other. Large firms, and their associated groups, can focus on different points on their vertical chains and still compete with each other (IBM and Microsoft in systems and software; Sears and GE in major home appliances). Theories of foreclosure and vertical integration suggest that the extent of vertical grouping in a sector will be related to the structure of competition among dominant firms, suggesting that vertical and horizontal industry groups will be related (Farrell *et al*., 1998; DeGraba, 1996; Odagiri, 1994).

Another set of issues that arises from our discussion concerns performance. The performance implications of vertical groups need to be better developed theoretically before research can proceed. These groups serve multiple and potentially conflicting functions (Dyer and Nobeoka, 2000). Reducing business and transaction risk is an economizing objective that all groups can pursue, although it is unclear that all will do so. Value enhancement, however, is a strategic objective, the implications of which will vary widely for firms depending on their industry and competitive positioning in the industry. Vertical groups that center on large dominant firms in an industry will likely serve both objectives. More fragmented groups will be more difficult to hold together and thus will likely pursue fairly limited objectives for their members.

Issues for theoretical development also arise out of the framework presented above. One issue concerns how the more enduring vertical groups in cells 2-4 develop out of the temporary groups in Cell 1. What factors lead a series of small localized markets to be viewed as a national market, manageable by a dominant set of firms? An example is the growth of national networks in the real estate business, based on improved data and communications technology, the growth of institutional innovations such as the multiple listing services, and the growth of strategically minded national real estate firms, such as Coldwell Banker and Century 21.

Issues related to the adaptive groups in Cell 2 concern the processes by which sufficiently clear focal points develop that permit the groups in this cell to become like the persistent groups in Cell 4. Do commercialization successes lead to a consolidation of sectors that facilitates more stable groupings? Does the development of multiple focal points help or hinder the growth of persistent groups? Does the scale of operations in an industry area limit the potential for groups? One possibility is that adaptive groups evolve into more lasting groups as a critical group member gains in size, scope, and market power, providing a greater focal point over time.

The principal issues regarding the reactive groups of Cell 3 concern the relative performance of groups having a focal point but lacking observability. Will success of these groups be contingent on the persistence of the focal point? If the focus changes, will the group have difficulty maintaining itself? If groups in this cell form as a joint response to some exogenous stimulus, will their characteristics differ from groups that form out of a more internal logic, such as an opportunity to exploit complementarities? Will there be a performance disadvantage for reactive groups? How do they evolve and under what conditions will they become more persistent?

Many issues can be raised regarding the persistent groups in Cell 4, especially regarding their competitive dynamics and evolution. How important is it for there to be a business vision motivating the group and providing strategic direction? Can this occur without a strong central actor? Do value-added partnerships tend to consolidate around a single dominant firm or can they remain more fragmented but balanced. Do vertical groups formed around a dominant firm tend to persist more than those that are more balanced? Under what conditions do persistent vertical groups become unstable?

A final set of research issues regarding vertical groups concerns the impact of technological change. As technologies grow more advanced, how do firm proclivities for grouping change? Does technical advance and more complex

product offerings lead to increased needs for coordination, making vertical groups more likely? Do firms participate in groups differently depending on the age of the technology that is involved? Lastly, will an increase in knowledge-based strategies and the accompanying emphasis on tacit knowledge make the emergence of vertical groups more difficult?

As is evident from the breadth and richness of the set of questions posed above, there is a myriad of research opportunities regarding vertical groups that is yet to be explored. The need for further conceptual development is evident. The need for empirical work follows accordingly. Our hope is to spark research of this sort with respect to a topic that clearly deserves the effort.

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NOTES

1. Even here, however, there is usually a main contractor that can serve as a focal point for organization and coordination.

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