NOTE

ALLIANCE CONSTELLATIONS: A SOCIAL EXCHANGE PERSPECTIVE

T. K. DAS
Baruch College, City University of New York

BING-SHENG TENG
George Washington University

We develop a social exchange perspective of alliance constellations, emphasizing the role of generalized exchanges. We then discuss three social control mechanisms for mitigating the unique difficulties of managing constellations, and we conclude by proposing a typology of constellations based on the dimensions of exchange horizon and type of generalized reciprocity. The perspective presented here contributes not only to research on alliances but also to the larger body of literature on generalized social exchange processes, which has traditionally been centered on interpersonal relations.

Alliance constellations are strategic alliances formed by multiple partner firms to "compete against other such groups and against traditional single firms" (Gomes-Casseres, 1996: 3). Strategic alliances, in turn, are "interfirm cooperative arrangements aimed at achieving the strategic objectives of the partners" (Das & Teng, 1998: 491). The last two decades have witnessed rapid growth in alliances as a result of technological development and the globalization of competition. Even though constellations constitute a more complex type of strategic alliance, they are becoming fairly ubiquitous in the competitive arena. Popular constellation types include R&D consortia, joint bidding, and code sharing among airlines. The prevalence of constellations is evident in the large database of 2,417 alliances from multiple industries and countries compiled by Gulati (1995), which Gulati claims to be "the most comprehensive data set on alliances within each of the focal sectors, both in terms of the length of time included and the depth of coverage" (1995: 96–97). More than a quarter of these alliances are reported to be "multilateral alliances" (or constellations). In a related database (see Gulati & Singh, 1998), out of 1,570 alliances in the biopharmaceutical, new materials, and automobile industries, about one-third are constellations.

Although constellations tend to have the same value creation logic as bilateral alliances, "greater numbers of participants also complicate alliance design and governance" (Doz & Hamel, 1998: 224). Hwang and Burgers note that "managing multi-firm alliances presents important challenges to managers" (1997: 101). The experience of two recent R&D consortia illustrates the vagaries of managing constellations. The early success of Advanced Computing Environment (ACE), formed to develop the RISC chip to compete directly with Intel, led to a membership of two hundred firms by October 1991 (Gomes-Casseres, 1996). However, as one of its key members, Mips Computer Systems, experienced a competitive setback, the constellation started to crumble, and the project eventually ended in failure. In contrast to ACE's dissolution, Sematech represents a success story. The fourteen member firms of this R&D consortium account for 80 percent of the U.S. semiconductor industry, and it is widely believed to have successfully enhanced U.S. competitiveness. The different performance outcomes of the two R&D consortia indicate that we need to better understand the nature of constellations and their unique management challenges.

We gratefully acknowledge the insightful guidance of associate editor Albert A. Canella, Jr., and three anonymous AMR reviewers.
We divide this paper into four sections. In the first we argue that constellations should be treated as a distinct type of alliance for appropriate theoretical development. Second, we develop a social exchange perspective of constellations, emphasizing the role of generalized exchanges. In the third section we present three social control mechanisms relevant to the management of constellations. Fourth, we propose a typology of constellations based on generalized reciprocity and exchange horizon.

THE NATURE OF ALLIANCE CONSTELLATIONS
How Are Constellations Different?

It is essential that we first distinguish constellations from other types of interfirm partnerships. Generally speaking, there are two broad types of interfirm partnerships: strategic alliances and alliance networks. Although both strategic alliances and alliance networks represent interorganizational relationships aimed at generating cooperative advantage, the differences between them are not always clearly spelled out. For instance, in a recent review of the literature on alliances and networks, Gulati (1998) does not discuss the differences between the two kinds of entities.

In our view, an alliance network is simply a collection of several alliances, whereas a strategic alliance is one cooperative arrangement involving two or more firms, such as in equity joint ventures, joint R&D, and joint production. A strategic alliance is a single arrangement that includes two or more firms, and an alliance network includes several alliances. For example, Fujitsu has developed a number of dyadic alliances with companies such as GTE, Nokia, and ICL in order to compete against IBM in the computer mainframe business (Doz & Hamel, 1998). Thus, each arrangement Fujitsu has is an alliance, and the overall web is an alliance network.

Definitions in the literature seem to support this differentiation. Following Emerson (1981), Anderson, Hakansson, and Johanson define a business network as "a set of two or more connected business relationships, in which each exchange relation is between business firms that are conceptualized as collective actors" (1994: 2). Whetten also notes that "a network consists of all interactions between organizations in a population" (1981: 8). In this sense, a network is a collection of alliances. Thus, an alliance network consists of at least two alliances, each with two partners or with multiple partners. For example, IBM has two-way alliances with a number of partners: Motorola, Wang, and Sears. Similarly, Motorola and Apple have their own two-way alliances. The overall web of all these microprocessing firms can be called an "alliance network."

Whereas alliance networks are collections of alliances, constellations are a particular kind of strategic alliance. By definition, constellations are alliances formed by at least three partner firms—or multiple-partner alliances. Essentially, as the number of exchanging parties reaches three, social exchanges become generalized. Thus, the critical difference between dyadic alliances and constellations is whether social exchanges are direct or generalized. Our inquiry here focuses on the constellation—an arena in which members are involved in generalized social exchanges. Figure 1 illustrates the differences among dyadic alliances, alliance constellations, and networks. While there are two dyadic alliances, DA1 (A & B) and DA2 (B & C), the alliance constellation (AC) is formed by four firms (A, C, D, E). All these entities and relationships together constitute a network (A, B, C, D, E, DA1, DA2, AC).

Research on Constellations

Until now, research attention on constellations has been sporadic, for most researchers have not regarded constellations as a distinctive form of alliance. The primary reason is that the distinction is not apparent in many theories. To see the distinction, we need to adopt specific theoretical perspectives. For instance, using a game-theoretic framework, Hwang and Burgers (1997) were able to show that the games played by multiple parties (as in constellations) are fundamentally different from the games played by two parties (as in dyadic alliances).

A few other contributions on the subject of constellations should be noted here (e.g., Doz & Hamel, 1998; Gomes-Casseres, 1994, 1996; Jones, Hesterly, Fladmoe-Lindquist, & Borgatti, 1993). Gomes-Casseres attributes the surge in constellations to the influence of the global economy and the increasing complexity of goods. He also
notes that constellations tend to flourish when
global scale is critical, technical standards need
to be established, and industries can be cross-
linked by new technologies. Gomes-Casseres
examines various characteristics of constella-
tions, such as size, patterns of growth, composi-
tion, and governance structure. Doz and Hamel
(1998) also discuss issues in managing multilat-
eral alliances—their term for constellations.
These issues include composition, size, growth
path, containing competition, governance, and
maintaining firm-specific advantage. However,
the works of Gomes-Casseres and Doz and
Hamel do not focus on developing any theoreti-
cal foundation for constellations.

Jones and colleagues' (1998) conceptual argu-
ment is that there is a tension in alliance con-
stellations between firm competitive advantage
and constellation competitive advantage. Con-
stellation partners may choose from two differ-
ent strategies in managing the tension: an indi-
vidual emphasis or a collective emphasis. The
theoretical basis of their paper can be only
broadly labeled as a network perspective. The
lack of substantive theoretical foundations is
also evident in several relevant empirical stud-
ies (Human & Provan, 1997; Olk & Young, 1997),
which are either exploratory in nature or are
based on a mix of theories.

Our review of the limited constellation litera-
ture suggests that academic research has thus
far stemmed primarily from economic perspec-
tives such as game theory. A significant gap in
the literature is that major theories that have
been fruitfully applied to strategic alliances in
general have not been used to specifically ex-
amine constellations. After all, constellations
do not appear to be obviously distinct from dyadic
alliances when viewed through most theoretical
lenses. We argue that the distinction can be
revealed if appropriate theories are adopted, as
demonstrated in the Hwang and Burger (1997)
article. Our objective here is to apply one of the
influential theories in the interorganizational
relations field—social exchange theory—to the
analysis of constellations and suggest ways to
improve constellation management.

A SOCIAL EXCHANGE PERSPECTIVE OF
CONSTELLATIONS

Social exchange theory was initially devel-
oped to examine interpersonal exchanges that
are not purely economic. The sociologists re-
sponsible for the early development of this the-
ory include Homans (1958), Thibaut and Kelley
(1959), and Blau (1964). These theorists view peo-
ple's social behavior in terms of exchanges of
resources. The need for social exchange is created by the scarcity of resources, prompting actors to engage one another to obtain valuable inputs (Levine & White, 1961). Blau defines social exchange as "voluntary actions of individuals that are motivated by the returns they are expected to bring and typically in fact bring from others" (1964: 91), and he views social exchange as an ongoing reciprocal process in which actions are "contingent on rewarding reactions from others" (1964: 6).

There are important differences between social exchanges and economic exchanges. Social exchanges may or may not involve extrinsic benefits with objective economic value. In contrast to economic exchanges, the benefits from social exchanges often are not contracted explicitly, and it is voluntary to provide benefits. As a result, exchange partners are uncertain whether they will receive benefits. Thus, social exchange theory focuses on the social relations among the actors that shape the exchange of resources and benefits (Cook, 1977; Emerson, 1976). While its origins are at the individual level, social exchange theory has been extended to organizational and interorganizational levels (Aiken & Hage, 1968; Jacobs, 1974; Levine & White, 1961).

Social exchanges can be either restricted or generalized (Ekeh, 1974; Levi-Strauss, 1969). Restricted social exchange occurs when two parties directly exchange favors with each other, which is also known as dyadic or mutual exchange. In contrast, generalized social exchanges take place among a group of at least three parties, and there is no direct reciprocity among them. In other words, what A receives from B is not contingent upon what A gives to B. Examples of generalized exchanges can be seen in the cooperative arrangements that farmers make to help each other out with harvesting chores and in the library consortia organized by local universities. The lack of one-to-one correspondence between the giver and the receiver is a key feature.

There are a number of important differences between restricted and generalized social exchanges (Ekeh, 1974; Gillmore, 1987). First, given that reciprocity is voluntary, both restricted exchanges and generalized exchanges are subject to the significant risk of free riding. However, because restricted exchanges entail direct reciprocity between two parties, accountability is relatively high and free riding relatively easy to detect and remedy. By comparison, this risk is more prevalent in generalized exchanges (Takahashi, 2000). In multiparty (or generalized) exchanges, where A gives to B, B to C, and then C to A, A often does not have information about reciprocity between B and C. Thus, given the ambiguity and disjointed nature of exchanges, members of a generalized exchange system have more incentives for free riding.

Second, because of the considerable risk of free riding, members involved in social exchanges have a high need for trust. Trust among exchange members reduces anxiety and allows reciprocity to take place over time. The need for trust is particularly high in generalized exchanges, because these exchanges are carried out by multiple parties that do not reciprocate with each other in a direct manner.

Third, social exchanges may lead to a high degree of solidarity and social support, and this is particularly so with generalized exchanges (Uehara, 1990). Since members undertake much risk and place considerable trust on others in generalized exchanges, they also tend to develop a relatively deep sense of solidarity over time.

We argue that social exchanges play a central role in interfirm alliances, which are characterized by incomplete contracts and reciprocal exchanges of resources (Das & Teng, 2001). Plainly, dyadic alliances are based on restricted exchanges. Constellations, however, having at least three partner firms, are based on generalized exchanges and, thus, share the salient features of such exchanges, such as a higher risk of free riding and a higher need for trust.

**MANAGING ALLIANCE CONSTELLATIONS**

Constellations can be difficult to manage. We maintain that the management of constellations requires a generalized social exchange perspective in order to be effective in dealing with unique exchange problems, such as coordination and safeguarding (Jones, Hesterly, & Borgatti, 1997). Das and Hamel (1998) identify three major difficulties in maintaining constellations (multilateral alliances is their term): norms of reciprocity, conflict resolution, and coordination. Social exchange theory indicates that, in the context of generalized social exchange, these difficulties can be dealt with by three social
control mechanisms: generalized reciprocity, social sanctions, and macroculture. That is, generalized reciprocity becomes the norm of reciprocity, social sanctions facilitate conflict resolution, and macroculture assists coordination.

**Generalized Reciprocity**

Reciprocity can be problematic in constellations, because member firms often do not reciprocate with one another directly. Since multiple parties are involved in generalized social exchanges, reciprocity is generalized—obligations to one party may be transferred to another party or to the entire group. By generalized reciprocity we mean a group-based exchange relationship in which members expect quid pro quo exchanges within the group but not necessarily with any specific member. Reciprocity becomes a generalized norm that all members are supposed to follow (Gouldner, 1960). Although generalized reciprocity connotes potential free riding, it does provide the basis for a trustbuilding process (Ekeh, 1974).

Multiple partners make developing trust particularly problematic in constellations. Yet, as we noted, the need for trust is especially high in generalized social exchanges. Trust not only reduces the cost of writing and policing contracts but also encourages the partners to adhere to the cooperative spirit and go beyond the contract when facing uncertainties and ambiguities.

According to Blau (1964), trust may emerge from social exchanges over time. In generalized social exchanges, trust is built mostly through an indirect reciprocal process in which actors receive benefits from a particular member and then pay back the favor to a different member in a subsequent period. Thus, constellation members often need to demonstrate their goodwill and commitment by making contributions while expecting others to reciprocate at a future time (albeit not necessarily by the proximate receiving party). Such generalized reciprocity can be more productive in building trust and solidarity than restricted reciprocity (Uehara, 1990). Only the highly trustworthy can be relied on to reciprocate to a third party in a relatively distant future. Because generalized reciprocity is risky, undertaking the risk at once demonstrates a willingness to trust and contributes to the mutual trust development. After all, the trust literature suggests that taking a risk with someone’s credibility can lead to high trust among trustors and trustees (Das & Teng, 1998). Thus, in constellations generalized reciprocity plays a positive role in developing trust, which, in turn, can lead to better performance.

**Proposition 1:** Compared with dyadic alliances, which rely on direct reciprocity, alliance constellations rely on generalized reciprocity to facilitate cooperation and ultimately promote constellation performance by increasing trust among member firms.

**Social Sanctions**

Because of the central role of trust and expected reciprocity, social exchanges rely on incomplete and informal contracts (Blau, 1964). However, trust may be abused and reciprocity ignored. Violations of social exchange norms "provide a context for generalized reciprocal retaliation," defined broadly as the repayment of injurious or otherwise undesired acts" (Westphal & Zajac, 1997: 164). Hence, actors in social exchanges need to resolve conflicts and restore equity through collective sanctions, in which all members (not only those denied reciprocation) punish those who violate group norms.

Nevertheless, a lack of formal contracts also means that disputes, conflicts, and norm violations in social exchanges have to be resolved by mechanisms other than legal and contractual ones (Maccaray, 1963). One approach is social sanctions, which primarily involve "the mutual monitoring between the participants and the rapid dissemination of information about the credibility of the participating companies" (Hagen & Choe, 1998: 595). In addition to resolving conflicts, this process also helps avoid conflicts. Being aware of the effect on their reputation, participants act more prudently regarding expected cooperation. Thus, social sanctions also serve as a deterrence mechanism against opportunism.

In generalized exchanges the scope of monitoring is expanded to the group level: all member firms have the responsibility of observing the conduct of all other members, even though this conduct may not affect the observing firm directly or immediately. Observations are quickly shared within the constellation and be-
beyond, with the aim of influencing the general reputation of a firm. According to Coleman (1990), sanctions may result in excluding an actor from normal interactions with others. Social sanctions are generally punishments that negatively affect a firm’s opportunities over the long haul. Since generalized social exchanges tend to be carried out over an extended period, social sanctions are particularly appropriate in such relationships.

The social sanctions in dyadic alliances are much less effective, because there are no third parties in the monitoring process. If an alliance firm deviates from an agreement, only its partner can spread the word about the defection, with no support from additional observers and messengers. Thus, dyadic alliances rely more on direct economic/legal sanctions. In constellations, however, social sanctions help both resolve conflicts between member firms and punish norm violators.

Proposition 2: Compared with dyadic alliances, alliance constellations rely more on social sanctions to promote performance by helping to resolve conflicts between member firms and to punish norm violators.

Macroculture

Another difficulty in managing constellations is coordinating multiple partners. While interfirm cooperation would not take place without such coordination, this coordination can be difficult and costly. An effective mechanism to reduce the need for coordination is macroculture—that is, “a system of widely shared assumptions and values, comprising industry-specific, occupational, or professional knowledge, that guide actions and create typical behavior patterns among independent entities” (Jones et al., 1997: 929). Firms develop macrocultures that result in a strategic and behavioral homogeneity among them. Macroculture is the prerequisite for social control in interfirm relations, as distinct from output and process control (Das & Teng, 1998).

Although macroculture exists in all types of alliances, its importance is greater in constellations than in dyadic alliances. While two parties may also have shared values, macroculture is essentially a group concept, and it is in a group (or multiparty) setting that its role is most relevant and salient. In generalized social exchanges, shared beliefs and values are particularly important for sustaining stable exchange relationships (Nord, 1969). When exchange actors have common beliefs regarding their objectives and behavior, the task of coordinating cooperative endeavors is less necessary—and, when it is necessary, easier and less costly.

Proposition 3: Compared with dyadic alliances, alliance constellations rely more on a cooperative macroculture to promote performance by facilitating coordination and reducing coordination cost.

A cooperative macroculture is valuable in alliance constellations since it also facilitates generalized reciprocity and social sanctions. First, if member firms develop a group culture in which collective interests are valued, they will be more comfortable with indirect reciprocity over time (Ekeh, 1974). Since member firms share a common understanding of constellation objectives, they will be more confident that their contributions will be reciprocated in a way that advances the collective interests of the firms.

Second, a strong macroculture ensures that social sanctions, whenever needed, will be imposed collectively. The power of social sanctions comes partially from reinforced messages—that is, various parties delivering the same information about a firm’s norm violation. Thus, social sanctions will be more effective if member firms share norms and know what message to spread when norms are violated.

Proposition 4: In alliance constellations a cooperative macroculture facilitates both generalized reciprocity and social sanctions.

A TYPOLOGY OF ALLIANCE CONSTELLATIONS

So far we have discussed various mechanisms of generalized social exchange that can be used to help manage constellations. To better understand constellations, we also must examine the various kinds of structural arrangements in constellations. As with dyadic alliances, constellations have considerable structural variety, such as R&D consortia and joint bidding. By revealing the differences among various types
of constellations through a structural typology, we should be able to better understand constellation formation and management.

One way to differentiate constellations is by their individual purpose (Doz & Hamel, 1998). Purpose strongly influences constellation structure, but it is possible that the same purpose (say, risk reduction) may lead to different constellation structures (such as R&D consortia and product bundling). Regardless of the efficacy of constellation purpose as a discriminating attribute, however, we believe that social exchange theory offers an alternative perspective concerning constellation structures. Specifically, two aspects of social exchange—exchange horizon and type of generalized reciprocity—seem to have the potential for clearly revealing the differences among constellations.

Exchange Horizon and Generalized Reciprocity Type

"Exchange horizon" refers to the expected temporal duration of generalized social exchange. Certain generalized social exchanges take a long time to be completed, owing to such factors as a large number of parties involved and a goal of long-range reciprocities. The second factor relates directly to the type of generalized reciprocity. According to Ekeh (1974), generalized exchange can be either chain based or net based. That is, generalized reciprocity may work in a chain, where, for instance, in a three-party group, A provides resources to B, B to C, and then C to A; with net generalized reciprocity, however, individual parties contribute to the group as a whole, and they then derive benefits directly from the group. The difference between the two lies in whether individual members exchange with one another (without one-to-one reciprocity) or with the group as a whole. Both types of generalized exchange can be found in alliance constellations: a member may pay back to other members or to the group as a whole.

We need to note that exchange horizon and type of generalized reciprocity are two independent variables, for one does not necessarily affect the other. Both chain and net generalized reciprocity may take either a relatively short or long period of time to be completed. Whether reciprocity is individualized (in a chain) or grouped (in a net) does not determine the temporal duration of reciprocity. Nevertheless, the two factors do impact the three social control mechanisms discussed earlier.

The long exchange horizon in constellations increases the need for generalized reciprocity. With the flexibility of generalized reciprocity, exchange parties reluctant to wait too long for reciprocation may receive reciprocity from another party in swift order. In this sense, generalized reciprocity helps accommodate the different temporal needs of individual members of a long-term exchange system. For instance, when a constellation member makes a contribution to another member (e.g., funding its R&D efforts), direct reciprocity may appear too far removed in time. Generalized exchange helps resolve the problem by redirecting reciprocity; the firm now may receive payback from a third member of the constellation in short order (such as sharing in the benefits of another R&D project within the constellation).

A long exchange horizon also increases the need for social sanctions and a cooperative macroculture. When the duration of a constellation is long, the free-riding problem tends to be more severe. A long-term constellation connotes discretion and ambiguity in when to reciprocate, making it more difficult to monitor whether members have reciprocated fairly and adequately. As we noted, both social sanctions and a cooperative macroculture help address free riding inherent in generalized exchanges. On the other hand, a cooperative macroculture ensures that member firms adhere to the norms of generalized reciprocity all through the life of the constellation. Social sanctions, on the other hand, reduce free-riding tendencies by increasing the penalties—principally by damaging the reputation of the member involved in violations.

Proposition 5: In alliance constellations a longer exchange horizon increases the need for generalized reciprocity, social sanctions, and a cooperative macroculture.

We noted earlier that there are two types of generalized reciprocity: the chain type and net type. Because chain generalized exchange involves A's giving to B and then receiving from C, the degree of uncertainty seems higher than net generalized exchange, which involves A's giving to the group and then receiving benefits from the group. In net-type systems, since there is a group that monitors the pooling and redis-
tribution of resources, the risk of reciprocity failure tends to be low. After all, monitoring and enforcing reciprocity will not be the business solely of the affected member but, rather, the entire group.

According to Coleman (1990), whether sanctions will be brought against a norm violator depends on whether the benefits an individual enforcer receives from the sanctioning action are sufficient to compensate for its sanctioning costs. Hence, when an entire group shares the costs of sanctioning activities, the chances of successful social sanctions will significantly increase. In chain-based systems, however, “since the group does not operate as a unit the matter may seem precarious” (Ekeh, 1974: 54–55). In the absence of an entity that has information about most, if not all, reciprocal exchanges, members of a chain-based system will be hard pressed to adequately appreciate the state of reciprocity. Thus, again, social sanctions and macroculture are opposite remedies for the problem of reciprocal uncertainty (and concomitant free riding).

Proposition 6: In alliance constellations there is greater need for both social sanctions and a cooperative macroculture in chain generalized reciprocity than in net generalized reciprocity.

We now use exchange horizon and generalized reciprocity type as the two determining factors in constructing a typology of four different kinds of constellations: product bundling, joint bidding, horizontal keiretsu, and R&D consortia (see Figure 2).

Product Bundling

Product bundling is the joint marketing of products or services that are related in the eyes of consumers. For instance, code-sharing arrangements in the airline industry allow passengers to fly different airlines based on a single ticket. The following are cases in point: the Star alliance, comprising Lufthansa, United, SAS, and Thai, and the SkyTeam alliance, formed by Delta, Air France, Alitalia, and others, which compete in the transatlantic and European-Asian markets.

Product bundling represents a type of constellation that has a short exchange horizon and involves mostly chain generalized reciprocity. The logic behind product bundling is to pursue a short-term match of complementary competence among partner firms. The match is short term because the needs of member firms may change quickly. Arrangements in product bundling are flexible, making it easy for firms to join or exit the constellation. The objective is not a long-term identity for the group; rather, it is a convenient fit in relation to the current needs of firms.

Product bundling is mostly based on chain generalized reciprocity, because a member deals with many, if not all, individual members. Since there is no exchange between a member and the group, exchanges in product bundling

FIGURE 2

Exchange Horizon and Type of Generalized Reciprocity in Alliance Constellations

<table>
<thead>
<tr>
<th>Chain</th>
<th>Type of generalized reciprocity</th>
<th>Net</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product bundling</strong></td>
<td>(Logic: short-term matching of</td>
<td>(Logic: arrangements taking advantage of</td>
</tr>
<tr>
<td></td>
<td>complementary competence)</td>
<td>collective size)</td>
</tr>
<tr>
<td><strong>Horizontal keiretsu</strong></td>
<td>(Logic: long-term cross-holding among members to provide stability and exclusivity)</td>
<td></td>
</tr>
<tr>
<td><strong>Joint bidding</strong></td>
<td></td>
<td><strong>R&amp;D consortia</strong></td>
</tr>
<tr>
<td></td>
<td>(Logic: strategy aimed at new technology and industry standards that benefit all members)</td>
<td></td>
</tr>
<tr>
<td><strong>Short</strong></td>
<td></td>
<td><strong>Long</strong></td>
</tr>
</tbody>
</table>
are not in the form of net generalized reciprocity. Besides, exchanges are not based only on direct reciprocity between dyads, because equity in exchange is usually achieved beyond the dyadic level. For instance, United Airlines customers who travel to Thailand will ordinarily take Thai Airlines—a case in which United helps channel travelers to Thai Airlines. Nevertheless, it is unlikely that Thai Airlines will garner exactly the same amount of business for United—it might be less or more. A strict balance in dyadic exchange is less important than the overall balance at the group level. If United does not get as many customers from Thai, it may well be compensated by some other Star alliance members.

Joint Bidding

Joint bidding is a type of constellation in which member firms jointly bid for a big project, with each member responsible for a portion of it. Joint bidding takes advantage of the group size so that the large projects no single firm can bid for become feasible. Construction and insurance businesses have used this model successfully, no doubt because joint bidding reduces business risk for the individual members, in addition to bringing large projects within reach.

We suggest that joint bidding is characterized by a short exchange horizon and net generalized reciprocity. The aim is to take advantage of the short-term accumulation of production capacity. Long-term group identity is not critical here. Members need not have had prior interaction, because each will be responsible for a specific portion of the total deal. Thus, for as long as there are formal contracts governing the details of job allocation, the constellation will remain in operation. The idea of joint bidding is to pursue one project at a time, without much regard for the distant future. Even if the project is renewable and/or the group bids on other projects, there are often new members in the group.

Joint bidding is also associated with net generalized reciprocity. Member firms first contribute resources (such as production capacity) to the constellation to bid for a large project, and they then receive benefits from the collective effort. Social exchanges take place between the group and the individual members. Furthermore, a member firm that contributes more resources to the joint project will ordinarily get more returns and a preferred portion of the project.

Horizontal Keiretsu

Keiretsus are "clusters of interlinked Japanese firms and the specific ties that bind them" (Lincoln, Gerlach, & Takahashi, 1992: 561). Within a keiretsu member firms cross-hold equity positions and prefer to do business with each other rather than with nonmembers (Cutts, 1992). There are two basic types of keiretsus: vertical and horizontal (Lai, 1999). In a vertical keiretsu suppliers and distributors are organized around and controlled by key manufacturing companies, such as Toyota and Sony. In turn, the core firm provides financial support (such as equity investment) and long-term business to its suppliers and distributors. Since suppliers usually do not have business relationships among themselves, a vertical keiretsu exemplifies the network rather than the constellation.

In comparison, horizontal keiretsus are bigger in size and have members spread over many different industries (Lai, 1999). Examples include the Sumitomo and Mitsui keiretsus. Member firms prefer to trade among themselves, with the help of the trading and banking arms of the constellation. Thus, member firms in horizontal keiretsus have less hierarchical and more symmetric relationships.

Horizontal keiretsus have long exchange horizons. Major horizontal keiretsus have been around for decades. Group identity developed over time is critical to the operation of a horizontal keiretsu. After all, the very purpose of a keiretsu is to enhance the long-term survival and development of member firms through support of one another. The cross-holding of each other's equity shares means that each member has a vested interest in the other's long-term success. Since a major share of a firm is in the hands of keiretsu members, there is less short-term pressure from the stock market. Thus, the firm can reasonably follow a long-term strategy.

A horizontal keiretsu has to rely on chain generalized reciprocity to a great extent. Indeed, reciprocity is viewed as critical in a keiretsu (Lincoln et al., 1992). Apparently, there is an element of dyadic, direct reciprocity between certain pairs of member firms in a horizontal keiretsu. In such cases, two firms hold each other's shares and trade between themselves. However,
since horizontal keiretsus are spread over many industries, the relationship among members is not just dyadic. For example, a steel-manufacturing member may sell to a ship-building member and have the steel transported by a shipping member. The shipping firm may order ships from the ship-building firm. Hence, there is a chain-ordering relationship among the three parties: A supplies to B, B to C, and C to A. Thus, cross-holding of firms can also be chain based and represents a tapestry of relationships that goes beyond the simply dyadic. In this case, member firm A holds shares of B, B holds shares of C, and C holds shares of A. Thus, reciprocity in a horizontal keiretsu is not limited to the dyad but reflects, at the group level, a complex pattern that amounts to chain generalized reciprocity. It is important to note that this is not net generalized reciprocity, because the exchanges are not with a central collective entity.

**R&D Consortia**

In R&D consortia a number of firms create a new legal entity that conducts joint research activities. In recent times, companies have increasingly relied on R&D consortia for gaining competitive advantage, often by establishing industry standards through a stable cooperative strategy. R&D consortia are different from traditional joint ventures in that they are usually research oriented and involve a larger number of participating firms.

Given their more formal structures, R&D consortia have a long exchange horizon and net generalized reciprocity. It usually takes a long time to get results in critical R&D efforts—often basic research that can influence the future of an industry. Also, member firms of R&D consortia rely on net generalized reciprocity; they first contribute their R&D capabilities to a consortium and receive benefits subsequently from the R&D outcome, such as an industry standard.

**Social Sanctions and Macroculture in Different Constellation Types**

We suggested earlier that exchange horizon and type of generalized reciprocity affect the need for social control mechanisms (Propositions 5 and 6). Thus, the four major types of constellations have different levels of need for social sanctions and a cooperative macroculture. In product bundling the level of need is moderate. Whereas a short exchange horizon suggests limited need for control mechanisms, a chain generalized reciprocity in product bundling indicates that member firms need to have compatible views about how to conduct business. After all, their products or services are presented as a package, making business compatibility critical. The mechanism of social sanctions helps ensure that members violating the norm of generalized reciprocity will not be able to take advantage of the short exchange horizon of product bundling and find their way easily into another similar constellation.

In joint bidding both a short exchange horizon and net generalized reciprocity suggest a low need for social sanctions and a cooperative macroculture. Since joint bidding is flexible in its arrangement and membership, developing a macroculture over time is neither feasible nor important. In a given project, member firms tend to rely more on contractual agreements regarding their separate responsibilities. Therefore, economic and legal sanctions play important roles in joint bidding, reducing the need for social sanctions.

Horizontal keiretsus have a high need for social sanctions and a cooperative macroculture because of their long exchange horizon and the presence of chain generalized reciprocity. Since a keiretsu has a long-term identity and features equity cross-holdings, a collective approach is critical for its success. Any behavior that violates the norm (such as a firm's selling off shares of other firms) would trigger reciprocal reaction (such as other firms' selling their shares) and cause great harm to the constellation. In addition to institutional sanctions, social sanctions are particularly needed to further punish norm-violating members. In a thickly integrated business group, loss of reputation could be more damaging than material loss.

Finally, R&D consortia have a moderate need for social sanctions and a cooperative macroculture. Whereas a long exchange horizon means that social control mechanisms are much needed, the dominance of net generalized reciprocity suggests a comparatively limited need. Hence, the overall level is moderate. For instance, a cooperative macroculture helps ensure that during the long period of developing an industry standard or a cutting-edge technology, member firms will be patient and not harm the
CONCLUDING REMARKS

In this article we developed a social exchange perspective of alliance constellations. Despite their increasing popularity, alliance constellations, formed by three or more partner firms, have not received adequate attention in the literature. The main reason probably is that most researchers have not seen constellations as a unique type of interfirm partnership. In our view, although constellations have some similarities with other kinds of partnerships, such as two-way alliances and alliance networks, they are also significantly different in many ways.

Based on social exchange theory, we noted that constellations are characterized by generalized, instead of restricted, social exchanges. Because there are at least three parties involved, member firms often need to go beyond direct reciprocity and rely on generalized reciprocity. This critical difference between dyadic alliances and constellations becomes clear from a social exchange perspective.

We examined the implications of generalized social exchanges in constellations in two substantive areas: constellation management and structural types. We suggested that the management of constellations is about controlling the social exchange process. Three areas of difficulty in constellation management are trust building, conflict resolution, and coordination. We illustrated the management of these difficulties in terms of key social control mechanisms—namely, generalized reciprocity, social sanctions, and macromulture. First, trust development in constellations is mostly accomplished through generalized reciprocity. Second, conflict resolution and punishment in constellations are carried out through social sanctions. Third, coordination costs can be brought down by developing a cooperative macromulture.

In terms of constellation structure, we argued that two relevant dimensions are exchange horizon (short and long) and type of generalized reciprocity (chain and net). Employing these two dimensions, we proposed a typology of constellations: product bundling, joint bidding, horizontal keiretsus, and R&D consortia. We also discussed the distinctive features of these four constellation types, including the differential needs for specific social control mechanisms.

While our effort here has been directed at helping to clarify key exchange processes in alliances, it has also contributed to the larger body of literature on generalized social exchange processes, which has traditionally been centered on interpersonal relations. The proposed social exchange perspective of constellations suggests important research issues for future explorations, beyond the empirical testing of the various propositions developed here. For instance, is it more effective to use restricted or generalized social exchange? This question probably will allow us to explore and explain possible performance differences between dyadic alliances and constellations. Another research question concerns how social exchange processes develop and evolve over time in constellations. For example, how do resource dependence and trust interactively evolve, and what is the implication of this development for constellations? An attempt to answer these questions will require a more process-oriented examination of generalized social exchanges in alliance constellations than is now evident in the literature.

REFERENCES


T. K. Das is professor of strategic management and area coordinator (strategic management and business & society) at the Zicklin School of Business, Baruch College, City University of New York. He received his Ph.D. in management from the University of California at Los Angeles. His current research interests include strategic alliances, strategy making, and temporal studies in management and organization.

Bing-Sheng Teng is an assistant professor of strategic management and public policy in the School of Business and Public Management, George Washington University. He received his Ph.D. in strategic management from the City University of New York. His current research interests focus on strategic alliances and cooperative strategies.