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**Virtual Techno-Alliances:
A Framework for Future Technology Relationships with Japanese Business**

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Center for International Studies
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**VIRTUAL TECHNO-ALLIANCES:
A FRAMEWORK for FUTURE TECHNOLOGY
RELATIONSHIPS with JAPANESE BUSINESSES¹**

**by
RICHARD L. THURSTON, Ph.D.²**

I. Introduction

Total, unrestricted foreign access to Japanese and other Asian-Pacific markets probably is not achievable in our lifetimes. Even if statesmen could agree on the contents of the cornucopia of requisite corrective legislative and administrative reform, full effectuation of that goal would fall far short.³ Notwithstanding this pessimistic outlook, some further leveling of the playing field is doable.

Avoidance of future bilateral confrontation with various economies of the Asia-Pacific region ("APR") requires U.S. businesses to take the lead in tackling prickly market access issues. That is not to say that government negotiators will not play an important role - they can and must - but the fundamental, long-term solutions must be championed by corporate America.

¹ This paper is based on a presentation made in Cambridge, Ma. on September 28, 1994 during the symposium "Partnering With Japan: Managing Risk, Maximizing Benefit" sponsored by the MIT Japan Pro-gram in cooperation with the University of California at Berkeley.

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³ This conclusion is largely due to the existence of deeply imbedded socio-cultural inhibitors which will take at least several generations to rectify.

In shouldering that responsibility, U.S. businesses must approach global markets strategically, creatively and boldly. Unless more long-term, international trade and investment strategies and tactics evolve decisively from the bowels of corporate America (which strategies must then be translated by the U.S. government into more consistent and visionary domestic and foreign policies), many U.S. industrial sectors will face ultimate destruction at the hands of their foreign competitors. Dynamic strategies, policies, objectives, and tactics (to be sustained by quality-based cultures) must be structured so as to enable U.S. businesses both to anticipate timely and then to address quickly and decisively the changing needs and demands of their customers. Without such an approach, U.S. companies will not be prepared to deal with the new trade order of the 21st century.

In the past, while preparing investment strategies, it appears that many American corporate officials erroneously viewed APR economies (including Japan) as a monolithic dragon spewing forth an acrid smoke easily subjected to neo-classical economic analysis. To the contrary, this mythical beast does not and has never existed other than in the minds of protectionist dragonslayers.

The noticeable absence of uniform cultural and economic homogeneity throughout the APR is especially evident as the region, and each economy therein, undergoes a dynamic, multi-faceted metamorphosis of complex, divergent and dissimilar socio-political-economic systems. The APR remains an area of stark and often irreconcilable contrasts and contradictions. Furthermore, when addressing regional trade and investment issues (and particularly when contemplating "partnering" within the APR), U.S. corporate executives all-too-often have underscoped, to their repeated disadvantage, the level of regional and sub-regional diversity which exists. Therefore, they have seriously misjudged the potential vitality and competitiveness of APR businesses and have, consequently, often failed in fully executing cooperative commercial efforts with those businesses.

Fortunately, as U.S. companies challenge new markets, new technologies, and new ways of thinking strategically, corporate executives are exhibiting a renewed interest in understanding how better to partner with Japanese and other APR companies. In part, this is because of a growing realization that the U.S. can not go it alone in the high-tech arena. But, it also arises from a renewed sense of competitiveness of American industry. Because of the underlying criticality of U.S. industry finding lasting solutions to achieving global competitiveness, this issue of partnering with Japanese and other APR businesses has become quite topical within both boardrooms and academic circles alike.

As part of the new introspective re-evaluation, old paradigms of global trade and investment relationships are being challenged regularly. For example, while there exist sizable low-cost labor pools within developing economies, such as in China, those labor sources will not continue to offer significant competitive advantage to a growing number of industrial sectors, such as the mammoth electronics industry. Instead, large labor pools of unskilled workers are becoming liabilities since they can not add value to high-tech oriented processes. Therefore, it is increasingly unlikely that a U.S. electronics company would, for example, voluntarily take over a Chinese counterpart with nearly 4x the number of necessary employees.

Similarly, investment incentives and subsidies, once taken for granted, will now become subject to intense scrutiny and challenge within the new World Trade Organization ("WTO"). New definitions of "national trade barriers" will become more widely accepted. Consequently, most U.S. businesses throughout the APR will need to refocus their strategic priorities and to realign resource allocations; the very ways in which business has been done historically is being reshaped dramatically. Unfortunately, at this point in time, those U.S. companies are ill-prepared to play by the emerging new rules of the international trade game.

Such paradigm shifts will also place increased pressure on all APR economies to re-evaluate traditional tactical solutions to economic growth and development, thereby requiring intensified private industry/sectoral cooperative solutions.⁴ For example, in Japan more serious attention must be paid to management inefficiencies, uneven productivity and product quality, etc. Should Japanese businesses not take the challenge seriously, then U.S. - Japanese economic relations will deteriorate progressively. Already, many U.S. companies are beginning to consider refocusing limited investment resources from the Japanese market to the more promising opportunities throughout the rest of the APR.⁵ This trend will continue if not arrested soon.

⁴For example, the recent announcement by the Chinese government to create in Shanghai a M&A market within which to sell off money-losing state enterprises (although it is unlikely that the municipal government will allow mass layoffs to occur). See, *Business Week*, March 13, 1995, p.56.

⁵ See the recent article in the *Asahi Evening News* entitled "Grass Looking Greener Outside Japan", 11/5/94, p.7. As the article notes: "...More and more, U.S. companies seem to be less mindful of Japan, lured instead by faster growing, less-developed markets in China and elsewhere in Asia. Japan is perceived as an already mature market in which it is expensive to operate, with strong domestic competitors and numerous regulations and other barriers.... Austin co., a construction concern based in Cleveland, recently closed its office here after more than 20 years, saying it perceived fewer opportunities in Japan.... Jeffrey E. Garten, the under secretary of commerce for international trade,

The rapid metamorphosis of APR economic development juxtaposed with nagging bilateral trade disputes have raised the stakes in incessant trade skirmishes. It is unlikely that the soon-to-be-established WTO will either lessen those disputes or have a significant, pro-competitive impact initially. In fact, if U.S. companies are not careful, they could find themselves at the receiving end of complaints and claims of dumping, antitrust violations and unfair trade practices generally.⁶ Such a development would clearly arouse protectionist sentiment in the United States. Therefore, to avoid the potential for deteriorating trade relationships, most especially with Japan, it is important, no, it is imperative, for U.S. and APR companies to implement meaningful, mutually beneficial "partnering" strategies on a wide variety of fronts.

But, successful development of those relationships requires U.S. companies first to convince themselves that "partnering" with Japan is in their best long-term commercial interests and then, to convince the Japanese that they are facing a very serious, potentially cataclysmic result if left unheeded.⁷ While our two governments wrangle over issues of market access and ascertainment of "quantifiable results," some Japanese businessmen are becoming increasingly

said recently that Japan is no longer the sole focus of attention....financial and political resources are limited, so efforts in other markets can mean diminished efforts in Japan...."

⁶ During a trip to Korea in January 1995, a Korean government official indicated that the Korean government was considering the possibility of bringing an unfair trade action against Microsoft for dumping its software in the Korean market. Similarly, other officials indicated that they were concerned that lack of significant intellectual property protection of software in the United States could become a non-tariff barrier for Korean businessmen in the U.S. in the future.

⁷ To have a hope of succeeding, the Japanese must be convinced that trade reform will work to the benefit of the security of the country and the "system" generally, but not that this security would equate to new benefits for the consumer (especially since consumer well-being has never been a significant factor in Japan historically). Also, the pretext of economic security allows Japanese leaders to camouflage the national interests under the illusion of self-betterment of the feudal nation-state and thereby enlist the support of the Japanese peoples in economic policy deployment.

The solution to nagging bilateral trade issues may possibly lie in an approach which would prioritize the needs and economic security of the global "village" over those of Japan, thereby possibly encouraging meaningful domestic Japanese economic reform. This tactic could possibly allow the Japanese officials to analyze trade issues from a non-defensive view-point, thereby enabling the mid-generation career bureaucrats in Japan to rally their support for increased globalization.

cognizant of the benefits which could arise from more open trade and investment markets. On the other hand, certain Japanese business leaders and former government leaders are adopting a more virulent attitude.⁸

In summary, the competitive realities of rapidly changing global and regional trade and investment environments have increased the importance of the creation of such strategic relationships. Consequently, U.S. micro-electronics companies, as in the case of IBM, AT&T, Motorola, Texas Instruments ("TI"), etc., increasingly have ventured into strategic alliance relationships with Japanese and other APR companies, such as joint ventures or joint development contracts (which arrangements were a hearsay to propose a mere decade ago!), to address the shortages in capital and manpower resources.

In the critically acclaimed The Competitive Advantage of Nations, Michael Porter astutely notes that even though a number of U.S. companies pursued bi-lateral commercial relationships during the 1970's and 1980's, those relationships often did not rise to a level of strategic significance. Why? Those initiatives were consummated principally as transitional, tactical tools conveniently created during periods of macro-economic structural change.⁹ Consequently, many U.S. - Japanese relationships established during that era failed to address fundamental pro-competitive solutions to the complexities of the fledgling high-tech era.

Porter has questioned whether collaboration and competition can co-exist in the future global world. Putting aside antitrust considerations for now¹⁰, **it is possible** to achieve a mutually beneficial co-existence. In fact, we may be at the nascency of an era during which such "alliance" relationships become far more necessary and permanent than in the past. Through such vehicles the opportunities for trade confrontation, as in the case of Japan, can be minimized significantly.

⁸ This attitude became most pronounced during a recent meeting of the U.S.-Japan/Japan-U.S. Business Council in Tokyo, Japan during February 1995. During that meeting several Japanese business leaders argued, for example, that the Japanese market had been open to U.S. automakers since 1961 and that there were good reasons for the U.S. to be excluded from the proposed EAEC (as proposed by Malaysian Prime Minister Mahathir).

⁹ (e.g., the intentionally shortlived TI-Sony joint venture in 1968).

¹⁰ Which considerations are significant and must be carefully considered in any analysis of a partnering relationship between competitors.

New-age alliances should be promoted vigorously and coalitions used selectively. First, let's ask "What distinguishes a coalition from an alliance in the commercial world? Principally, the degree of anticipated permanency and strategic focus of the intended relationship determines the model to be deployed. In the context of Japan, coalitions should be viewed as finite, tactical relationships designed to address limited, transitional problems or issues, thereby, restricting the coalition's degree of permanency. Often, the results of the coalition relationship will be largely one-sided, and fairly predictable. On the other hand, new-age strategic alliances should serve as much longer-lived unions or associations for compatible (if not common) strategic objectives of the partners. Generally, this type of alliance should seek to: (i) promote a philosophical meeting of the minds; (ii) integrate certain complementary skill sets; and (iii) capitalize on certain, clearly identified, yet, segregated synergies and efficiencies of the partners. If structured carefully, such relationships can be pre-competitive, even between the staunchest of competitors.

The manufacture of the components and systems of the electronic gadgets of the late 1990's and early 21st Century will demand much more strategic structuring of alliances than has been required in the past for most traditional joint ventures or even customer-supplier linkages. Driving this requirement will be:

- (i) more technically complex electronic systems;
- (ii) an increasing pervasiveness of the micro-electronic content of consumer products;
- (iii) greater time-to-market pressures;
- (iv) growing complexity of intellectual property regimes, licensing arrangements and the enforcement (or lack thereof!); and
- (v) swelling capital costs.

Aspiring global businesses will either survive or face extinction based on how effectively and efficiently they can migrate their technologies, processes and capacities to align with the fluidity of needs of a divergent but shrinking end-equipment customer base.

Certain U.S. electronics component manufacturers have recognized the desideratum of merging their technologies with the various system levels of consumer end-equipment manufacturers. For example, as telecommunication companies strive to integrate all elements of their electronic systems on a single semiconductor chip or within a chipset, the need for semiconductor suppliers to establish multiple, core technological competencies and then to

provide to the customer additional electron-based or post-electron generation building blocks, drives it towards the virtual integration of business activities within certain well-defined commercial areas.

To maintain successfully a competitive advantage over Asian-Pacific upstarts, or to obtain a meaningful market position in countries such as Japan, requires U.S. electronics companies to evaluate propagative strategies from non-traditional perspectives. In this context, one such vehicle is the "virtual techno-alliance".

II. VIRTUAL TECHNO-ALLIANCES¹¹

As noted previously, many traditional U.S. - Japanese partnering relationships were tactical in nature. The post-World War II metamorphosis of U.S.- Japanese microelectronic commercial linkages in particular has evolved through five fundamental stages:

(I) 1950's to 1960's: One-way license arrangements whereby which U.S. companies transferred certain core technologies to Japanese market entrants at little financial cost to the Japanese upstarts (e.g., RCA-Hitachi, 1961; TRW-Mitsubishi, 1962; GE-Toshiba, 1964, etc.);

(II) Late 1960's to early 1970's: traditional joint ventures, often assisted or restricted by government regulations or administrative "guidance" on foreign investment in Japan in return for which joint venture investment U.S. companies believed that they were assured market access in Japan;

(III) Late 1970's - mid-1980's: domination by Japanese electronic companies in numerous industrial sectors wherein some U.S. businesses became an occasional but limited second source (e.g., Texas Instruments Japan Limited);

(IV) Late 1980's to early 1990's: era of growing confrontation but also of increasingly strategic customer-supplier relationships. Those relationships were characterized by growth in

¹¹ For purposes of this paper, a virtual techno-alliance involves a strategic relationship wherein the goals and objectives of the resulting entity is virtually transparent to the parties and operates effectively as an independent, profit generating entity. While the parties may have somewhat different goals and objectives, they have been able to establish a pre-competitive meeting of the minds which can translate into competitive advantage for both parties while recognizing efficiencies and technological accomplishments which would not otherwise be easily achievable by either party alone.

numbers of design-in wins of U.S. products, cross-licensing, OEM and joint development activities, etc., in part necessitated by bilateral trade pressures and the emergence of strong competition from the Asian dragons; and

(V) Presently: emergence of "core" strategic alliance activities including joint R&D, joint manufacturing, foreign R&D in Japan, and joint activities in third countries (ie., TI - Hitachi, Motorola-Toshiba, H.P. - Hitachi, etc.).

Throughout the 1970's and the 1980's, Japanese companies were the unquestionable major benefactors of most relationships with U.S. companies. Technological flow was primarily one-way, from the U.S. - Japan. But, the tide may have turned away from Japan's shores.

The current stage in the metamorphosis of technology-intensive business relationships is being nurtured by three factors:

(a) dynamic and perhaps unprecedented economic growth throughout the Asia-Pacific region, coupled with stagnation in Europe and recession in Japan;

(b) pervasiveness of microelectronics in consumer products (by the end of this decade semiconductors should be a \$200B per year business); and

(c) rapid advancements in increasingly-complex microelectronic technologies.

In the case of rapid technological advancement, the following elements are taking on increasing importance:

(i) Growing complexities of technologies;

(ii) Consumer demand for constant innovation;

(iii) Rapid development/deployment of products;

(iv) Short product life-cycles;

(v) Costly R&D and manufacturing expenses, especially for semiconductor equipment (growing, insatiable appetites for continuous capital investments); and

(vi) Increasingly high risks (including diminishing rates of return on investment activities).

In order for the U.S. micro-electronics industry to survive into the next decade, it must not only maintain a high pace of technological innovation but must also achieve absolute cost reductions to offset expected factor increases of: (a) 3.5x in capital equipment costs; (b) 2.7x in the cost of producing a given area of silicon; (c) 2.5x in the cost of raw materials; and (d) 1.5x for test equipment costs. Everyone has heard of the "learning curve." But, what about the "forgetting curve?"

In the case of semiconductor manufacturing equipment costs, they are rising dramatically instead of steadily declining over-time (as would be expected in a rapidly growing industry). Such costs are increasingly disproportionate to the total cost of manufacturing the finished chip. As a result, the wafer fabrication facility of the year 2000 could well exceed U.S. \$1B in cost. There are few, if any, microelectronic companies anywhere in the world which can continue to absorb such costs alone!!

Accordingly, to remain competitive, high-tech electronics manufacturers must achieve new levels of integration evolving into virtually integrated, strategic components partners, not just dependable suppliers of quality products. Achieving near six-sigma quality levels of production will no longer be sufficient in and of itself to remain competitive, let alone viable. New strategic thrusts and multiple variations in tactical implementation require today's microelectronics companies, which traditionally had avoided strategic alliances, to make them an integral part of their core corporate strategies.

Such thinking has predominated the strategic planning of Dallas-based Texas Instruments during the last several years. Overall, the competitive challenges have caused TI's management to focus on becoming more competitive globally while keeping the competition guessing about what will come next. For example, take two contemporary alliance relationships of TI:

A. HITACHI

During the last 20+ years, Hitachi has been an important TI customer and significant competitor. Beginning as a purely buy-sales relationship (of TI semiconductor devices for Hitachi use in their consumer electronic products) the relationship has evolved into a significant core, virtual techno-alliance.

During the initial relationship with TI, Hitachi viewed TI as a second-class citizen of convenience - a good second source when products were not available in Japan or when

Hitachi did not want to buy devices from other Japanese manufacturers. But, during the mid-1980's, after a bruising battle with TI over TI's patent infringement claims, the focus of the relationship began a subtle change.

In December 1988, Hitachi and TI announced, after a year of challenging negotiations, that the two companies would cause their respective semiconductor R&D expertise to work jointly on the development of some common technologies for the 16megabit generation of Dynamic Random Access Memory ("DRAM") semiconductor devices, at the 0.35 micron level. While the initial focus did not attempt to develop new technologies per se, the companies sought to find compatibilities in their technologies and processes and, if successful, to lay the groundwork for a more meaningful developmental relationship.

Nearly three years later, TI and Hitachi announced that the 16megabit relationship had been successfully implemented and, therefore, would be expanded to include a common, joint original design and development of a 64 megabit DRAM device (containing 143M transistors, and capable of storing 2,800 typed pages of text). Development activities (joint product design, joint automation design, process technology development, packaging, reliability, qualification, pilot fab prototyping, etc.) have continued to take place at TI and Hitachi's respective Japanese facilities.

In January 1993, just a little over one year after the 64megabit announcement, the two companies announced that they had reached agreement to conduct a feasibility study on the joint development of a 256megabit DRAM device (note: a 256 megabit DRAM is planned to be manufactured at 0.25 microns; one human hair is 75 microns wide, so the new device will have a feature size of 4/1000ths the diameter of a human hair, capable of storing 11,200 typed pages of text).

Subsequently, the co-development relationship expanded beyond the laboratories. On August 1, 1994, after one year of negotiations, TI and Hitachi announced that they would form a joint venture semiconductor manufacturing facility in the U.S. to build and operate a \$500 million wafer fabrication plant to manufacture initially 16 megabit and then 64 megabit DRAM devices. The product output of the joint venture was to be sold to TI and Hitachi equally to help meet the anticipated long-term demand for memory chips (it is projected that the electronics industry will require the new construction of 40 such facilities during the next 10 years). Shortly thereafter, the FTC advised the parties that it had granted their request for early termination of the Hart-Scott-Rodino waiting period, thereby clearing the major antitrust hurdle.

Negotiations were completed in early December, with the joint venture signing ceremony held in Tokyo on December 16, 1994, attended by TI and Hitachi officials, along with officials of 13 international banks who also had agreed to be equity partners in the joint venture. Twinstar, as the joint venture is known, broke ground for the new wafer fab facility in Richardson, Texas in mid-January 1995, with formal inaugural ceremonies held at the Twinstar plant on April 13, 1995.

Why an alliance with Hitachi? A number of factors are relevant:

- a. Hitachi had been a TI customer for over twenty years;
- b. Both TI and Hitachi had ongoing megabit DRAM development efforts.
- c. Hitachi's expertise was "stacked" technology and TI's expertise was "trench" technology; both technologies can be complimentary;
- d. Both companies needed more effectively to use limited corporate R&D funds;
- e. Hitachi desired to insure against antagonism over licensing issues encountered by other Japanese semiconductor manufacturers.
- f. Increasing global competition required the introduction of future generations of DRAMs to become more timely and much more cost effective; manufacturing costs in Japan were becoming prohibitive;
- g. Opportune timing in light of U.S. - Japan trade disputes; U.S. government goal was to strengthen the critical U.S. semiconductor industry while MITI, under pressure from the U.S., placed emphasis on "global partnerships";
- h. Hitachi could bring to the venture significant financial resources of its corporate bankers; and
- i. Other pre-competitive effects.

B. KOBE STEEL

Kobe Steel has been one of Japan's four largest vertically-integrated steel companies: a dying breed, without significant new technologies to propel it into the new century. In addition

to its integrated iron/steel business, Kobe has been a major player in the aluminum/copper and heavy machinery markets. But, because it had become overly dependent on those declining profit-generating smokestack businesses, Kobe's management decided to diversify their business activities -- at a time during which TI was looking for new partners for its wafer fab capacity expansion program in the late 1980's (during which time two other Asia-Pacific joint ventures were formed in Taiwan and Singapore). To quote Dr. Norman Neureiter, a TI expatriate manager resident in Tokyo, "A common interest or goal brought the two parties together, to further penetrate a difficult market for one company while adding a new technical capability to the other company's portfolio."

In the spring of 1990, after nine months of negotiations, TI and Kobe announced that they would form a new joint venture company - KTI Limited - to manufacture primarily logic semiconductor devices (since the announcement, DRAMS have been produced because of market requirements) in Nishiwaki Japan (located to the west of Kobe). The joint venture, in which TI owns a 25% equity interest, receives all of its technology infusion from TI in return for which TI purchases 100% of the product output. The joint venture company is now successfully operating at full capacity, ramping up production at a time of general global DRAM shortages. Since the signing of the joint venture contracts, TI and Kobe have continued to expand their relationship with a variety of mutually beneficial commercial arrangements. For example, TI and Kobe have established a design center in Japan to work on TI semiconductor designs (which are then loaded in KTI and other TI facilities) using the TI cell library. Also, a division of Kobe serves as a distributor of TI semiconductor products in Japan. Other non-semiconductor ventures are being explored.

Why Kobe Steel? A set of factors somewhat different from those in the case of Hitachi were considered:

- a. Kobe's traditional businesses were facing the potential of long-term revenue and profit decline.
- b. Kobe wanted to enter the high-tech arena quickly and decisively but without bearing the full risk of such a foray; semiconductor operations were determined by Kobe management to be the appropriate vehicle (Kobe management was "encouraged" by similar intentions announced by a couple of Kobe's Japanese steel competitors);
- c. In order to reduce its overall cost of capital and to minimize financial risks, TI needed a partner in Japan possessing strong cash reserves;

- d. Kobe could obtain access to Japanese capital markets whereas TI could not (at least not as effectively);
- e. Kobe was not a competitor to TI and further indicated that it did not have any desire to so become.
- f. TI and Kobe cultures were fairly compatible;
- g. TI had a well-trained Japanese work force; and
- h. Kobe would bring to the venture excellent management and operations expertise.

As shown through the above two examples, TI has parlayed virtual techno-alliances into differentiated investment strategies, which strategies have come to be predominate its strategic thinking today. In the case of Hitachi, an initial coalition emerged into a much more significant strategic alliance. The Kobe relationship, on the other hand, focused initially (by design) on a specific, narrow-width strategy but has evolved into a much broader partnership.

Throughout the relationship building process with these and other Asia-Pacific ventures, a general model for success for the virtual techno-alliance has been developed. Several of the key points of that model are as follows :

- (a). The parties must establish a clear meeting of the minds on the goals and objectives of the venture;
- (b). The venture needs to be operated as an independent, profit making entity;
- (c). Sources of technology are limited, with products manufactured under a have-made-rights basis and thereby the jv company has no rights to sell products independently into the marketplace;
- (d). Costs of capital are minimalized; and
- (e). The partners should maintain some form of dialogue such as through an Executive/Operating committee structure, meeting on a regular basis (subject to antitrust review and analysis and government approval where necessary).

III. CONCLUSION

In structuring virtual techno-alliances with Japanese companies, keep in mind that, despite the general structure outlined above, there is not available a single, boiler-plate formula or model. Each project must be sculpted of its own image and material. Nevertheless, the end result should be a quasi-independent venture which increases economies of scale, reduces costs and promotes competition.

From a U.S. perspective, the microelectronics industry must sustain itself through a viable yet innovative semiconductor sector. There has been little challenge to the well-argued strategic importance of our industry. But, in order to sustain the industry there must be established a "reverse flow" of technology from Japanese/foreign manufacturers to U.S. companies and successful design-in wins for U.S. companies in Japan (along with purchases of those products by Japanese companies). This can be accomplished through a virtual techno-alliance so long as it is structured in terms of a "win-win" relationship.

Unfortunately, there are many challenges to be confronted along the path: cultural; antitrust/anti-monopoly; suspicion and distrust; the protection of intellectual property, etc. Furthermore, virtual techno-alliances can not be established overnight and must be flexible enough to withstand occasional disagreements or discontinuities between the partners.

What are the benefits to Japanese partners? Although they continue to lead in consumer product development, the question is --- for how long (especially with the Chinese tiger lapping at their heels)? The transition to digital electronics, which has caught the Japanese ill-prepared, increases the necessity of Japanese businesses to work with U.S. logic and microprocessor design and manufacturing leaders. Additionally, other technological or business developments such as the switch in the computer industry to a client-server environment/architecture places new pressures on the Japanese (again, increasingly from China). Finally, the revolution in the telecommunications industry and the possible creation of some sort of "information highway" necessitates more aggressive solutions to be adopted by Japanese corporations. In these and other areas of technological development U.S. industry currently holds the lead.

Some people may challenge one of the basic premises of this article - that virtual techno-alliances can and must be successful if we are to avoid another major confrontation with Japan. Since the Japanese view their security strictly in terms of economic well-being (in a truly Japanese context) it is incumbent on us to address the challenge of partnering from the perspective of a "win-win" relationship to assist Japan as it gropes to address its current

identity crisis. We must also be somewhat patient as Japan tackles the cultural clash within that nation, which clash has the potential to split it apart.

Because of many issues for which there is insufficient space to address here, it is not likely that government to government negotiations will be able to address successfully the current impasse on trade and investment issues. Increasingly, the initiative must arise from the private sector -- virtual techno-alliances are a good place to start.

APPENDIX

SEVEN CONSIDERATIONS WHEN CREATING AND MANAGING A VIRTUAL TECHNO-ALLIANCE IN JAPAN

1. Know Your Partner

- a. Evaluate carefully (at the outset or even before) the strengths and weaknesses of the alliance partner -- make certain that you conduct adequate due diligence (as if you would any M&A activity);
- b. Assume there will be disputes along the road;
- c. The virtual techno-alliance is a marriage (but not of "convenience"), not just a contract;
- d. Dispositive agreements must be living, breathing documents; and
- e. Adopt a "we can work it out" approach, but maintain a watchful eye (especially where intellectual property is concerned).

2. Ensure and Promote Management Compatibility:

- a. Do not enter into a relationship for convenience sake;
- b. Managerial independence is very important;
- c. Align as close as possible on product and technology strategies and corporate philosophies; and
- d. Make certain that the trust and confidence established at the most senior level or on the negotiating teams permeates all levels of organizational management (initial negotiations as well as continuity throughout the term of the relationship are extremely important).

3. Be Constantly Attuned to Timing:

- a. Timing is more important than perhaps it was during the past 20 - 30 years;
- b. Understanding business trends is crucial to success (as is a little foresight and a pinch of luck); and
- c. Develop a business plan with full review and buy-in by the alliance partners.

4. Invest Significant Management Time and Effort:

- a. Significant management effort is required before, during and after negotiations. Dedicate sufficient resources;
- b. Management must understand and agree (not just the ambiguous "hai") that after signing the dispositive agreements they will have to "manage" the alliance with dedicated staff and some level of ongoing senior management oversight, including retaining points of continuity (however, where antitrust issues may exist, this requires very careful planning and review by legal counsel);
- c. Cautiously approach the issue of "clash of cultures";
- d. Do not establish arbitrary deadlines; and
- e. Investment of time is not limited to business hours.
- f. Annotate a "troubleshooter" to run the traps, develop consensus, or to reach "compromise." If not, one's credibility and commitment will be challenged.

5. Identify Sensitive Issues and Prioritized Focus:

- a. What are your objectives? What are your partners objectives and care-about's?;
- b. Do you have a "meeting-of-the-minds"?
- c. Create procedures, prompt and reliable communications in the event of a major dispute (e.g., ownership of a patent); and
- d. Establish, as laws permit, operating and executive committee structures which help manage issues as they arise;
- e. Begin the relationship with a narrow focus and then expand it over time;
- f. Fully comprehend one's bargaining strength throughout the planning, negotiating and implementing stages (it will likely vary over time!); and
- g. Emphasize future building blocks.

6. Agreements Must Establish Checks and Balances.

- a. Ensure that there is established adequate: intellectual property protection; policies and procedures, for dispute resolution and disentanglement; plans for contingency factors; etc.
- b. Maximize flexibility;
- c. Clearly define partner contributions; and
- d. Once again, establish executive and operating committees.

- 7. Make the Virtual Techno-Alliance Conditional on Effective, Equal Two-way Transfer of Technologies:**
- a. One needs to structure a relationship which is one of "win-win" and which improves competitiveness;
 - b. Promote the concept of "positive-sum" alliances"; and
 - c. Small U.S. companies should try to avoid leveraging technologies with larger Japanese companies.