

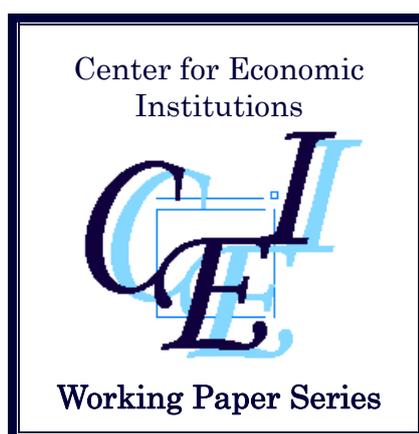
***Center for Economic Institutions***  
***Working Paper Series***

CEI Working Paper Series, No. 2008-19

*"Strategic Alliances in the Japanese  
Economy: Types, Critiques, Embeddedness,  
and Change"*

*February 2009*

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Types, Critiques, Embeddedness, and Change

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ABSTRACT

This paper provides an overview and interpretive analysis of the Japanese strategic alliance process. Both international and domestic alliances are considered, although the emphasis is on domestic partnerships. I argue that the domestic Japanese economy is "underallianced" relative to Japanese firms' extensive involvement in partnerships with foreign firms. This is particularly true if government-sponsored consortia and keiretsu-based tie-ups are excluded. Japanese companies appear, for a variety of institutional and cultural reasons, to have had some difficulty partnering with strangers and competitors and that has led to the formation of fewer synergistic and otherwise constructive intra-country cooperation arrangements than corporate Japan arguably needs. That pattern is changing, however, and there is evidence that the rate of intra-country alliances among Japanese firms is accelerating, particularly when the focus of the alliance is technology and innovation.

# Strategic Alliances in the Japanese Economy: Types, Critiques, Embeddedness, and Change

## INTRODUCTION

This paper reviews the role and consequences of strategic alliances in Japanese business. I am not aware of another paper in English that takes a similarly broad look at Japanese firms' embrace of and utilization of strategic alliances. Some readers may disagree and point out that a very large literature in fact deals with the cooperative customer – supplier relationships that are seen as an integral feature of the Japanese “lean production” model of manufacturing success (Dyer, 1996; Helper, MacDuffie, and Sabel, 2000; Liker and Choi, 2004). From the perspective of this paper, however, those vertical partnerships housed within the durable governance structures known as “keiretsu” are not strategic alliances in the usual sense of the term. Admittedly, alliances such as the keiretsu that form and persist for other reasons may at times take on strategic purpose. Much of the focus of this paper is on the interplay between Japan's keiretsu networks and the strategic alliance creation process in its domestic economy. Japan has also been a major player in international strategic alliances, and I devote some space to that topic. However, the broad involvement of Japanese firms in alliances with foreign partners appears to be matched by relatively little strategic alliance activity at home, particularly if government-led research consortia and the keiretsu themselves are excluded.

My approach is less descriptive than analytical and critical. I wish to understand how Japanese strategic alliances reflect the structure and strategies both of individual Japanese firms and of the Japanese economy as a whole. Moreover, because of rapid ascent to the front ranks of global economic powers and also, perhaps, because Japanese business and government are often carried out in ways that depart to some degree from Western norms, Japan has come in for a

good deal of Western criticism. That is as true of its strategic alliances, particularly the international ones, as of other facets of its economic organization and behavior. I review some of those criticisms and attempt to assess their validity and origin. I then focus on one broad issue regarding Japanese domestic interfirm alliances: that to a degree arguably unhealthy for the Japanese economy in the long run, Japanese strategic partnerships have often required embeddedness in preexisting network infrastructure for their launch, persistence, and success. The scholarly literature has shown strategic alliances in other countries likewise utilizing such network infrastructure particularly in the early stages of the alliance life cycle. But Japan is distinctive in that it has had such elaborate inter-organizational networks in the form of government-run consortia, trade associations, and keiretsu groupings in place. Building on other writers who have addressed similar themes, I suggest that, while such network or community infrastructure has served a useful purpose in the past, Japanese firms need to move beyond them and, according to my own empirical analysis of the Japanese electronics industry, they are in fact doing just that. Recent strategic alliances, particularly the technology-based ones, are less embedded in keiretsu than was true of the alliances of the past.

### Defining strategic alliances

Given their variety of types and forms, strategic alliances are difficult to define. They may be said to include any cooperative and intendedly lasting partnership between two or more companies that has some express business purpose geared to improving the performance and competitiveness of the partner firms.

While strategic alliances may have a variety of functions and goals, they can be divided down the middle between alliances aimed at R&D—cooperation in the creation or application of

process or product technology—and alliances formed for other purposes.<sup>1</sup> Much if not most of the scholarly literature on strategic alliances addresses the R&D case.

Beyond the critical distinction between R&D partnerships and other types, strategic alliances serve a variety of purposes and take a variety of forms. They may be cost-sharing or economizing as when two firms consolidate production or distribution. They may be skill-sharing or learning-based when one firm possesses expertise another needs (Sakakibara, 2002). They may be synergy-producing as when two or more firms possess distinct but complementary capabilities that interact in raising production or innovation. They may be asymmetric as when one firm extracts knowledge from the other (e.g., by licensing technology) or assists in gaining access to its distribution channels. They may be symmetric as when two or more firms commit equal resources to or create dedicated boundary-spanning teams. An important distinction in the class of symmetric alliances is between dissimilar partners possessed of complementary assets or capabilities versus partners whose alliance mostly enlarges the pool of existing assets.

Most students of strategic alliance agree that the concept does not extend to the poles of Williamson's (1985) "markets and hierarchies" continuum. That is, a merger or acquisition is not an alliance. By definition, if one firm is absorbed into another, such that its people and processes are subject to the second's firm's authority hierarchy, there is no longer a voluntary cooperative partnership. Neither included is a pure exchange contract whereby one firm shifts assets—

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<sup>1</sup>A related distinction is that made by March (1991) between organizational activities that are directed at *exploitation* – performing as best one can with present resources and capabilities-- and those aimed at *exploration* – acquiring new resources or learning new capabilities. The distinction is particularly relevant to the topic at hand. Do Japanese companies attempt to make the most with present competencies or do they identify opportunities and then seek out the competencies/resources necessary to exploit them?

products or services—to another for a price or fee. There is no provision for cooperation between the parties beyond a written contract specifying what is to be sold at what price and what recourse legal or otherwise is available to the parties in the event of default or defection.

Yet if the “contract” fails to lay out in codified and closed form all the rights and obligations of the partners but is *implicit* and *relational* –a promise by the parties to trust and work with one another to resolve problems along the way-- the contract takes on the flavor of a strategic alliance (Macaulay, 1963). This is a particularly important consideration in the Japanese context, as Japanese purchase-supply contracts have been famously vague and short, necessitating privately-ordered relational contracting as governance structure. Indeed, the prevalence of relational contracting in Japanese business has contributed substantially to scholarly interest in the roles of trust, commitment, and reciprocity in economic systems generally, even in the arms-length and market-oriented “Anglo-Saxon” West (Dore, 2000).

While companies may disdain hard explicit contracts in favor of implicit and relational ones (more on this later), the presence of a detailed formal contract in itself does not spell the absence of broad and deep cooperation. Hewlett Packard’s successful strategic alliance with Cisco Systems involved frequent joint discussions, cross-functional and high-level buy-in, and much in-depth contact between employees of the two firms (Casciaro and Darwall, 2003). When a formal contract was signed, participating managers reported, it provided a framework that facilitated, but did not substitute for, substantive cooperation.

Bona fide strategic alliances can and do vary in degree of formal organization and the autonomy of the partners. An equity joint venture, for example, is a separate corporate entity that may structure its activities and compete in markets in ways distinct from its parent firms. Indeed, a strategic alliance is unlikely to acquire “a life of its own” without the formal legal devices of

separate stock, management team, board of directors, and the like. An important Japanese example is Fuji-Xerox, a joint venture between Fuji Photo Film and Xerox Corporation, which grew into a highly successful stand-alone business.

## JAPAN'S INTERNATIONAL ALLIANCES

Although my dominant concern in this paper is with strategic alliances within the domestic Japanese economy and the role of keiretsu and other network infrastructure in supporting them, such alliances cannot be fully understood without some discussion of the many strategic tie-ups that companies in Japan have had with corporate partners elsewhere, particularly Europe and the United States.

### TABLE 1 ABOUT HERE

Table 1 reports data from the CATI – MERIT Strategic Technology Partnership global database maintained by Professor John Hagedoorn (2002) and his colleagues at the University of Maastricht. It is the most complete compilation of data on international and multisector technology alliances available. Unfortunately, no comparable global database of nonR&D alliances exists. Moreover, the CATI – MERIT data only concern privately-funded alliances. Government consortia and other public-funded cooperative ventures are excluded.

The Table shows that, in the 1980-84 period, Japan's share of all strategic technology partnerships ("STP's" as the authors refer to them) at 24% was just 5% short of all of Europe's. Japan's contribution then declined to 17.4% in the latter 80's and to 12% in the 90's. One likely reason is the shift in the industry composition of international alliances from consumer electronics and information technology, where Japan was strong, to biotechnology, where its role was smaller. Probert (2006), however, suggests that the participation rate of Japan's

pharmaceutical companies in international biotech alliances is roughly on a par with that of European pharmaceuticals, if one adjusts for the smaller size of the Japanese companies.

A report using the same data for 1980-94 by Narula and Hagedorn (1998) breaks down total recorded STP activity according to international and domestic and by separate countries. The USA led with 4848 recorded STP's, followed by Japan with 1931. In Europe, the UK had 927, Germany 857, France 722, Netherlands 703, and Italy 421. Other European countries are in the 200's or lower. How do these alliances divide between international and domestic? For no European country is the percentage of international alliances less than 75%. As Narula and Hagedorn note, smaller countries have more cross-border alliances, simply because of limited home market size and partner availability. Forming and managing international alliances are also easier in Europe where, unlike Japan and the U. S., so many partners are close by. The very large and geographically distant U. S., by contrast, has a 41.3% rate of international alliances. The also large (in population and economy) and distant Japan, on the other hand, looks like a European country: 75% of its STP's in this period involved international partners. No doubt this high rate reflects the Japanese economy's very strong export orientation, but it provides some support for the suggestion that, despite an array of government and keiretsu supports, Japan's domestic technology alliances have been few in number relative to its international alliances.

#### The (mostly Western) critique of Japanese strategic alliances

Despite the perception that Japanese companies are good at managing and working within networks and that their highly networked organizations as a consequence have performed well, Japanese companies' participation in and use of strategic alliances, particularly the international ones where the country's profile is quite high, have come in for strong criticism. Not all the criticism stands up to scrutiny, and some of it is out of date. But other complaints are

valid and shed some useful light on the divergent ways that Japanese and Western companies approach strategic alliances. I review the most prominent critiques in the sections below.

### *Milking the partner*

In the late 1980's and early 90's, with Japanese economic power and Western resentment of it peaking, the complaint was that the alliances Japanese companies formed with American companies were aimed, not at mutual value creation, but at asymmetrically "milking" the partner of knowledge while giving little in return (Hamel, 1991). Hamel suggested that the Japanese firm extracts more value, i.e., chiefly knowledge, from an international alliance than the Western partner for three reasons: (1) intent: the Japanese partner is more focused on learning than is the partner; (2) transparency: the Japanese partner is better at keeping its processes opaque. Finally, (3) learning ability or "absorptive capacity:" The Japanese firm is better able to assimilate or absorb knowledge from the partner than vice versa. Although his evidence is qualitative and therefore hard to verify, his arguments generally ring true. An obvious reason for the asymmetry of Japanese learning through alliances is language. The Japanese partner is better able to understand the English (even in continental Europe the language of the Japanese joint venture workplace is apt to be English) than the partner can understand the Japanese. Another reason is the relative centralization of the Japanese multinational firm. Much of the Japanese partner's decision-making will be done in Tokyo or Osaka and is thus concealed from the Western partner.

Is milking bad? In a famous article, Prahalad and Hamel (1990) place a positive interpretation on the Japanese reputation for such one-sided learning from foreign partners. They see learning and knowledge creation as Japanese "core competencies," evolved, perhaps, from the country's history since the early Meiji Era (latter 1800's) of aggressive copying in order to

catch up economically and militarily to the West (Nonaka and Takeuchi, 1995). A more analytical article by Cohen and Levinthal (1990) carries the argument further. They attribute to Japanese organizations high levels of “absorptive capacity;” i.e., the ability to learn and apply the innovations of others. The relatively low specialization of functions within the Japanese firm and the regular rotation of employees among them facilitates internal learning, as, of course, do long-term employment, large investments in training and mentorship, workforce commitment, and organizational cultures centered on teamwork, quality, and continuous improvement (Cohen and Levinthal, 1990).<sup>2</sup>

Still, the evidence for the milking hypothesis has been largely anecdotal and is probably colored to some degree by American and European disgruntlement over the formidable competitive challenge Japanese companies mounted in the 80’s. One careful study found no evidence for one prediction from the milking theory: that such asymmetric learning-based alliances collapse at the point that one side has thoroughly drained the other’s knowledge pool. Hennart, Roehl, and Zietlow (1999) find no difference in the life expectancies of Japanese and nonJapanese joint ventures. This, in their view, suggests that that the Japanese firm is as committed as its partner to the venture’s survival and success.

*Too dominant?*

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<sup>2</sup> Cole and Matsumiya (2007) have recently argued that the Japanese manufacturing firm’s culture of quality and strategy of incremental improvement, conducive as they may be to learning, stand in the way of innovation, particularly of a radical sort. High and unwavering standards and an obsession with prevention over correction of errors fosters rigidity and risk aversion that makes fast response to discontinuous changes in markets and technology difficult to achieve.

Another variation on the theme that Japanese partners to international alliances appropriate the lion's share of the benefit seems at first blush at odds with the "milking" critique with its implication that the Japanese firm's commitment to the alliance ends at the point that it has learned all it can. The complaint here is that Japanese firms are "too involved," too much in control, and, as a consequence, able to extract the lion's share of value from the alliance. Yet other observers control of the alliance as a normal consequence of learning fastest and most. As Hennart, Roehl, and Zietlow (1999) put it:

*"Value is appropriated in joint ventures when the venture is used to absorb the skills of the partner. The party that learns the fastest gets the upper hand in the venture and is able to renegotiate the terms of the venture in its favor."*

Turpin's (1993) useful review of prominent 20<sup>th</sup> Century joint ventures between large Japanese and Western firms finds a pattern of Japanese dominance, but in several such cases he faults the Western partner. Had the Japanese side not acted as it did, the venture might have failed. Furukawa's longstanding joint venture Siemens, Borden's partnership with Meiji Dairy, and Sumitomo's alliance with 3M are cases in which the Japanese firm was mostly in the driver's seat, so that the alliance moved in directions that it chose. One might add to these examples the Fuji Xerox joint venture and NUMMI, the GM-Toyota joint venture in Northern California. Unlike the Japanese-Western alliances in high tech and biotech, the Japanese partner at NUMMI was teacher and the Western partner pupil (Inkpen, 2005). Although critics, particularly in NUMMI's early years, questioned GM's commitment to learning from Toyota, much of Toyota's system of lean production and cooperative supplier relations eventually did filter through NUMMI to GM's North American and European operations. Similarly, Xerox was in serious need of the design and manufacturing capabilities in small copiers and integrated

copier-fax-scanner technologies that Fuji Photo Film brought to the Fuji-Xerox joint venture.

As Turpin suggests, the reasons for the Japanese partner 'getting the upper hand' in international alliances probably had to do with the significant contrasts in management, organization, and culture that distinguish Japanese and Western firms. Immunity to shareholder pressures to maximize quarterly returns enabled a focus by the Japanese partner on long-term business expansion goals that caused conflict with the shorter-term earnings-oriented American partner but ultimately served the alliance well (Inkpen, 1996). Likewise, the stability of the Japanese firm's workforce meant that, while Western executives came and went, the venture derived some management stability from the Japanese executives remaining the same.

It is true that many of the international alliances pursued by Japanese corporations were with small, entrepreneurial Western companies in high-tech and biotech. There are reasons for this apart from any Japanese corporate proclivity to prey on the innovativeness of Western firms. Japanese companies, particularly in leading-edge industries like biotech, lacked the large basic research capabilities of the West (Probert, 2006). As Japanese firms acquired a stronger base of knowledge and experience, Gassel and Pascha (2000: 638) write, their international biotech alliances have been less aimed at one-sided "milking," more aimed at "longer lasting, flexible, and trusting relationships with foreign partners."

*Japanese firms in international alliances: bad partners or bad press?*

Japanese companies have been hugely active in international strategic alliances, many of which have yielded lasting ventures that at times outperformed (and may outlive) the parent firms themselves. Yet there is a perception in the West that Japan's international alliances were often asymmetric and served the interests of the Japanese firm more than the alliance as a whole. Either the Japanese firm's role was one of siphoning off the knowledge while giving little in

return, or was one of taking control of the alliance and maneuvering it in ways disadvantageous to the foreign partner.

We have seen that the behavior of the Japanese international alliance targeted in these criticism is: (1) less than well supported by the evidence; (2) if true, not out of the ordinary for alliance partner behavior anywhere; and (3) attributable to the bad or short-sighted management of the foreign partner and good for the alliance in the long run. Yet there are reasons to believe that Japanese firms do struggle at times with their international strategic alliances. Such problems are endemic to international business, but Japanese firms are distinctive among global corporations for their strong cultures and tight employee communities, which, combined with the language issue, caused low utilization of foreign personnel in upper management roles. Compared to North American – European alliances where the language and culture pose smaller barriers to cross-border meshing of people and processes-- Japanese firms have faced some challenges here.

### JAPANESE DOMESTIC ALLIANCES

I turn now to the question of strategic alliances within the Japanese domestic economy; that is, among Japanese firms themselves. The principal question addressed is the degree to which Japanese strategic alliances have been embedded in or supported by preexisting networks, principally the keiretsu, although some attention is also given to government-sponsored research consortia.

Relative to their active participation in international alliances, Japanese companies appear to fewer true strategic alliances at home. The MERIT – CATI data for the 1984-89 period show intra-Japan alliances comprising just 6% of all global alliances, as contrasted with 25.3% contributed by U. S. domestic alliances, and 20% intra-European. As noted earlier, at 75%

Japan's rate of international strategic technology partnerships is high for a country of its size and geographic isolation; much higher than the U. S. and on a par with the smaller and geographically concentrated European countries.

Indeed, my own data on strategic alliance foundings, discussed in greater detail below, shows no increase in the rate of new R&D alliance formation in the domestic Japanese electronics industry between 1985 and 1998. As noted, international technology partnerships have shifted since the 1990's from the electronics and information technology sector to biotech. Given the relatively stronger domestic than international orientation of the Japanese pharmaceuticals industry, one might expect the shift to be accompanied by a higher ratio of domestic to international Japanese STP's. Gassel and Pascha (2000) write that this is not the case: most Japanese international alliances are of the market positioning sort, and the development alliances that do occur are generally within the government-sponsored consortia. In their words:

*At a national level, Japanese firms often tend to refrain from providing access to internal scientific resources and frequently regard joint government-sponsored R&D as unavoidable, but without major positive results expected.*

In biotech, where, for reasons of limited venture capital and a low rate of university scientists pursuing second or parallel careers as biotech entrepreneurs (Darby and Zucker, 1999), domestic biotech research and commercialization have been well behind the North American and European curves. In part as consequence, domestic alliances in the industry are few and far between, and, according to Gassel and Pascha's data, some third of them are industry – university alliances.

## Government research consortia as strategic alliances

A distinctively Japanese technology alliance form occasioning much discussion and research is the government-sponsored R&D consortia that bring together a number of companies typically from one industry or technologically related industries for cooperative research and development activities. The most famous such consortium was the VLSI project organized by MITI in the 1970's. Cooperative R&D done within consortia has drawn considerable theory and research attention in the economics of innovation. At the pinnacle of Japanese economic success, cooperative action by Japanese firms via the government consortia, keiretsu, trade associations aroused concern in U. S. policy circles about American competitiveness. U. S. anti-trust law, which at the time frowned on cooperative research and development, was seen as a competitive liability relative to Japan where government not only tolerated but actively promoted industrial cooperation (Kodama, 1992). Much writing by U. S. economists focused on the disincentives to private sector R&D that exist in a competitive market economy. Corporate innovators with huge sunk costs in R&D often cannot capture the returns to those investments as information spillovers enable competitors to copy the technology for use in competing products, thus destroying the innovator's competitive advantage. Cooperative R&D was seen to be a solution to the problem. Cooperation would spread the costs of innovation across the consortium and would keep the spillovers within the boundaries of the group.

The consortia were viewed by Japanese scholars and policy makers as a means of motivating (with government pressure and incentives) and coordinating technology cooperation among competitor firms that would otherwise resist technology partnerships. Firms participated because of government pressure and perhaps the legitimation of being a part of an important national effort (Darby and Zucker, 1999). Even then there were problems, some caused by

keiretsu alignments and divisions. In the 1970's, MITI (Ministry of International Trade and Industry) was forced to create two distinct research laboratories in order to get firms from rival groups to join the VLSI project (Fransman, 1990). The ministry faced similar difficulties in persuading electronics firms to work together in the Fifth Generation Computer Projects in the 1980s (Guillot, Mowery, Spencer, 2000).

Nonetheless, research on the consortia shows that they yielded tangible benefits in terms of higher rates of patenting by member firms, both during and after the consortium (Sakakibara, 2002). Sakakibara's analysis shows, moreover, that the stepped-up innovation truly derived from the organization and activities of the consortia, not merely the government subsidies distributed to participants.

The consortia have been of limited success in the biotech industry. Gassel and Pascha (2000) write that Japanese pharmaceutical firms' commitment to the consortium process in biotech has been uneven and declining. The consortia have lost government and other funding because of failure to produce significant innovation outcomes. Latecomer firms were happy enough to use them to access technology and other resources, but established firms in possession of proprietary technologies had the usual concerns with knowledge spillovers. Unlike electronic and information technologies in which many Japanese firms achieved significant competence years ago, the newness of the global biotech industry and the lateness of Japan's entry into it meant a highly uneven distribution of technological capability across Japanese pharmaceutical firms (Probert, 2006).

#### *Alliances without consortia*

Kodama's influential 1992 *Harvard Business Review* paper heralded a wave of "technological fusion" sweeping Japanese industry, by which he meant the synergistic

combination of (e.g., electronic and mechanical) technologies through cooperative initiatives:

*“...technology fusion grows out of long-term R&D ties with a variety of companies across many different industries. Investment in research consortia, joint ventures, and partnerships goes beyond tokenism. It is both reciprocal and substantial – all participating companies are on more or less equal footing in terms of responsibility for and reward from the investment.”*

Yet Kodama’s examples of technological fusion were those of ministry-sponsored consortia; keiretsu-based alliances such as the 1980’s collaboration of Sumitomo companies in fiber optics; one-sided learning (technology absorption) alliances pursued by Japanese companies with Western partners during Japan’s high growth era; *and* the technology innovation programs of individual firms (Sharp in LCD’s). As he suggests, keiretsu, like government consortia, offered a “safe environment” for R&D alliance, particularly of a cross-industry sort (which involves less partnering with direct competitors). Both, that is, enabled interfirm research to proceed within a set of community walls such that affiliated firms could collectively capture the returns to their innovation since knowledge spillovers to competitors were controlled.

For these reasons, intra-industry technology partnerships forged and sustained without such consortia or keiretsu embeddedness have been the relative exception in Japan. This, to some degree, represents the flip side of Japan’s network-ridden industrial organization. If trust and cooperation between business partners flows easily when they share a pre-existing tie or identity (including third-party monitors and brokers) the *absence* of such community infrastructure may create an interorganizational vacuum in which trust and cooperation in a *de novo* alliance are hard to establish.

This would seem to be a downside to relational contracting of any sort. “If the Japanese

knew how to write contracts,” said a Japanese economist colleague of mine in semi-jest, “they would have less trouble partnering with strangers.”<sup>3</sup> Indeed, the evidence that formal joint ventures comprise a smaller percentage of strategic alliance activity in Japan than in Europe or the United States is consistent with the supposition that Japanese partnerships are constructed with less legalism and formalism (Hagedoorn, 2002). As noted, the extensive literature on customer-supplier relations in Japanese industry has been highly supportive of the idea that implicit and relational contracting guide transactions to a greater degree than explicit contracts do (Dyer, 1996).

It is important to recognize, however, that the trust and reciprocity with which Japanese exchange relations are thought to be infused are not merely circulating in the country’s cultural “ether,” such that they spare any and all Japanese business partnerships the opportunism, holdup, defection, and other market maladies afflicting transactions elsewhere in the world. On the contrary, in the past if less so in the present, potential pairings of transaction partners were heterogeneous in this respect. Some had all the qualities of the relational contracting model. Others, however, were separated by wide chasms: long-standing rivalries reduced the odds the firms involved would get together in an exchange.

Many transactions in the Japanese economy are “embedded,” to use an overworked term, in an established network or community, which serves as supportive infrastructure for a stable partnership with relatively few formal contractual features. This may be particularly true of partnerships aimed at the creation and transfer of new knowledge. Kodama implied as much:

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<sup>3</sup> Contracts in Japan are known to be short (~2 pages), in no standard format, vague on the obligations of the parties and the timing of activities, often drawn without legal counsel, and with unclear provisions for legal recourse in the event of malfeasance or defection.

his examples of technology fusion alliances fall within the confines of government-sponsored research consortia, keiretsu groupings, and trade associations. One could add regional enclaves such as Aichi Prefecture, Kyoto's high-tech corridor, or the textiles cluster in Nishiwaki studied by Ronald Dore (1983). In addition to rules of participation that foster trust and discourage malfeasance members, such communities provide a variety of supports and constraints: the transacting pair is not "on its own" but is witnessed by, assisted, and intervened in by the other companies of the group.

Such patterns have been conspicuous in Japanese transaction (lending and purchasing) partnerships. If cooperative, flexible, relational contracting prevailed within the group, exchange relations spanning groups were-- worse than atomized and arms-length-- nonexistent. A company with Mitsubishi as its main bank might have several other banks as secondary lenders and (very likely) shareholders, but Mitsubishi archrival Sumitomo would not be one. There was a time when Toyota refused to source parts or materials from a Nissan keiretsu supplier (Ahmadjian and Lincoln (2001).

An interesting question here, however, is whether the real obstacle to a firm going outside its group or network in search of an alliance is really cost of the social supports foregone. The alternative possibility is that, in an economy so riddled with and segmented by networks, reaching beyond the borders' of one's own network meant reaching into a rival one. If consortia and keiretsu function well to circulate yet confine innovative knowledge within the boundaries of a firm's community, they also worked to absorb and diffuse the knowledge spillovers from other communities. Figure 1 provides an illustration. Because of Mitsubishi Electric's linkage to the Mitsubishi horizontal keiretsu network and Matsushita Electric's ties both to the Matsushita vertical keiretsu and the Sumitomo horizontal group, knowledge leaked from a strategic alliance

between those two firms might diffuse very quickly throughout their respective keiretsu networks. Similarly, an alliance between Toyota and Hitachi, which, as noted, was for this reason ruled out by Toyota, risked spillovers of knowledge to the Toyota vertical group (no doubt a positive from Toyota's perspective), the Mitsui horizontal group, the Nissan vertical group, AND, because of Hitachi's unique status as an affiliate of all three, the Fuyo, Sanwa, and DKB horizontal groups and their associate vertical keiretsu such as Furukawa.

#### FIGURE 1 ABOUT HERE

Indeed, some of my empirical evidence on strategic alliances within the Japanese electronics industry between 1985 and 1998 suggests that the barriers posed by horizontal keiretsu alignments to boundary-spanning partnerships arose mostly when the outside partner candidate hailed from another group. In other words, horizontal keiretsu companies were approximately as likely to strike up an alliance with a keiretsu-unaffiliated partner as to select one from the ranks of their own group. Partner prospects from competing groups, however, were another story: the odds of those alliances fell significantly. The same was not true, however, when the keiretsu form was vertical. There, companies displayed a clear preference for intra-group partnerships over those with other groups *or* unaffiliated firms. (More discussion of this analysis appears below.)

One of the benefits of confining technology partnerships to a company's pre-existing network is that, as is also true of knowledge creation and exchange within a single firm, such groupings develop their own operational and cultural routines (Nonaka and Taekuchi, 1995), such that the knowledge that emerges is tacit and inchoate, rendering its absorption by competitors difficult. This will be truer of the keiretsu than the government research consortia; truer of the tighter-knit vertical than horizontal keiretsu; and truer of process than product innovation.

## KEIRETSU AS INFRASTRUCTURE

To this point, I have touched several times on the role that Japan's famous keiretsu networks of stable interfirm relations play in the strategic alliance process. This section attempts a more systematic treatment of that issue.

A consistent finding of strategic alliance research is that firms choose as partners for new alliances companies with whom they have been linked in other ways. One such connection that has been shown to have a very strong effect in this regard is previous strategic alliance. Firms form new partnerships with their partners of the past. Some researchers interpret this as a matter of trust and good will that builds up through repeated partnering (Gulati, 1995). Also possible is that the tendency to gravitate again and again to the same partners reflects a kind of risk aversion or organizational inertia. Rather than put the effort into scouting out new partner prospects, firms recycle old ones. For some purposes—meshing of processes and cultures—repeated alliances with others who are tried and true makes sense. For other purposes—innovation of process and product technology—it may not.

There is evidence as well that preexisting networks based on boundary-spanning interpersonal relations may provide the network infrastructure within which new strategic alliances are erected. Some studies show that that firms linked at the top by board interlocks and other professional and executive ties are more likely to form strategic alliances (Eisenhardt and Schoonhoven, 1996)

As noted in earlier sections, an important form of preexisting business network providing supportive infrastructure for new strategic alliances in Japan is the keiretsu, the country's distinctive business "groups." The keiretsu represent an institutional feature of the Japanese economic terrain to which enormous scholarly and journalistic attention has been directed

(Lincoln and Gerlach, 2004). The Japanese term translates as linear or ordering and was first applied to the vertical chains of suppliers and distributors that surrounded a large manufacturer such as Toyota, Nissan, Hitachi, NEC, or Nippon Steel. But the term extends as well to the “horizontal keiretsu,” or diversified enterprise groups, three of which descended from the prewar zaibatsu conglomerates whose central holding companies were banned and executive ranks purged by the U. S. Occupation under MacArthur at the close of World War II. Compared to the hierarchically structured vertical keiretsu, the horizontal groups were communities of relative equals, although a triumvirate of large member firms typically occupied central positions and exercised leadership roles-- a commercial “city” bank, a major trading company, and a heavy industry manufacturer.

Although the keiretsu are commonly discussed as “groups,” that term in any but the loosest sense is a misnomer. The concept of group implies an unambiguous separation between members and nonmembers. Both keiretsu forms, however, had porous and permeable boundaries, and, in the case of less cohesive groups, partially overlapping memberships.

The prewar zaibatsu, however, were bona fide business groups of the sort now common in developing economies and regarding which a rich empirical and theoretical literature has grown up (Guilen, 2000). Such business groups have a distinct organizational form: majority ownership of a few peak companies is maintained by a wealthy family with close ties to the state. Those peak companies, in turn, own controlling shares in a next tier of companies, and so on down the hierarchy such that relatively small equity stakes in family hands translate into effective control of a large share of the economy. The prewar zaibatsu and the predecessors of the vertical groups as well (the *konzerns*) had this form (Shimotani, 1991).

Like business groups in the developing world, the zaibatsu and the prewar vertical

groups performed a number of functions in a Japanese economy whose fast development followed the Meiji restoration in 1868, which ended 265 years of Tokugawa feudalism (Caves and Uekusa, 1976). The vertical networks filled gaps in supply chains (Odaka et al., 1988). The trading companies of the horizontal groups and the wholesalers and retailers of the vertical groups performed material procurement and distribution functions. Intra-group lending by banks and insurance companies created “internal capital markets” that substituted for well-developed external capital and corporate debt markets. Furthermore, the risk sharing and pooling activities of the groups took over some of the functions of a market for corporate control.

Much has been written on the contributions and liabilities of the keiretsu for the performance and competitive success of the Japanese economy. The flexible, cooperative relations between customer and supplier typical of the vertical keiretsu are often contrasted with the U. S. pattern of arms-length and adversarial supplier relations (Helper and Sako, 1995). While an older generation of observers portrayed keiretsu suppliers as exploited and abused by their large company customers, later scholars armed with better evidence find that manufacturers in the auto industry support and absorb the risks of their suppliers, buffering them from market volatility. A careful quantitative study by Branstetter (2000) furthermore found convincing evidence of knowledge sharing in the vertical groups. Intra-group information “spillovers” enhanced the innovation of the member firms and thus their business performance as well.

Until the asset bubble burst in 1991 and the decade-long financial crisis and recession/stagnation set in, the horizontal groups’ stable cross-shareholdings, interlocking directorates, and, especially, monitoring and risk-sharing by group banks and trading companies, likewise came in for praise. They were believed to overcome the corporate governance and organization problems then faced by the more market-oriented Anglo-American economies

(Aoki and Dore, 1992; Nakatani, 1984; Thurow, 1992).

Were the keiretsu “strategic” alliances?

Were the keiretsu themselves “strategic alliances”? Because the latter term has so many meanings and is applied to such a variety of forms, it is difficult to take a strong position. Certainly, the vertical keiretsu often had strategic purpose. Affiliated firms working under the leadership of the lead manufacturer developed, fabricated and assembled, and distributed products. For the most part, the horizontal groups as wholes did not have strategic goals or actions in this sense. However, a cluster or network of firms that comes into existence for historical and institutional reasons may nonetheless at times behave strategically.

Whether or not the keiretsu are defined as strategic alliances in their own right, they served as network infrastructure for the launch of domestic and, occasionally, Japanese international alliances. Most noteworthy of Japan’s international alliances in which the keiretsu played a role was the very broad-based partnerships in manufacturing, distribution, extraction, and other activities pursued by Mitsubishi companies—the most prominent of the “big-six” horizontal groups-- with Daimler-Benz of Germany in the late 1980’s. Daimler is a Western-style diversified but centrally-managed headquarters-and-subsidaries corporate entity. The Mitsubishi group of the time, by contrast and in keeping with the keiretsu form, was a loose collection of independently managed firms bound together by a web of generally small cross-shareholdings, overlapping boards, employee transfers, and common business culture. The only formal group-wide “governance” structure was the *shacho-kai*-- the weekly-meeting councils of member company presidents (called *kinyu-kai* or “Friday club” in Mitsubishi’s case). Other examples of publicly-announced strategic partnerships, domestic or international, between an entire horizontal keiretsu group and another corporation do not spring easily to mind.

As noted, the vertical keiretsu, much more than the horizontal groups, had a strategic, supply chain-based, business rationale, and thus have more the look of a strategic alliance. The off-shoring of Japanese manufacturing to foreign sites was carried out as a strategic alliance in that a parent firm's move abroad was followed by its entourage of keiretsu suppliers, typically to the dismay of host country suppliers who had hoped that the business would be theirs.

A genuine strategic alliance is one explicitly created for the purpose of advancing the parties' competitive strategies, better positioning them in supply chains or markets, enhancing their capabilities, and otherwise reducing their costs or increasing their earnings. Such a definition excludes the vertical as well as horizontal and vertical keiretsu. Borderline cases exist to be sure. There are, for example, instances in which Japanese companies were deliberately brought into keiretsu because a lead firm saw some strategic advantage (Lincoln and Ahmadjian, 2001). For the most part, however, the keiretsu arose and persisted for nonstrategic reasons.

#### *Risk sharing is not a strategy*

Indeed, one of the nonstrategic functions that business networks within Japan have long performed is that of risk-sharing and resource-shifting to ensure the survival of member companies (Nakatani, 1984). Keiretsu ties were often mobilized over Japan's postwar era history to assist distressed or otherwise weakling firms. Some of the best known cases are the Sumitomo bailout of Mazda, the Mitsubishi turnaround of Akai Electric, and the Mitsui restructuring of Mitsukoshi Department Store. There is evidence as well, both anecdotal and quantitative, of the vertical manufacturing groups pooling risks. Large customers extended trade credits and engaged in strategic pricing in order to manage the earnings of their suppliers (Sheard, 1991). They also adjusted equity stakes and sent in management and technical personnel to help suppliers weather hard times.

Whether these risk-sharing maneuvers are thought good or bad for the firms involved or for the Japanese economy as a whole varied with whether Japan at the time was on solid or fragile ground. In the 60's large-scale transfers of labor and assets from the fading industries of steel and shipbuilding to the rising industries of automobiles and electronics were orchestrated by the horizontal keiretsu with government assistance (Taira and Levine, 1985). Paul Sheard (1991), an astute observer of the Japanese economy, praised such private sector industrial adjustments for their success in keeping the profile of the government and cost to taxpayers low relative to the direct government bailouts for which the U. S. is known such as the rescues of Penn Central, Lockheed, Savings and Loan industry in the 80's and Wall Street in the 90's. The consensus of the day was that these were long-term strategic moves that enabled the Japanese economy to adapt to changing conditions without the wrenching adjustment shocks that a more market-driven economy might experience. By the 90's, however, the consensus view, especially in the West but increasingly in Japan as well, was that such main bank, keiretsu, and ministry interventions to keep weak firms alive (as "zombies") and sustain old partnerships and practices were the wrong things for Japan to be doing. A combination of Schumpeterian "creative destruction" of the losing players and a strategic allocation of resources to the winners was advised as Japan's best hope for restructuring the economy and pulling out of the slump. The private sector subsidies and bail-outs had become a major drag on the performance of Japan's best firms and the economy as a whole.

If not a topic on which there is yet much systematic research, Japan's domestic strategic alliances have a risk-sharing function as well (Sakakibara, 2002). The MITI-led and overseen technology consortia and the many trade associations in which Japanese firms band together are aimed, not only at harnessing the collective resources and capabilities of Japanese companies in

developing new technological solutions and finding applications for them in new products, they also extend a helping hand to laggards who are unlikely to make it in the innovation game on their own. Many domestic alliance arrangements are formed with an eye to extending a helping hand to a less-than-sterling company to whom one or more keiretsu partners are committed. Toyota's 1967 bailout and subsequent inclusion in its keiretsu of minicar maker Daihatsu is a case in point, as, arguably, is Toyota's more recent move to increase its ownership and control of long-time keiretsu members Hino, Kanto, and (again) Daihatsu.

Similarly, risk pooling might be less a matter of strong firms bailing out weak ones than a keiretsu as a whole reorganizing in order to redistribute risk and resources to reduce the costs and enhance the performance of all member firms. Indeed, it is reasonable to characterize the recent reorganization of the seven companies of the Matsushita Group as a vertical keiretsu transforming into a strategic alliance (Lincoln and Shimotani, 2008). Like other examples of the keiretsu form, the Matsushita Group was a set of companies, several of that which were spinoffs of the parent firm, that owned minority percentages of one another's stock and traded executives and technical personnel. Yet they were separately managed and pursued independent competitive strategies, as amply witnessed by their overlapping and competing product lines, R&D facilities, etc. A part of the aggressive restructuring mounted by Matsushita Electric President Kunio Nakamura in the early 2000's, they were converted into wholly-owned (with the exception of majority-owned JVC) Matsushita Electric subsidiaries. Toyota engineered a similar conversion of most of its first-tier supply keiretsu into an integrated parent-and-subsidary entity. Both firms justified the de facto takeovers of keiretsu affiliates as a necessary response to extreme global competitive pressures, which demanded tighter coordination and greater strategic focus of business goals and processes (Ahmadjian and Lincoln, 2001).

## The demise of the keiretsu role – a summary of research

This section reviews my recent research on strategic alliances in the Japanese electronics industry (see Author, 2008). It addresses the role of vertical and horizontal keiretsu affiliations on the formation of new R&D and nonR&D alliances during the period 1985-1998. This was a critically important period in the evolution of the Japanese economy, encompassing the *endaka* slowdown caused by the Plaza Accord doubling of the yen against the dollar, the bubble era of rampant stock and real estate inflation, the bursting of the bubble with the collapse of the Nikkei index in 1991 and Japan's prolonged recessionary slump, a brief recovery in 1995-96 cut off by the 1997 Asian financial crisis, followed by serious regulatory reform and corporate restructuring. It also encompasses a period of unraveling of Japan's keiretsu networks—particularly the big-six horizontal groups, but to a degree as well the vertical manufacturing and distribution groups. With the demise of the groups, one should expect a decline in their function as supportive communities/platforms/infrastructure for new strategic alliances, and that is what the data show. However, the form and speed of the decline varies in interesting fashion with the keiretsu form and strategic alliance type.

The principal findings are graphed in Figure 2 and are the following. In the

### FIGURE 2 ABOUT HERE

prebubble (1985-1988) period, both horizontal and vertical networks served as infrastructure for the launch of new alliances. We found significant tendencies for strategic alliances, whether R&D or not, to form within, but not across, horizontal or as vertical keiretsu boundaries. Thus, this prebubble era represented the old “Japan, Inc.” regime. Firmly in place were most of the structural attributes associated with Japan's network economy—keiretsu, main bank dependence, ministry guidance and industrial policy, not to mention Japan's peculiar labor market institutions

of permanent employment, seniority-based compensation, enterprise unions, employee transfers to affiliated firms, and the like. In the second, “bubble,” period (1988-90), the horizontal keiretsu effect on R&D alliances disappeared. The bubble in fact contributed to the withering of the keiretsu. With asset prices and business chutzpah peaking, firms were straying from the keiretsu fold. Lincoln and Gerlach’s cluster analysis of the interfirm network of trade, lending, director transfer, and equity ties shows a significant decline in the cohesion and definition of the groups over earlier periods. In the third period, the horizontal keiretsu effect on nonR&D alliances disappeared. The horizontal groups, tattered by the financial crisis and the depressed stock market, had altogether ceased to serve as platform for strategic alliance activity.

In the fourth period, a time when Lincoln and Gerlach’s (2004) analysis shows some rebound in keiretsu cohesion—in a “circling of the wagons” defensive reaction to the troubled times and the distress of affiliates-- the vertical group effect on the R&D alliance process is gone. Japan, it seems, had entered an era in which R&D partnerships formed without regard for the partners’ keiretsu ties. Yet the picture with respect to nonR&D alliances proved sharply different. Vertical group alliances of this sort surged during the period. As attested by the press reports from which the data were taken, the vertical groups had again surfaced as an important platform for alliances of a particular type—those aimed at reducing capacity, increasing economies of scale, and otherwise achieving cost reductions to help member firms survive.

Thus, despite the importance in the past of keiretsu networks as infrastructure platforms’ for the launch of new strategic alliances, by the end of the 90’s the horizontal groups were no longer performing that function. The vertical keiretsu continued to perform it but only with respect to nonR&D alliances.

Henry Chesbrough (2003) has argued that the Japanese model have long embraced the

“closed innovation” paradigm. Research and development activities were housed either within the firm or within a tight-knit network or community of firms such as *keiretsu*, government-sponsored research consortia, and trade associations (Schaede, 2008). In the U. S. and UK, by contrast, prevails the “open innovation” regime of entrepreneurship and venture capital, wide-ranging, ever-shifting alliance activity, lively merger and acquisition markets, and active labor markets for managerial and technical talent. Our evidence on the disappearance of vertical as well as horizontal keiretsu effects on R&D alliances suggests that by the end of the 90’s Japan had moved away from the closed innovation model in the sense that its technology alliances were becoming “disembedded” from the keiretsu network infrastructure that had supported and constrained them in the past.

Why did the keiretsu effect fade away? The most obvious reason is that the keiretsu themselves had mostly faded away, the horizontal groups first and to greater degree, the vertical groups second and to a lesser degree. Consistent with this interpretation is the pattern in our data of early attenuation of the horizontal keiretsu effect. Still, other reasons come to mind. One is the rising integration of Japan in the global economy. Another is Japanese firms’ shift away from the old “core competency” paradigm of leveraging assets for maximum growth to a new paradigm of strategic positioning and value maximization (Schaede, 2008). The diminution of the keiretsu effect is consistent with the hypothesis that Japanese electronics firms’ domestic strategic alliances were in fact becoming more strategic, with partners selected more than in the past for contributing to business goals and with less regard for keiretsu obligations. Relevant to this question is a tentative finding from an extended analysis that I now have underway that Japanese electronics firms that lack or lose keiretsu affiliations are superior performers in profitability (return-on-assets) terms.

Do Japanese strategic business partnerships no longer require embeddedness in a preexisting network infrastructure? It is not unreasonable conclusion that, with Japan's economic maturation and, more specifically, the reforms of its corporate governance and financial reporting rules enacted in the latter 90's (Vogel, 2005), its corporations were more and more inclined to into strategic tie-ups without the benefit and/or constraint of third party networks.

But most interestingly related to the network embeddedness question is the following finding from our research. As the keiretsu effects on partner choice in new strategic alliances faded away, the effects of prior and third-party strategic alliance ties grew. Our evidence suggests that, as the keiretsu network ceased to provide supportive infrastructure for new alliances, the prior alliance network to some degree took its place.

Thus, with the exception of the consolidation alliances orchestrated by the vertical groups, strategic alliances in the Japanese electronics industry were less affected by the horizontal and vertical keiretsu networks than in the past. This was particularly true of R&D alliances that earlier gave up the "security blanket" of keiretsu support. The strategic alliance process in this industry was thus embracing what Rtschev and Cole (2003) recently called "organizational discontinuity," a quality that they believe Japan—its high tech industries in particular—needs more of. Keiretsu networks, like the internal structure and culture of the Japanese firm, have provided a kind of community within which trust, reciprocity, and knowledge-sharing might flourish. But those communities were akin to islands in a choppy sea such that travel from one to another was difficult to do.

## CONCLUSIONS

Japanese companies have been huge players in international strategic alliances, although in recent years has diminished as the industry composition of global technology alliances has

shifted from consumer electronics and information technology to biotech, where Japan remains behind the U. S. and European curve. Japanese companies' reputation in international alliances has been mixed. They were viewed, at least by Western partners and scholars, as adept and aggressive learners, also, in a number of notable cases, as capable and dedicated, if sometimes overly dominant, managers and stewards. As full partners willing and able to work cooperatively with a Western firm, the reputation has been mixed, although some of the negative billing they seems attributable to Western resentment of Japanese competitive success in the 80's and to goal conflicts and communication problems to which the Western side may have contributed equally.

As for alliances in the domestic economy, much-studied and discussed have been the government-led cooperative research consortia, which were not always embraced with enthusiasm by the participants but appeared in the 80's and early 90's to have paid off in terms of research and innovation productivity, both during the duration of the alliance and followings its termination in the efforts of the individual firms. Such consortium activity has wound down in recent years, in part because of the late 90's restructuring and diminishing of the government ministries that led them, but also perhaps because the consortium approach proved less successful in the biotech sector than had been true in the older electronics-based industries.

Finally, based largely on the cooperative interfirm relations associated with Japan's distinctive vertical manufacturing keiretsu and, to a lesser degree, horizontal keiretsu networks, Japanese companies have achieved an enviable reputation for "relational capability," infusing trust and reciprocity into their transactions with customers and suppliers so as to spread the costs and burdens of product and process development, quality assurance, and customer service and thus to circumvent the "hold-ups", haggling, and adversarial posturing that so troubled supply chain management in the West. But the keiretsu, especially the horizontal groups, have mostly

vanished from the Japanese economy, and, as my research shows, have ceased (with the exception of the capacity- and other cost-reducing tie-ups of the late 90's) to serve as platforms for the launch of new domestic strategic alliances. That, like the phasing out of consortia, is on the whole a good thing as it testifies that Japanese firms are forging more alliances with one another absent the benefit of such embeddedness in institutionalized network communities. Those communities worked well to facilitate research and other partnerships among the companies within them, but they reinforced what has long been a Japanese business tendency to shy away from partnerships with rivals or even "strangers" (others with whom no prior tie exists). Both as individual organizations and in their interorganizational alliances, Japanese companies are becoming more strategic, choosing courses of action and partners, less on the basis of commitment, reciprocity, and obligation, and more on the basis of what is best for the competitive success of the firm. That is a positive development for the Japanese economy as a whole.

## REFERENCES

- Ahmadjian, C. L. and J. R. Lincoln. 2001. "Keiretsu, governance, and learning: Case studies in change from the Japanese automotive industry." *Organization Science* 12:683-701.
- Aoki, M. and R. P. Dore. 1992. *The Japanese Firm: Sources of Competitive Strength* New York: Oxford University Press
- Branstetter, L. (2000). "Vertical keiretsu and knowledge spillovers in Japanese manufacturing: An empirical assessment." *Journal of the Japanese and International Economies* 14(2): 73-104.
- Branstetter, L. and M. Sakakibara. 2002. "When do research consortia work well and why? Evidence from Japanese panel data." *American Economic Review* 92: 143-159.
- Casciaro, T. and C. Darwall. 2003. *The HP – Cisco Alliance (A)*. Harvard Business School Case 9-403-120. April.
- Caves, R. and M. Uekusa. 1976. *Industrial Organization in Japan*. Washington, D. C.: The Brookings Institution.
- Chesbrough, H. W. 2003. *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Boston: Harvard Business Press.
- Cohen, W. M. and D. A. Levinthal ( Mar., 1990). "Absorptive capacity: A new perspective on learning and innovation." *Administrative Science Quarterly* 35: 128-152.
- Cole, Robert E. 2008. "Too much of a good thing? Quality as an impediment to innovation." *California Management Review* 50:
- Darby, M. R. and L. G. Zucker. 1999. "Local academic science driving organizational change: the adoption of biotechnology by Japanese firms. Cambridge, MA, NBER Working Paper 7248, July 1999.
- Dore, R. 1983. "Goodwill and the spirit of market capitalism." *British Journal of Sociology* 34:459-82

- Dore, R. P. (2000). *Stock market capitalism : welfare capitalism : Japan and Germany versus the Anglo-Saxons*. Oxford UK: New York: Oxford University Press.
- Dyer, J. H. 1996. "Specialized networks as a source of competitive advantage: Evidence from the auto industry." *Strategic Management Journal* 7: 271-291.
- Eisenhardt, K. and C. Schoonhoven. 1996. "Resource-based view of strategic alliances formation: strategic and social effects in entrepreneurial firms." *Organization Science* 7:136-150.
- Fransman, M. 1990. *The Market and Beyond: Cooperation and Competition in Information Technology Development in the Japanese System*. New York: Cambridge University Press.
- Gassel, K. and W. Pascha (2000). "Milking partners or symbiotic know-how enhancement? International versus national alliances in Japan's biotech industry." *International Business Review* 9: 625-640.
- Guillen, M.F. 2000. "Business groups in emerging economies: A resource-based view." *Academy of Management Journal* 43: 362-380.
- Guillot, D. and J. R. Lincoln. 2005. "Dyad and network: models of manufacturer-supplier collaboration in the Japanese TV manufacturing industry." Pp. 159-86 in Tom Roehl and Allan Bird (eds.): *Japanese Firms in Transition: Responding to the Globalization Challenge*. Greenwich, CT: JAI Press.
- Gulati, R. 1995. "Social structure and alliance formation patterns: A longitudinal analysis." *Administrative Science Quarterly* 40:619-652
- Hagedoorn, J. 1993. "Understanding the rationale of strategic technology poartnering: interorganizational modes of cooperation and sectoral differences." *Strategic Management Journal* 14: 371-385.
- \_\_\_\_\_. 2002. *Inter-firm R&D partnerships: an overview of major trends and patterns since 1960.* *Research Policy* 31: 477-492

- Hamel, G. 1991. "Competition for competence and inter-partner learning within international strategic alliances," *Strategic Management Journal* 12: 83–104.
- Hennart, J. F., T. Roehl, D. S. Zietlow. 1999. "'Trojan horse' or 'workhorse?' - The evolution of US-Japanese joint ventures in the United States." *Strategic Management Journal* 20: 15-29.
- Helper, S. R. and M. Sako. 1995. "Supplier relations in Japan and the United States: Are they converging?" *Sloan Management Review* 36:77-84.
- Inkpen, A. C. 2005. "Learning through alliances: GM and NUMMI." *California Management Review* 47: 114-136.
- Inkpen, A. C. 1996. "Creating knowledge through collaboration." *California Management Review* 39: 123-140.
- Kodama, F. 1992. "Technology fusion and the new R&D." *Harvard Business Review*. July – August. Pp. 79-91.
- Kogut, B. 1988. "Joint ventures: theoretical and empirical perspectives." *Strategic Management Journal* 9:319-332
- Liker, J. Y. and T. Choi. 2004. "Building deep supplier relationships." *Harvard Business Review*. December, 2004. Pp. 104-113.
- Liker, J. K., R. R. Kamath, et al. 1996. "Supplier involvement in automotive component design: Are there really large US Japan differences?" *Research Policy* 25: 59-89.
- Lincoln, J. R. and M. L. Gerlach. 2004. *Japan's Network Economy: Structure, Persistence, and Change*. New York: Cambridge University Press.
- Lincoln, J. R. and M. Shimotani. 2009. "Whither the keiretsu, Japan's business networks?" forthcoming in A. Colpan, T. Hikino, and J. R. Lincoln (eds.): *The Oxford Handbook of Business Groups*. New York: Oxford University Press, 2009.
- Macaulay, S. 1963. "Non-contractual relations in business: a preliminary study." *American Sociological Review* 28: 55-70.
- March, J. G. "Exploration and exploitation in organizational learning." *Organization Science*

2:71-87.

- Mowery, D. R. 1988. "Collaborative ventures between U.S. and foreign manufacturing firms: an overview." Ch. 1 in D. R. Mowery (ed.): *International Collaborative Ventures in U. S. Manufacturing*. Cambridge, MA: Ballinger.
- Nakatani, I. 1984. "The economic role of financial corporate groupings." Pp. 227-58 in M. Aoki (ed.): *The Economic Analysis of the Japanese Firm*. North-Holland: Elsevier.
- National Science Board. 2002. *U. S. and International Research and Development: Funds and alliances*. Chapter 4 in *Science and Engineering Indicators – 2002*. Arlington, VA: National Science Foundation, 2002 (NSB-02-1).
- Nishiguchi, T. 1994. *Strategic Industrial Sourcing: The Japanese Advantage*. Oxford University Press
- Nonaka, I. and H. Takeuchi. 1995. *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. New York: Oxford Univ. Press.
- Odaka, K., K. Ono, and F. Adachi. 1988. *The Automobile Industry in Japan: A Study of Ancillary Firm Development*. Tokyo: Kinokuniya.
- Pascale, R. T. and T. Rohlen. 1983. "The Mazda turnaround " *Journal of Japanese Studies*. 9: 219-63.
- Porter, M. E., H. Takeuchi, and M. Sakakibara. 2000. *Can Japan Compete?* Basingstoke, Macmillan.
- Prahalad, C. K. and G. Hamel. 1990. "The core competence of the corporation." *Harvard Business Review*. May – June.
- Probert, Jocelyn.(2006. "Global value chains in the pharmaceutical industry." Pp. 87-105 in H. M. Whittaker and R. E. Cole (eds.): *Recovering from Success: Innovation and Technology Management in Japan*. New York, Oxford University Press.
- Ritschev, E.. and R. E. Cole. 2003. "The role of organizational discontinuity in high technology: insights from a U.S.-Japan Comparison." In J. Bahnik (ed.): *Roadblocks on the Information Highway*. Lanham, MD: Rowman Littlefield Publishers.

- Sakakibara, K. 1993. "R&D cooperation among competitors: A case study of the VLS Semiconductor Research Project in Japan." *Journal of Engineering and Technology Management* 10:393-407.
- Sakakibara, M. 2002. "Formation of R&D consortia: Industry and company effects." *Strategic Management Journal* 23:1033.
- Sako, M. 1992. *Price, Quality, and Trust: Inter-firm Relations in Britain and Japan*. Cambridge University Press.
- Schaede, Ulrike. 2008. *Choose and Focus: Japan's Business Strategies in the 21st Century*. Ithaca, NY: Cornell University Press.
- Sheard, P. (1991). "The role of firm organization in the adjustment of a declining industry in Japan - the case of aluminum." *Journal of the Japanese and International Economies* 5: 14-40.
- Shimotani, Masahiro. 1991. "Corporate groups and *keiretsu* in Japan." *Japanese Yearbook on Business History*, pp.3-22
- Taira, K. and S. Levine. 1985. "Japan's industrial relations: a social compact emerges." Pp. 247-300 in H. Juris, M. Thompson and W. Daniels (eds.): *Industrial Relations in a Decade of Economic Change*. Madison, WI: Industrial Relations Research Association Series.
- Thurow, L. C. 1992. *Head to Head: The Coming Economic Battle among Japan, Europe, and America*. New York, Morrow.
- Turpin, D. 1993. "Strategic alliances with Japanese firms: Myths and realities." *Long Range Planning* 26: 11-15.
- Williamson, O. 1985. *The Economic Institutions of Capitalism*. New York: Free Press.
- , 1996. *The Mechanisms of Governance*. New York: Oxford University Press.
- Womack, J. P., D. T. Jones, and D. Roos. 1990. *The Machine that Changed the World*. New York: Rawson Associates.

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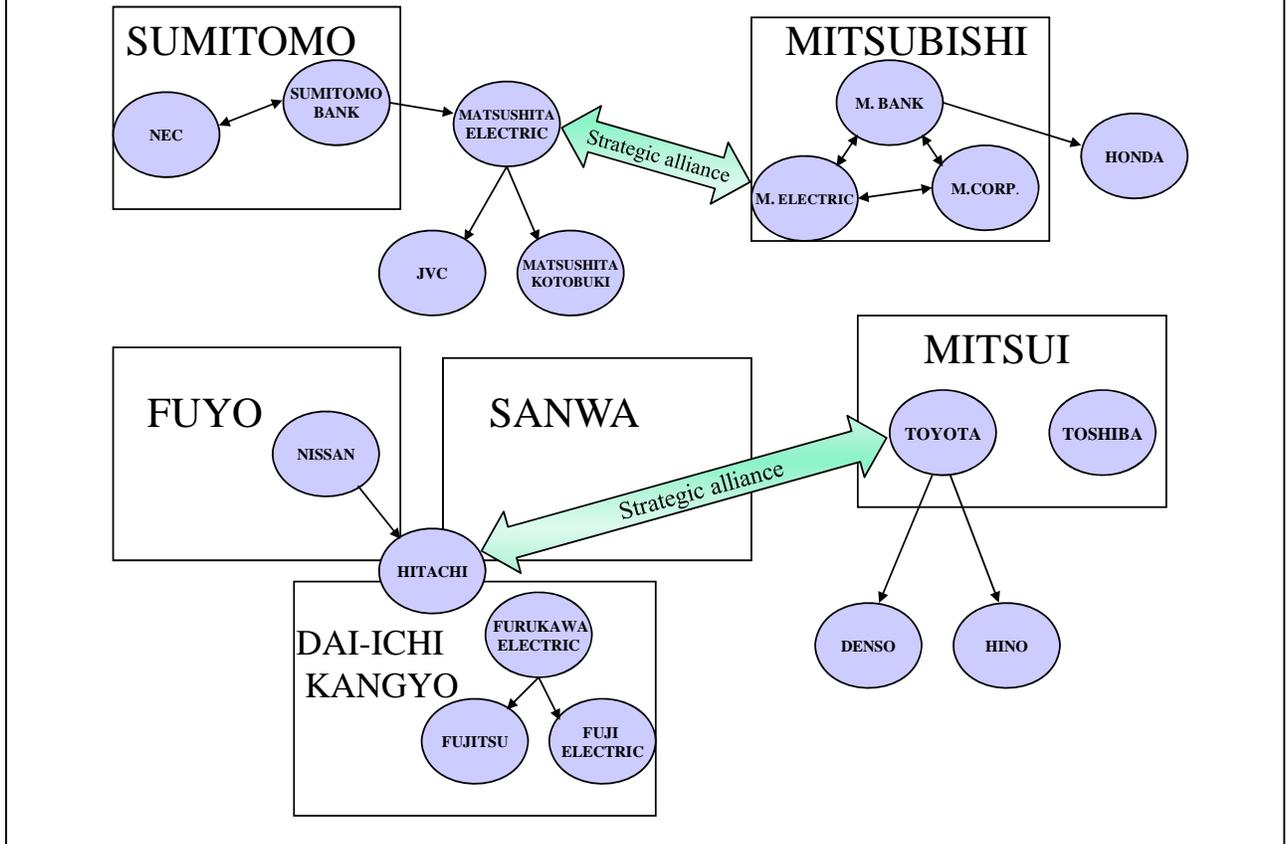
**Table 1. Domestic and International R&D Strategic Alliances by Period**

	<b>1980-1984</b>	<b>1984-1989</b>	<b>1990-2000</b>
Domestic Alliances			
Europe	17.7	20.1	10
Japan	4.2	6.2	2
USA	22.9	25.3	41
International Alliances			
Japan - Europe	6.5	5.7	4
Japan - USA	17.6	11.7	8
Europe - USA	22.1	22.5	26
All others	9	8.5	9
Total	100%	100%	100%

**Source:** National Science Board (2002:40).

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Figure 1. Strategic alliances connect horizontal and vertical *keiretsu*  
(Note: firms within a rectangle are shacho-kai members)



**Figure 2. Observed Durations of  
Horizontal & Vertical Keiretsu Effects on  
R&D and NonR&D Alliances:  
Japanese Electronics Firms, 1985-1998**

