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THESIS

JAPANESE TECHNOLOGY
AND
U.S. NATIONAL SECURITY

by

Robert Joseph Dukat
December 1990

Thesis Advisor:

Dr. Edward A. Olsen

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92-04953



92 2 25 190

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE

Form Approved
OMB No. 0704-0188

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED		1b. RESTRICTIVE MARKINGS	
2a. SECURITY CLASSIFICATION AUTHORITY		3. DISTRIBUTION / AVAILABILITY OF REPORT	
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE			
4. PERFORMING ORGANIZATION REPORT NUMBER(S)		5. MONITORING ORGANIZATION REPORT NUMBER(S)	
6a. NAME OF PERFORMING ORGANIZATION Naval Postgraduate School	6b. OFFICE SYMBOL (if applicable) 038	7a. NAME OF MONITORING ORGANIZATION Naval Postgraduate School	
6c. ADDRESS (City, State, and ZIP Code) Monterey, CA 93943-5000		7b. ADDRESS (City, State, and ZIP Code) Monterey, CA 93943-5000	
8a. NAME OF FUNDING / SPONSORING ORGANIZATION	8b. OFFICE SYMBOL (if applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8c. ADDRESS (City, State, and ZIP Code)		10 SOURCE OF FUNDING NUMBERS	
		PROGRAM ELEMENT NO.	PROJECT NO.
		TASK NO.	WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) JAPANESE TECHNOLOGY AND U.S. NATIONAL SECURITY (UNCLASSIFIED)			
12. PERSONAL AUTHOR(S) Dukat, Robert, J.			
13a. TYPE OF REPORT Master's Thesis	13b. TIME COVERED FROM _____ TO _____	14. DATE OF REPORT (Year, Month, Day) 1990, December, 18	15. PAGE COUNT 166
16. SUPPLEMENTARY NOTATION The views expressed in this thesis are those of the author and do not reflect the official policy or position of the DOD or U.S. Government			
17. COSATI CODES		18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB-GROUP	
			Japanese Technology, U.S. National Security, U.S.-Japan Relations, U.S. Foreign Policy,
19 ABSTRACT (Continue on reverse if necessary and identify by block number)			
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20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS		21. ABSTRACT SECURITY CLASSIFICATION Unclassified	
22a. NAME OF RESPONSIBLE INDIVIDUAL Dr. Edward A. Olsen		22b. TELEPHONE (Include Area Code) 408-646-2228	22c. OFFICE SYMBOL 038

CONTINUATION, BLOCK 18: U.S. Economic Policy, U.S. Technological Policy, Japanese Economic Policy, Japanese Foreign Policy, Japanese Governmental Policy, U.S.-Japan Trade, U.S. Trade Problems, U.S. Defense Policy, U.S. Industrial Policy.

CONTINUATION, BLOCK 19: should be handled. Some advocate letting the free market solve the problem while others propose managed trade solutions. The United States also needs to reevaluate its entire policy with Japan and the Asia-Pacific region, in light of a changing world environment and increasing U.S. financial difficulties.

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Japanese Technology and United States National Security

by

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Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF ARTS IN NATIONAL SECURITY AFFAIRS

from the

NAVAL POSTGRADUATE SCHOOL
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National Security Affairs



Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
Distribution/	
Availability Codes	
Dist	Special
A-1	

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This rivalry is placing strains upon U.S.-Japanese relations. Debate has arisen in the United States about how these perceived problems should be handled. Some advocate letting the free market solve the problem while others propose managed trade solutions. The United States also needs to reevaluate its entire policy with Japan and the Asia-Pacific region, in light of a changing world environment and increasing U.S. financial difficulties.

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I. INTRODUCTION

Since the end of World War II, the United States and Japan have become close economic and security partners. The United States has been content to let Japan economically develop under a U.S. shadow, providing Japan generally supports American foreign policy objectives in the Asian region. Now that Japan is financially successful and a strong economic competitor, a perception is intensifying in the United States of Japan becoming a threat to U.S. national security. Polls on U.S. network evening news continue to show the American masses how Americans consider Japanese economic competition a greater menace than any foreign military challenge.

At the heart of Japanese economic competition with the United States is a race for technological superiority. The United States once was dominant throughout the world in technological innovation, production, and sales. However, since the mid 1980s, Japan has come to dominate many high technology areas such as semiconductors, disk drives, robots, printers, optical fiber instruments, and others. Of 34 basic technologies reviewed by the U.S. government, Japan has supremacy in 25.1

- 1 Clyde Prestowitz, Jr., Trading Places (New York: Basic Books, 1988), p. 11.

This thesis examines Japanese technology and technological competition and what impact it may have upon U.S. national security. The United States has been able to become a global power through the strength and qualitative superiority of its military, and an extremely productive international economy. However, as Japan has come to dominate specific basic and advanced technologies, U.S. defense systems have been forced to purchase critical advanced parts from Japanese firms. Also, the heart of U.S. economic competitiveness, development and introduction of new technologies, is being severely challenged by the Japanese. Is this technological dependence and competition a threat or is it simply a result of increased interdependence which can be dismissed as mutual cooperation between friendly nations?

The second chapter discusses background information important to the U.S.-Japanese relationship. When the United States decided to rebuild Japan as a strong security partner, the main concern was countering a growing spread of communist governments hostile to the United States and its allies. Japan was very cooperative and supported U.S. objectives.

Since the 1940s and 1950s, there has been a significant change in the world political order. The Soviet Union has apparently been overcome by financial, social, and political problems forcing it to seek rapprochement with the West, instead of conflict. China has become overwhelmed with internal strife. The United States is currently grappling

with financial problems stemming from overextended military commitments, large domestic spending, and increasing economic competition from other industrialized nations. Japan, meanwhile, has become an economic superpower and is beginning to seek increased political power throughout the world.

These changes have forced the United States to review its national security concerns. No longer is geopolitical and military power considered the sole focus of national security, but economic power should be included as well. This reevaluation needs to consider which security and economic interests Japan has in common with the United States and which differ. Technology should also be adjudged as important to national security.

Chapter III will address the relationship between Japanese technology and U.S. national security. Which critical components do the Japanese supply for U.S. weapons systems? Even if the United States relies upon Japan to supply specific parts, it may not be a problem. The United States provides for the bulk of Japanese external security, thus Japan would appear to have little incentive to reduce the readiness of its defense provider. One concern has been a supply disruption, but there is little chance that a hostile power could effectively block trade between North America and Asia.

One potential factor of American defense relying upon Japan, could be an opportunity for Japanese political

leverage upon the U.S. Government. As Japan voices stronger desires to share power with the United States, an avenue could be opened through technological dependence. Japan could also threaten to transfer critical technologies to nations hostile to the United States, possibly changing balances of military power.

The other aspect of Japanese technology and U.S. security discussed is how Japanese competition influences overall U.S. economic health. The United States in the postwar years has never been contested in technological superiority, but now Japan is challenging U.S. dominance. Does this challenge hurt the U.S. technological advantage, thereby restricting American global competitiveness, or is the Japanese rivalry an inevitable result of global interdependence and industrialization?

Nevertheless, there are problems within the U.S. technology industry which hamper competitiveness. American corporations are sometimes engulfed in realizing short-term profits, rather than long-term development. Japanese firms can take advantage of this situation because they are not as susceptible to certain free market demands.

U.S. technological development is also influenced by Government defense spending. In the United States, a large portion of Government monies allocated for research and development (R&D) go to defense technologies. While this can stimulate the development of technologies, often these

technologies are not available for commercial applications simply because of bureaucratic restriction. Japanese firms, on the other hand, develop primarily civilian technologies, then apply them to defense.

One other factor affecting U.S. competitiveness is the Japanese method of conducting trade. Japan has been accused of illegally dumping semiconductors on the U.S. market, absorbing the loss, yet driving U.S. competition out of business. The Japanese also have a fairly restrictive domestic market and a patent and intellectual property rights bureaucracy difficult for Americans to deal with.

The fourth chapter explains what impact the U.S.-Japanese technological relationship has upon the United States, Japan, and their strategic relationship. In the United States, loss of competitiveness has sparked debate concerning the ability of the United States to remain the preeminent global power. Should the United States not retain economic supremacy, it will be increasingly difficult to maintain its global security network. If this happens the United States must either scale back its overseas commitment, or have increased burdensharing with its allies. Foreign financial commitments could possibly lead to those allied nations desiring a greater share of the decision-making power.

The reflux of American economic superiority has generated many views on how to solve the perceived problem. Free

marketeers believe the problem is a result of laissez-faire trade practices which benefit the consumer. Trade imbalances and deficits are not necessarily a bad thing, the U.S. has Japanese goods while Japan has U.S. dollars. Another view encourages protectionism or managed trade. According to this view, Japan is conducting unfair trade practices and the United States needs to protect itself and make a strong statement to Japan.

Japan has reacted to the debate being conducted in the United States. Japanese nationalists believe Japan should become more assertive with the United States, commensurate to its economic power. The nationalists think that problems between the United States and Japan stem from poor American business practices and a society becoming too consumer-oriented.

The Japanese public and government have been slower to criticize the United States. The public is becoming increasingly dissatisfied with its status in Japan. They see great wealth within their country, yet the consumer has not derived as much benefit from Japan's financial fortunes. When traveling to the United States, they witness the living conditions of consumers and notice the differences. The Japanese Government has taken a low key and reactive approach to its relationship with the United States. Concerned over a continued and profitable partnership, the Government tries to appease U.S. demands.

Problems between the United States and Japan have also been manifested in their strategic relationship. While not significantly affecting the U.S.-Japan Mutual Security Treaty, debate in Japan and the United States has surfaced. In Japan, changing perceptions of the external threat has helped bring to light differences with the United States. American debate has focus upon increased burden sharing with Japan and stability in the Asian/Pacific region.

In the recommendations and conclusions section, Chapter V, some policy options are presented. For the United States to properly address its problems with Japan, global and regional policy reassessment should be considered. Significant change has taken place geopolitically in the late 1980s. A good portion of American foreign policy is still based upon Cold War philosophy. If the United States is to remain strong economically and politically, it needs to take geopolitical change into account. The U.S.-Japanese technological relationship may be a microcosm and indicator of a changing world environment.

II. BACKGROUND

At the end of World War II, when the American-Japanese cooperative strategic relationship began, the United States was the primary benefactor of Japan. America provided the bulk of Japan's external defense, while allowing Japanese products unrestricted, unreciprocated entry into the U.S. domestic market. The United States envisioned Japan as a strong Far Eastern ally in the U.S. global plan to counter the worldwide spread of Communism. Our cooperation with Japan would eventually develop into the core relationship in the Western Pacific, both in global and regional terms. As that occurred, many have echoed the sentiment of former U.S. ambassador to Japan, Mike Mansfield, who noted that the U.S.-Japan association is the "most important bilateral relationship in the world, bar none."²

Since 1945, the relationship has undergone a significant transformation and is highlighted today by increasing economic interdependence between the two nations. Japan is still reliant upon the United States for its national security, but the Japanese are increasingly basing their national security upon economic might. Meanwhile, the United

² Norman D. Palmer, Westward Watch (Washington, D.C.: Pergamon-Brassy's International Defense Publishers, 1987), p. 52.

States' overall outlook upon national security is evolving toward economics. While military and geopolitical aspects of national security remain strong in defense and foreign policy, a changing world and domestic economic landscape is forcing the United States to increase attention upon its economic health. Logic suggests that if the United States and Japan continue their economic interdependence, and economic aspects of U.S. national security become more important, then Japan's economic health and Japanese technological development will become larger parts of U.S. national security.

When broadly discussing foundations of the U.S.-Japan cooperative relationship, a number of aspects need to be addressed. This section will examine initial American involvement with Japan following World War II, the views both nations hold concerning national security, and the current state of U.S.-Japan economic cooperation and friction. It will conclude by noting the position technology plays as a basis for U.S. national security.

A. JAPAN AT THE END OF WORLD WAR II

By mid-September 1945, Japan had surrendered to the Allied forces, marking the end of the Second World War. However, the greatest battle was yet to face the Japanese: the rebuilding of their nation.

When the U.S. military advisors to Gen. Douglas MacArthur arrived in Tokyo, they were unprepared for what they initially observed.³ They were overwhelmed by the widespread destruction wrought by American strategic bombing and the eagerness of the Japanese to cooperate with the American occupation forces.

Japan lay in ruin. The once productive industrial base and commercial centers were piles of rubble. Much of the population was living in hastily pasted together shanties and shacks. Foreign raw materials and food supplies needed to feed the populace and begin industrial reconstruction were cut off, and the fishing fleet was nearly out of commission. The outlook for the future was not optimistic.⁴

The Japanese, however, seemed to view their problems philosophically, and cooperated with their government in carrying out the orders of the occupation authorities, offering no armed resistance. They obeyed all the directives prescribed for them in Washington, carried out by the General Headquarters (GHQ) Supreme Commander for the Allied Powers (SCAP). A number of actions and reforms were taken. Quickly demobilized, Japanese forces had their war machine destroyed while General Tojo and others were arraigned as war

- 3 Justin Williams, Sr., Japan's Political Revolution under MacArthur (Athens: University of Georgia Press, 1979), p. 1.

- 4 William Manchester, American Caesar (Boston: Little, Brown, and Co., 1978), p. 476-490.

criminals. Politically, a democratic constitutional system was adopted, accompanied by a general election of members to the Diet. Other important changes were the outlawing of a state-supported Shinto religion, free discussion of the emperor system, and a comprehensive land reform.⁵

The American occupation of Japan was unique in Eastern Asia. Unlike during past Western intervention in the region (France-Indochina or U.S.-Philippine), there was a relative parity in industrial and societal development between the United States and pre-war Japan.⁶ The two parties, the American occupiers or teachers and the Japanese subjects or students, seemed to complement each other and both had a desire to see a successful occupation of Japan. The Americans were motivated by the optimism and self-confidence found in their new position as world leader and by the apparent universality of their culture and its values. At the same time, the Japanese wanted to shed the yoke of military rule and continue to develop indigenous liberties, such as women's liberation, a labor movement and land reform, which had been seeded in the early 1900s, but stifled when Japan's military later controlled the government.⁷

- 5 Williams, p. 2-6.

- 6 James C. Thomson, Jr., Peter W. Stanley, and John Curtis Perry, Sentimental Imperialists (New York: Harper Colophon Books, 1981), p. 204-206.

- 7 Thomson et al., p. 204.

B. UNITED STATES POSTWAR DESIGNS FOR JAPAN

It was obvious that the United States was in charge of Japan and the Japanese were malleable in the hands of their occupiers. However, political observers outside Japan sometimes had a difficult time following the true direction of the American occupation policy.

In late 1945, a basic guiding directive for Japan's occupation, entitled "United States Initial Post-Surrender Policy for Japan," outlined a three-point program. First, Japan was demilitarized to ensure it would not use military force to disrupt the Far East. Next was a more basic objective of creating "a peaceful and responsible government" in Japan. By establishing democratic principles, the Japanese would be less likely to embark upon a warlike course. The third point was the realization that Japan would remain peaceful and democratic only if it had a viable economy to meet the peacetime requirements of the population.⁸ Thus, the overriding theme of the initial occupation stage was to democratize Japan, ensuring that they would not be able to undertake future aggressive action against neighboring nations.

This initial American occupation policy had a significant effect upon the structure of the Japanese economy. The

⁸ Edwin O. Reischauer, The United States and Japan (New York: Viking Press, 1968), p. 31-32.

prewar economy in Japan was based upon a zaibatsu system, which were giant financial, commercial, and industrial combines run by a central holding company, and largely owned by a controlling family.⁹ In the early 1930's the old-established zaibatsu were generally independent, resisting pressure from elements within the military to concentrate in heavy and chemical industries which would support Japan's territorial expansion in China and throughout Asia. By the mid-1930's, constant pressure and coercion had brought the zaibatsu system into collusion with the military. Together, they sustained the industrial power needed by the Japanese military.¹⁰ After the war, the American occupation attacked the zaibatsu for being the root cause of Japanese imperialism. The controlling families were removed from ownership virtually without compensation, and the combines were broken down into their component parts.¹¹

As the process to change the base of the Japanese economy progressed, unforeseen changes altered the geopolitical map of Asia. The United States had erred while assessing potential threats in the East Asian region, believing future Japanese military aggression to be the most likely source of

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- 9 Edwin O. Reischauer, The Japanese Today (Cambridge: Belknap Press of Harvard University, 1988), p. 305.
 - 10 Michio Morishima, Why Has Japan Succeeded? (Cambridge: Cambridge University Press, 1982), p. 130-132.
 - 11 Reischauer, The Japanese Today, p. 305.

regional instability. Americans felt that the removal of the Japanese threat would return the rest of the region to stability and prosperity.¹²

Unfortunately, the major sources of tension developed outside Japan. In 1948, Chiang Kai-shek's army was being defeated throughout China by a Communist army under Mao Tse-tung, and on the Korean Peninsula two separate Koreas were formed, one ostensibly a democratic nation under the tutelage of the United States, the other a nation closely aligned with the Soviet Union. By 1949, the communists in China were victorious and aligned their "new" China with the Soviet Union. War broke out between North and South Korea in 1950, eventually bringing the United States and China into armed conflict.

With regional order shifting in the Far East, the United States took a different view of Japan's future regional role. The U.S. government discarded its original occupation plans and began to rebuild Japan as a strong ally to counter Chinese and Soviet aggression in the region. The occupation authorities concentrated upon rapid economic reinvigoration, while simultaneously establishing a limited self-defense capability. At the same time, former members of the armed

¹² Reischauer, The United States and Japan, p. 32.

services and businessmen who were purged at the end of the war were depurged and permitted to hold public office.¹³

The dismantling of the zaibatsu was stopped, leaving important components of the former industrial structure intact which would spearhead post-occupation economic growth. The industries loosely reformed into keiretsu groupings, which became networks of preferential, stable, obligated, and hierarchical bilateral trading relationships. Contemporary Keiretsu are not conglomerates because they have no central board or holding company. Each keiretsu has diverse lines of business, a bank, a trading company, a steel firm, an automobile firm and so on. However, each grouping has only one of each business, thus trade within the group is extremely active.¹⁴ They also engage in mutual stockholding to create tangible ties within the group.¹⁵

The Korean War helped invigorate the Japanese economy. While providing initial orders for heavy industry to supply the United States in Korea, the war provided Japan with the opportunity to build its own infant defense-industrial structure. From the outbreak of war, American forces placed

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- 13 Morishima, p. 162.
 - 14 Ronald Dore, "Goodwill and the Spirit of Market Capitalism," in Inside the Japanese System, eds, Daniel I. Okimoto and Thomas P. Rohlen, (Stanford: Stanford University Press, 1988), p. 94.
 - 15 Edward J. Lincoln, "Japanese Bond and Stock Markets," in Inside the Japanese System, p. 59-60.

orders with Japanese enterprises for weapons, vehicle components, and other military necessities. This not only boosted iron and steel production, but also invigorated the spinning, coal mining, and machine tool industries as well.¹⁶ However, large businesses derived the most profits from the developing economic relationship with the United States. The small-to-medium sized firms did not fare as well.

The United States policy toward Japan had come a full turn from the end of World War II to the mid-1950's. The United States initially viewed post-war Japan as a medium-sized economic power in Asia stripped of its ability to launch any aggression against its neighbors. Eventually, the international tension, which postured the United States against the Soviet Union and China, changed U.S. postwar designs for Japan. This change in attitude gave Japan a needed boost to become the global economic power it is today.

For the most part, the Japanese were extremely cooperative with the American occupying force, following the American military's numerous dictums and policies. Yet, this outward display of cooperation should not be surprising. The United States had thoroughly defeated Japan, leaving the Japanese no choice but to accept the U.S. course of action. An important factor was the presence of MacArthur presiding

- 16 Morishima, p. 163.

as "czar" of the occupation. His personal traits such as strength of will, dignity, austerity, capacity for hard work, and insistence on unwavering personal loyalty from subordinates were qualities which the Japanese deeply admired. These characteristics helped bond Japanese to his leadership and encouraged them to follow his policies for their nation.¹⁷

Some other factors also helped to explain this cooperation between the Americans and Japanese. The Japanese penchant for situational ethics allowed a sharp psychological about-face following the war, enabling them to accept the American policies. Power and authority, such as MacArthur's, were respected and helped them to recognize quickly that cooperation was the only practical course. The Japanese were also willing to accept new knowledge and admit past errors.¹⁸

One must probe a little deeper into Japanese culture and society following World War II, however, to gain insight into the Japanese reaction to American postwar plans for Japan. Although top Japanese officials were not ordered by the occupation authorities to approve American edicts and policies, they were convinced that their choice lay between retaining features of their past society and culture under

- 17 Manchester, p. 459-461.

- 18 Reishauer, The United States and Japan, p. 220-221.

the Americans' plans, or having it abolished altogether.¹⁹ Ironically, it took less pressure upon the Japanese people to accept most of the policies. The masses seemed to identify themselves as beneficiaries, rather than victims of the occupation regime. They appreciated both the spirit and the content in many of the policies which met the deep felt feelings they had to purge authoritarianism and militarism from their society.

For the period of the American occupation, Japanese reactions were generally supportive towards the policies and plans of their overseers, if not for any other reason than they had no choice in the matter. Following the San Francisco peace treaty of 1951 and accompanying mutual security agreement between the United States and Japan, the relationship changed from one of father-son to older brother-younger brother, with the younger brother furiously bent on making his name within the family.

C. DEVELOPMENT OF U.S.-JAPAN SECURITY ARRANGEMENTS AND NATIONAL SECURITY INTERESTS

On September 8, 1951, a treaty of peace, officially acknowledging the end of hostilities, was signed in San Francisco between American and Japanese representatives. Following that event, delegations from both nations met to

¹⁹ Williams, p. 122-124.

discuss and endorse a mutual security agreement which would guarantee Japan's security and provide access into Japan for American military forces.²⁰ These meetings marked the beginning of a strategic relationship between Japan and the United States which has remained the foundation for contemporary economic and military cooperation.

The Mutual Security Treaty, while not a legal constraint upon Japan's defense structure, has played an important role in post-war Japanese security policy. At the same time, it has created a security environment in Japan of dependence upon the United States. The treaty provides for Japan's protection from outside attack, especially nuclear attack, a consideration not covered by the Japanese "anti-war" constitution. The treaty also states that the United States "intends to take the necessary measures for the defense of these islands, and to do its utmost to secure the welfare of the islanders," in accordance with its constitutional provisions and processes.²¹ However, the agreement does not obligate Japan to provide military assistance should aggression occur directed against the United States.

- 20 John K. Emmerson and Harrison M. Holland, The Eagle and the Rising Sun (Stanford: Stanford Alumni Association, 1987), p. 61.

- 21 John M. Maki, Conflict and Tension in the Far East: Key Documents 1894-1960 (Seattle: University of Washington Press, 1970), p. 221-223.

While not explicitly stated within the text of the Mutual Security Agreement, Japan derived special economic benefits from entering into the alliance with the United States. When most other countries were discriminating against Japanese goods after the war, the United States accepted them freely, at the same time allowing Japanese tariffs designed to protect their developing industrial base. The Japanese government also had the freedom to use its capital to invest in the development of private enterprise, rather than defense expenditures. This capacity existed because reliance upon the U.S. defense system drastically reduced the amount of capital required for adequate self-defense.

For the most part, the treaty has been accepted by the Japanese as a fact of life, and any major disagreements over the wording of the treaty have been settled. One of the past defects, emphasized by the Japanese, has been the lack of a clear commitment by the United States to come to the aid of Japan, by nuclear means if necessary. Other problem areas were the open-ended nature of the treaty, the stipulation that American forces stationed in Japan might intervene in the case of domestic riots or unrest, and the lack of restrictions upon U.S. operations from bases in Japan.²²

As solid as the formal portion of the relationship may be, the two nations have differing perspectives of national

²² Emmerson and Holland, p. 123.

security interests in continuing the Mutual Security Treaty. The United States has long considered its national security primarily in geopolitical terms, relying on a strong defensive posture, a series of alliances, and in general, its foreign policy initiatives. Economic aspects were taken for granted in the past, since America's economy was unquestionably the world's strongest and most dynamic. Thus, the United States viewed the treaty with Japan as a portion of its worldwide security system. Japan, on the other hand, has taken the view that national security is comprehensive, encompassing economic, political, and military means, but emphasizing economic skills and minimizing military contribution.²³ While recognizing the important part the United States plays in the defense of Japan, the Japanese understand the substantial economic benefits being derived from continuing the U.S.-Japan security arrangements.

1. United States' National Security Interest in Japan

As mentioned previously, the United States has viewed its security relationship with Japan primarily within the context of its global commitments and perceptions. For the most part, Japan has been considered the central relationship of the Western Pacific. It is an area that U.S. political and security planners seemed to regard largely in global, rather than regional terms and mainly as a theatre of the

²³ Palmer, p. 60-61.

global U.S.-Soviet conflict.²⁴ This was evident in the period immediately following the occupation, when the United States had an abrupt change of policy concerning Japan's future due to the Chinese situation and the outbreak of the Korean War.

Since the end of the Korean War, the United States has used the security relationship with Japan as a springboard for regional operations as a part of the global containment policy directed against the Soviet Union. The structure of the U.S. military presence in Japan is intrinsically linked to a potential for hostilities on the Korea Peninsula and any potential threat which would be mounted from Soviet forces in the Soviet Far East. At the same time, the United States has protected sea lines of communication between Japan and the Western Hemisphere and between Japan, the Middle East and Suez Canal.²⁵

As the United States concentrated upon the geopolitical aspects of its relationship with Japan, it failed to monitor and correct the economic imbalances beginning to favor Japan. Japan's economic base and wealth grew astronomically during the 1960's and 1970's, but the United States did not adequately readjust its economic policies with Japan to compensate. Evidently, concern with

- 24 Palmer, p. 61.

- 25 Tetsuya Kataoka and Ramon H. Myers, Defending an Economic Superpower (Boulder: Westview Press, 1989), p. 91-93.

world events and confidence in the strength of the American economy made U.S. leadership apathetic to the changing situation. No effort was made encouraging Japan to assume addition financial responsibility for its defense or to participate fully in U.S. international affairs.

The 1980's brought a marked decrease in the ability of the United States to finance overextended commitments in the region, accompanied by an increasing trade deficit, most notably with Japan. Suddenly, geopolitical objectives were beginning to be overshadowed by economic problems. This is resulting in the economics of the U.S.-Japan relationship beginning to overshadow the military cooperation. Tangential to this changing emphasis, many in the United States are beginning to call for an increase in the Japanese financial commitment to its defense, comparable to its economic stature.²⁶ There has been vocal debate in Congress, which has led to an addition in the 1991 Defense Appropriations Act. The measure states that unless Japan pays virtually all the costs associated with U.S. forces stationed in Japan, the United States should withdraw 5,000 troops per year.²⁷ The Bush Administration says that an effective U.S.-Japanese partnership requires the military component to come from

- 26 Ronald A. Morse and Alan Tonelson, "Let Japan Be Japan," New York Times, National Edition, 4 Oct. 1989, p. A29.

- 27 Oka, "Congress Pressures Japan to Pay More of Defense Bill," The Christian Science Monitor, 20 Nov. 1990, p. 4.

America, while Japan shoulders a large part of the economic burden.²⁸

2. Japan's National Security Interest in the United States

While the United States has viewed Japan as an important part of its world security system, the Japanese take a very different view. Important elements of Japan's security have been dependent upon the United States. These included defense against an attack on Japan's homelands by the Soviet Union and the protection of Japanese East Asian and Persian Gulf security interests. Reflecting the national strategy of "comprehensive national security," Japan has also relied upon America for important economic factors. The U.S. domestic market is the leading target for many Japanese exports, and the financial stability of growing Japanese investments in the United States and third countries is dependent on a healthy American economy.²⁹

As Japan's economic strength and world influence have grown in recent decades, so has the importance of developing parallel security and political frameworks. However, while the Japanese have steadily strengthened their international

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- 28 Takashi Oka, "U.S. Aims to Fulfill 'Balance Wheel' Role in Asian Security," The Christian Science Monitor, 6 Nov. 1990, p. 6.
 - 29 Larry A. Nicksch, "Japan-U.S. Relations," Congressional Research Service Review, Jul. 1989, p. 1.

policies. The Japanese do not wish to devote more than one percent of GNP to defense expenditures. This particular mindset has led to the Japanese wielding their growing economic power as an international tool without a military support system. The Japanese were able to undertake a foreign policy in this manner because they knew the worldwide U.S. military security system would afford them protection.

One glaring example of this policy was demonstrated in Japanese Middle East policy. By confining foreign policy initiatives to economic interests and not possessing any significant direct ties to Israel, the Japanese are viewed by most Arab states as basically non-committed to any particular political issue. This has allowed Japan to trade freely with most parties in the region, to include both sides of warring nations (Iran and Iraq). However, when hostilities may threaten Japanese interests in the region, they quickly become beneficiaries of the U.S. global security system; many Japanese ships were escorted through the Persian Gulf during the Iran-Iraq War. The 1990 Persian Gulf crisis is no exception. Upon Iraq's invasion of Kuwait, U.S. troops were dispatched to the region, protecting Saudi Arabian oil fields and stabilizing the Gulf region. Once again, Japanese energy interests were protected by the United States.

**D. CURRENT STATE OF U.S.-JAPAN ECONOMIC COOPERATION AND
FRICTION WITHIN THE CHANGING WORLD ENVIRONMENT**

An incredible sequence of events occurred in 1989 which eventually led to the most rapid transformation of the world environment since the immediate post-World War II period. The Soviet Union allowed its East European satellite countries to exercise self-determination; some of its own republics threaten to declare independence; and the international confrontation between the United States and the U.S.S.R. may be relaxing enough to allow a worldwide scaling back of military forces. All these events lessen the value of military power in influencing world events, while increasing the relative importance of economic power.

The correlation between Japanese-American interdependence and the worldwide changes will force both countries to examine their national priorities and adjust their core relationship in the Pacific accordingly. However, some caution flags should be raised. As American leaders come to the realization that the health of the U.S. economy should be the top national security priority, it is imperative they realize the U.S.-Japan relationship reflects the current state of affairs, but is not the cause of contemporary U.S. financial decline.

Presently, the United States and Japan possess the two largest economies in the world and have become intrinsically

dependent upon the other. The United States consumes 34 percent of Japan's total foreign trade, is the recipient of 46 percent of Japan's direct foreign investment, and counts on Japan to show up at every government bond auction to finance its federal budget deficit.³⁰ Japan purchases about ten percent of total U.S. high-tech exports, 30 percent of the U.S. export total. Japan is the leading purchaser of U.S. agricultural products, buying 20 percent of total U.S. agricultural exports.³¹

While many in the American public and Congress view Japan as a horrible monster ready to destroy the United States, the situation is not as ominous as it may seem. Japan has no ambitions to bring about the financial ruin of its largest trading partner and the provider of its external security. However, despite all the rhetoric on both sides the United States does have problems in its economic relationship with Japan, not all of them trivial. By discussing and describing the problems endemic to the U.S.-Japanese economic relationship, one can better understand potential solutions to U.S. economic problems, hence national security.

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- 30 Charles Smith and Louise do Rosario, "Empire of the Sun," Far East Economic Review, 3 May 1990, p. 46.
 - 31 Leyla Woods, "U.S. Trade with Japan in Perspective," Business America, 2 Jul. 1990, p. 18.

1. Economics as a U.S. National Security Matter

Since World War II, Americans and their leadership have viewed national security primarily in the context of military strength. However, a changing world environment is raising the utility of economic aspects of national security. Newly formed democracies in Eastern Europe desire economic assistance and trade vice a military alliance. Asian countries such as Singapore, Hong Kong, Thailand, and Taiwan are increasing world influence through exports and investment opportunities, not by arming themselves. Most indicative of this trend is the Soviet Union, where the leadership is desperately seeking Western financial assistance. These examples indicate that the value of using military power to influence world events is decreasing relative to the value of economic power.

The importance of economic security concerns vice military security concerns has been growing since the end of the Vietnam War. The most noticeable incidents to both the American public and government were the series of economic downturns following the Arab oil embargo of 1973 and the energy problems of the late 1970's. These two incidents struck hard at the American economy and its overall stability and could not be reasonably countered by military force. These events served as warning signs for Americans that their economy was becoming increasingly vulnerable to outside influence.

Some fundamental world developments were changing America's position in the world. The United States' industrial preeminence was facing strong competition, the military costs of supporting a global security system were beginning to rise dramatically, and the postwar Japanese and European economies (accompanied by industrializing third world countries) were all beginning to induce a comparative decline in U.S. economic power.³² As a result of these factors, the profile of America's economic component of national security was rising.

The most obvious economic signals raised by the current U.S. economic situation are the continuing trade deficit and growing public debt. The U.S. external deficit has been running at unprecedented heights. The trade deficit peaked at \$159.5 billion in 1987 and is currently running at around \$100 billion.³³ Even more frightening is the total government debt being shouldered by Americans: \$3.1 trillion.³⁴ Economists disagree on the impact of trade and government deficits. Some contend that chronic government and corporate indebtedness sops up capital available for companies to use, thereby driving up investment

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- 32 Brian McCartan, "America's Best Defense Is A Strong Economy," Business and Society Review, No. 71 (1989), p. 55.
 - 33 Philip H. Trezise, "Japan, the Enemy?" The Brookings Review, No. 1 (1990), p. 4.
 - 34 Jo Ann Tooley, "Calendar," U.S. News and World Report, 22 Oct. 1990, p. 16.

capital costs, making it harder for businesses to modernize and compete internationally. Other economists disregard trade deficits considering them a result of economic interdependence, eventually evening out over time. While not complete, these statistics and forecast give a sketch of the importance attached to good American economic health.

Logically, if the current economic problems persist, the United States must do one of two things: either significantly scale back its worldwide military and political commitments or take serious action to correct the financial problems now posed. Since it appears that Washington has committed America to continued global leadership, there must be an effort made to address economic security. If this is to happen, Japan's impact upon the U.S. economy must be examined.

2. Japan's Role in U.S. Economic Security

The U.S. trade deficit with Japan now accounts for over 40 percent of the total U.S. trade deficit. Japan's share of the total deficit has grown since 1987 because the U.S. deficit with Japan has improved much less than with the global deficit. Between 1987 and 1989, the total U.S. trade deficit shrank 29 percent while the U.S. deficit with Japan

- 35 Woods, p. p. 17.

declined only 13 percent.³⁵ Trade relations with Japan have a significant impact upon the current U.S. trade deficit and accompanying debt.

Trade deficits are significant factors in economic health because they must be covered by borrowing. This indebtedness has rapidly made the United States the world's largest-ever debtor, currently estimated at \$500 billion, much of it currently owed to Japan.³⁶ This debt has been covered through great sums of Japanese capital investment in U.S. Treasury securities, and in the bond and stock market. By virtue of controlling portions of U.S. debt, Japan has the ability to exercise a not insignificant amount of leverage upon the U.S. economy and government if it so chooses.

However, Japanese trade offers a number of benefits which can not be overlooked. Japan is an important destination for a substantial amount of U.S. exports. Japan is the second largest trading partner for the United States, purchasing ten percent of total U.S. high-technology exports and 20 percent of all U.S. agricultural exports.³⁷

Whether the United States likes it or not, Japan has become an important player in its economic health. The mutually dependent relationship which has developed forces the United States to pay particular attention to Japan.

- 36 Trezise, p. 4.

- 37 Woods, p. 18.

Japan has become an integral part of the U.S. economy and must be considered a primary external indicator for U.S. global competitiveness and economic national security; if the United States can compete with Japan, it can compete with any nation.

E. TECHNOLOGY AS THE BASIS FOR NATIONAL SECURITY

If economic well-being and military power are the two major components in national security, then the foundation for both components rests on technology and the ways it can be applied. As MIT researcher Charles Ferguson explains, "technological revolutions often contribute to shifts in wealth and geopolitical influence by changing the sources of industrial and military success."³⁸ Beginning with the industrial revolution, through Henry Ford's assembly line manufacturing, to the atomic bomb and space flight, there is little argument that the United States has been the world economic innovator and technological leader. This great financial and industrial success, accompanied by its free-market orientation and democratic society, has allowed America to assume the position of world leadership it has held since the end of World War II.

However, in recent years, the United States has seen its decisive world technological lead diminish in relative terms,

³⁸ Charles H. Ferguson, "America's High-Tech Decline," Foreign Policy, No. 74 (1989), p. 123.

especially with Japan. Not coincidentally, one has also witnessed the accompanying overall decline in U.S. global economic leadership. Granted, there have been a number of other pressures working upon the U.S. economy such as a federal deficit, low personal saving rates, and increasing worldwide competition, but past experience has shown that while the United States continued to introduce new technologies, its economic health was sustained.

Considering the significance of technology in maintaining U.S. national security, one must examine the role technology plays between the United States and its main competitor, Japan. Clyde Prestowicz, a former U.S. trade official, has observed that Japan has used its "special" relationship with the United States to acquire different technologies, then use mercantilist-type trade practices to gain majority control of a particular market, driving U.S. firms out of business.³⁹ The United States has been criticized for overlooking Japan's aggressive economic behavior due to concentration upon geopolitical and military matters.⁴⁰ The Defense Department is becoming concerned that too much of the U.S.'s national security is dependent upon Japanese

- 39 Prestowicz, p. 26-70.

- 40 Ferguson, p. 126.

technology.⁴¹ The next chapter discusses concerns within the U.S.-Japan technological relationship.

⁴¹ Trezise, p. 12.

III. JAPANESE TECHNOLOGY AND U.S. NATIONAL SECURITY

As with the industrial and scientific revolutions, we are currently in the midst of a technological revolution transforming our very existence. This revolution has brought about dramatic changes and advances in medicine, agriculture, manufacturing, military weaponry, and the dissemination and use of information.³⁴ These advances have been largely made through the development and subsequent improvements of the computer, which allows one to collect, analyze, and utilize information on a scale never possible in the past. Technological success also depends upon a broad educational base, a sound financial system, laws and economic policies conducive to the development of new products, and a host of other national factors.

This current high technology revolution plays an extremely important role to the national security of both Japan and the United States. The United States' national security is based upon a strong defense supported by a healthy economy, while the national security of Japan is viewed mostly in economic terms. Technological advancement and superiority is at the center of a strong economy and

³⁴ Andrew J. Pierre, ed. A High Technology Gap? (New York: Council of Foreign Relations, 1987), p. 1.

superior defense.³⁵ A modern fighter jet or modern tank equipped with the most advanced electronics and weapons systems is individually superior to a larger number of older planes or tanks. Similarly, possessing a powerful, growing economy is fast becoming dependent upon how quickly a nation's businesses can develop, implement, and introduce new technologies and technologically advanced products on the world market.

As American and Japanese economic interdependence grows, it will become more difficult for either nation to maintain sole possession of a technology, and it may even be to a nation's advantage to share it more freely.³⁶ Indeed, Japan has recently announced it will increase flows of dual-use technologies to the United States.³⁷ Both nations will supply certain basic technologies and related goods important to the other's economy and overall national security. This section will examine the role technology plays in the U.S.-Japan cooperative relationship.

The first section will describe the American and Japanese military-industrial complexes (MIC). Both nation's

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- 35- Frank C. Carlucci, "Technology and National Security In the 21st Century," Defense Issues, Vol 3, No. 59 (1988), p. 1.
 - 36 Edson W. Spencer, "Japan as Competitor," Foreign Policy, No. 78 (1990), p. 161.
 - 37 "Dual-Use Technology Flows Increase Possible," FBIS/EA/Daily Report, 29 Jun. 1990, p. 9.

industries play important roles in the development of defense technologies, but the United States and Japan emphasize each differently. The American MIC is the leading recipient of government research monies and has become an important part of America's economic growth, while its counterpart remains an insignificant part of the Japanese economy. Recently, cooperation has increased between the United States and Japan in weapons research.

The second section will discuss how America's defense institution increasingly relies upon Japanese technological components and advanced research to maintain weapon readiness and qualitative superiority. While the two nations are strong allies, some problems could develop because of this situation. One concern is that, should supply channels be disrupted between Japan and the United States, U.S. security could be harmed. Also, continued U.S. dependence upon Japan for weapon system components gives the Japanese increased leverage upon U.S. policymaking.

The last section will briefly explore the impact Japanese technological development has upon overall U.S. economic competitiveness. Historically, the ability of American businesses to develop and market new technologies gave the United States a marked edge over the world economy. As Japan encroaches upon U.S. dominance, American economic hegemony

may decrease. One must ask what the causes are of this situation and how U.S. industry and government have reacted thus far.

A. TECHNOLOGY AND THE AMERICAN AND JAPANESE MILITARY-INDUSTRIAL COMPLEXES

In modern times, a nation's military-industrial complex (MIC) has been an essential part of its defense. The U.S. MIC can trace its roots back to the Springfield Armory, while Japan's Kawasaki Shipbuilding Yard has supplied the Japanese Navy with ships since the Meiji Period.³⁸ However, in the post-war era, the two nations' defense industries have held very different roles. American defense contractors are significantly more dependent upon government contracts and business than their Japanese counterparts. The U.S. industries also conduct most U.S. government sponsored research. Indeed, Japan's defense industries consider government contracts a sideline to consumer production.

1. The American Military-Industrial Complex

The U.S. defense industry is a huge institution. The American government spends approximately \$150 billion per year acquiring equipment from thousands of companies. This

³⁸ Morishima, p. 94.

equipment is often technologically advanced and provides the U.S. military the qualitative edge needed for worldwide supremacy.

According to Jacques Gansler, a leading analyst of the U.S. defense industry, the defense industrial base should be viewed in three different dimensions.³⁹ The first tier consists of the large defense contractors, such as Lockheed or General Motors/Hughes, which manufacture major weapons systems. Companies which are major subcontractors to the large contractors comprise the second level, manufacturing electronic devices such as computer systems and radar. The third level of the defense industry supplies parts and materiel, such as semiconductors and metal fabrications. The total number of U.S. firms involved in the defense industry is staggering, numbering over 25,000.⁴⁰

The strength of the U.S. defense industry lies in its technological superiority. While the Soviet Union invests more money in arms than the United States, the American armed forces maintain a significant technological superiority. This supremacy has been achieved primarily because adequate emphasis has been placed on military research and development (R&D). In fact, defense R&D accounted for 70 percent of the

- 39 Jacques S. Gansler, Affording Defense (Cambridge: MIT Press, 1989), p.239.

- 40 Byron Callan, "Defense Electronics' Top 100 Companies," Defense Electronics, Jan. 1990, p. 62.

63 billion research dollars the federal government spent.⁴¹

There has been growing criticism over the amount of defense R&D monies spent by the federal government. In terms of monetary return on dollars invested, defense R&D does not provide direct profits. Some believe that if military R&D funds were used to develop consumer products, the government would get a much larger investment return.⁴² The government and defense contractors counterargue that defense R&D provides the intangible benefit of superior national defense, while pointing out that most of the laboratory research is available to industry.⁴³

In a budget climate that places defense expenditures under a microscope, DOD tries to justify its R&D budget by showing commercial spinoffs. This creates a problem however, because the DOD is concerned with export controls upon technology. A balance needs to be struck between the exploitation and commercialization of federal research and the risk of unsuitable foreign disclosure.⁴⁴

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- 41 Jean-Loup R. Combemale, "Research in Technology and the Federal Government," Science and Technology, June 1989, p. 22.
 - 42 George K. Chacko, Technology Management (New York: Praeger, 1988), p. 54-55.
 - 43 Ron Schneiderman, "Profitable Technology from Uncle Sam," High Technology Business, Feb. 1989, p. 26.
 - 44 Combemale, p. 22.

2. The Japanese Military-Industrial Complex

Compared to its American counterpart, the Japanese defense industry is very small. In fact, Hoover Institute research fellow Tetsuya Kataoka hesitates to use the term "defense industry" at all, as corporations consider their arms production a sideline occupation to their civilian manufacturing.⁴⁵ This balance between defense and civilian manufacturing is not surprising. The Japanese government spends roughly 1% of Japan's GNP on defense, or \$29.7 billion, about one-tenth the amount America spends for defense.⁴⁶

The structure of the Japanese defense industry differs from that of the United States. While the U.S. MIC consists of three tiers, the Japanese MIC appears to have only two layers. The top layer consists of large corporations contracting with the government. In turn, they subcontract much of that work to a second layer of approximately 800 subcontractors.⁴⁷

Funds earmarked for defense R&D are extremely low. In 1987, roughly \$500 million was expended by the Japanese

- 45 Kataoka and Myers, p. 65.

- 46 Ge Gengfu, "Japan Tones Up Defence Policy," Beijing Review, No. 9 (1990), p. 17.

- 47 For further discussion on the Japanese MIC structure, consult Kataoka and Myers, p. 64.

government for defense related research, about 1/80th of U.S. defense R&D.⁴⁸ There are a number of factors explaining why the Japanese spend so little on defense research. Japan's defense requirements are in such limited quantities that the design, development, test, tooling, and labor rates will guarantee expensive indigenous equipment.⁴⁹ It is much more economical for Japan to purchase certain military technologies from the United States. Another reason for low government defense spending is that Japanese corporations, which internally fund R&D, possess an sizable amount of technology applicable to defense.

However, the Japanese do have capabilities. As early as 1973, Japan began production of an indigenous supersonic aircraft, the T-2 trainer and the F-1 ground support fighter.⁵⁰ Also, the percentage of Japanese contents will increase in its military aircraft built from foreign designs, such as the F-15. Some of domestically manufactured components are wheels, brakes, hydraulics, and electronics. Not surprisingly, these low technology components have the most civilian applications, leading one to believe they were intentionally developed to also be used in civilian airplane production.

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- 48 Kataoka and Myers, p. 59.
 - 49 James Phillips, "Japan: Rebirth of Independent Military Power," Defense and Foreign Affairs, May/Jun. 1989, p. 15.
 - 50 Phillips, p. 15.

3. Cooperation between the American and Japanese MIC

Japan is an overlooked source of military technology for the United States. While most of their defense technology comes from foreign firms, Japan is strengthening its indigenous capabilities. Companies like Tokyo Keiki Co., Mitsubishi Electric Co, Mitsubishi Heavy Industries, and Kawasaki are becoming more involved in many electronic warfare and related technologies.⁵¹ The United States has not recognized the potential which Japanese corporations possess. They have an enormous amount of dual-use technology developed from the high amount of R&D funding. That technology is available under the terms of the November 1983 Exchange of Notes on the Transfer of Japanese Military Technologies. In this agreement, the Japanese government allows the export of military technology only to the United States.⁵²

For the past few years, the U.S. DOD has been sending technical assessment teams to Japan from a number of DOD R&D offices. Ironically, U.S. DOD officials are quick to criticize Japan for not wanting to transfer applicable

- 51 Stephen M. Hardy and Martin Streetly, "Making the East Less Inscrutable," Journal of Electronic Defense, Feb. 1990, p. 36.

- 52 Gregory P. Corning, "U.S.-Japan Security Cooperation in the 1990s," Asian Survey, No. 3 (1989), p. 280.

technologies, at the same time, though, these officials do not adequately identify what technology is desired.⁵³

This framework was tested using three technologies-the KEIKO surface-to-air missile; research related to the Strategic Defense Initiative; and in the development of the FSX support fighter.⁵⁴ The KEIKO project was a milestone of sorts. The missile was successful and became the first military-related technology exported to the United States. Japanese-American joint participation in SDI research began very well, but future cooperation is in doubt because of a possible cutback in U.S. funding of the project. However, the FSX project highlights the potential political pitfalls in joint U.S.-Japan collaboration.

In the late 1980s, Japan had the need for a new fighter to replace aging planes in its inventory. The Japanese believed that no American "off-the-shelf" airplanes could fulfill the role of the new fighter and decided to begin development of their own aircraft. The U.S. DOD asserted that existing American aircraft were the most cost-effective and rapidly available, either through purchases from U.S. companies, or through continuing license production agreements currently in use by the Japanese.

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- 53 Phillips, p.16.
 - 54 Corning, p. 281.

After many discussions, Japan agreed that some form of codevelopment with the United States should be considered. A number of guidelines were established addressing technology transfers, production cooperation, and equitable burden sharing during the development. The greatest concerns surrounded the flight control software, which the United States believed was too valuable to be transferred to Japanese firms. At last, some foundations were being set so Japan and the United States could work together, without reservations, in certain areas of codevelopment. Many felt this cooperation could establish a framework which could be applied to private technological codevelopment as well.⁵⁵

However, the entire program became enmeshed politically in the United States. The breakdown occurred due to a combination of mistrust and corporate infighting which resulted in aggressive Congressional lobbying by companies denied a role in the development. Another contributing factor was a number of misunderstandings between the Commerce Department, the Defense Department, and Congress. Here was an optimal, tightly controlled situation, which could conceivably have produced technologies beneficial to Japan and the United States, while protecting each nation's domestic technology.

- 55 Masaru Kohno, "Japanese Defense Policy Making," Asian Survey, No. 5 (1989), p. 458.

Eventually, in February 1990, Japan-U.S. negotiations for the joint development of the fighter were concluded.⁵⁶ The impasse was broken when the Japanese government offered the main-wing production responsibility to the United States as a dual-use technology, rather than a military application. In doing so, the United States will not have to pay for the technology introduced by Japan. If the technology was considered weapons-related, the United States would of had to compensate Japanese firms for the technology. The United States demand that the Japanese develop their own flight control software, instead of using American software, was another key issue which helped to break the impasse.

Also in 1990, the United States and Japan reached an agreement to cooperate in three technologies likely to be critical to future American weapons systems. The agreement involves technology to make submarines less susceptible to undersea detection, to design target-seeking devices for missiles, and to develop a new type of highly efficient rocket engine that could be incorporated in missile systems.⁵⁷

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- 56 "Japan-U.S. Negotiations for FSX Development Settled," Nihon Kenzai, 22 Feb. 1990, p. 13, as translated in American Embassy, Tokyo, Political Section, Office of Translation Services, 1 Mar. 1990, p. 14.
 - 57 David E. Sanger, "U.S. and Japan to Work Together On Weapons Systems Research," The New York Times, National Edition, 21 Mar. 1990, p. A1.

B. PROBLEMS CONCERNING TECHNOLOGY AND U.S. DEFENSE

As Japanese-American technological cooperation and interdependence grows, it becomes important to recognize developments affecting U.S. national security vis-a-vis defense. While cooperation pools resources and can lead to rapid developments in new technologies, it also increases the amount of influence both nations can exercise upon each other. Considering the emphasis the United States places upon military superiority and security, a number of problems have developed.

One problem is the growing U.S. reliance upon Japanese technological products vital to U.S. defense systems. One example is described in the Defense Science Board Study Panel on Industrial Preparedness. The panel estimated that up to 90 percent of the semiconductors used in U.S. military applications were assembled and tested abroad, primarily in Japan.⁵⁸ The Japanese were also identified in the study as the source of a large percentage of the ceramic packages, lead frames, and high-technology components.

This growing situation of dependence could have severe repercussions should a supply disruption occur between the

⁵⁸ Robert S. Wood, "Conventional Deterrence and the American Industrial Base: Security Challenge for the Nineteen-Nineties," in Business in the Contemporary World, Herbert L. Sawyer, ed. (Lanham: University Press of America, 1988), p. 26.

United States and Japan.⁵⁹ Weapons systems vital to U.S. national security may not have sufficient spare parts and substantial funds would be needed to begin domestic production. A tangential problem would result should U.S. technological dependence upon Japan reach certain levels. Japan may be able to exercise significant leverage directly upon U.S. policy makers.

Another concern revolves around aspects of American technology transfer to Japan. As Japanese companies acquire more U.S. firms engaged in the development and production of basic technologies vital to defense, the United States may lose production capability in those areas. The U.S. government needs to address the problem and respond appropriately. A different problem relating to technology transfer is the fear Japan will pass technologies used in defense applications to nations hostile to the United States and Japan.⁶⁰

1. Technology and the U.S. Defense Industry

At the heart of worldwide competition in armaments is the race in military technology, a race which the United States has consistently held the lead in since the end of World War II. This is especially evident in the breakthrough leaps which the United States made developing nuclear weapons

- 59 Masataka Kosaka, Japan's Choices (London: Pinter Publishers, 1989), p. 81.

- 60 Kosaka, p. 81.

and delivery vehicles after WW II. The essential underlying motive for a domestic weapons program is to expand and strengthen one's own military capabilities; and the main driving force lies in the growing thrust of military technology.⁶¹ Thus, having the lead in technology and its development, especially military technology, is a major asset to any nation's defense-industrial complex.

As American and Japanese technological interdependence and cooperation grow, so does the potential for increasing U.S. reliance upon Japan to supply technologies vital to U.S. military hardware. These products are not limited to military technologies, they include civilian Dual-Use Technologies (DUT).

To identify which technologies are important to ensuring the long-term superiority of U.S. weapon systems, each year the DOD submits a listing of critical technologies to the Senate and House armed services committees. The selection of critical technologies is largely derived from government science and technology projects in research, exploratory development, and advanced technology development. It is not made on the basis of export control of technological expertise, or investment strategies for

⁶¹ Marek Thee, Military Technology, Military Strategy, and the Arms Race (New York: St. Martin's Press, 1986), p. 14.

competition, but identifies which technology is necessary to produce the qualitative superiority of U.S. weapons systems.⁶²

For 1989, 22 technologies were identified as critical:

1. Microelectronic Circuits/Fabrication
2. Preparation of Gallium Arsenide and Other Compound Semiconductors
3. Software Producibility
4. Parallel Computer Architectures
5. Machine Intelligence/Robotics
6. Simulation and Modeling
7. Integrated Optics
8. Fiber Optics
9. Sensitive Radars
10. Passive Sensors
11. Automatic Target Recognition
12. Phased Arrays
13. Data Fusion
14. Signature Control
15. Computational Fluid Dynamics
16. Air-Breathing Propulsion
17. High-Power Microwaves
18. Pulsed Power

⁶² Julian Lake, "Critical Technology," Defense Science, Jul. 1989, p. 17-22.

19. Hypervelocity Projectiles
20. High-Temperature/High-Strength/Lightweight
Composite Materials
21. Superconductivity
22. Biotechnology Material/Processing.

Of this listing, Japan holds the lead in semiconductors, robotics, superconductivity, biotechnology, and photonics, which is the use of light and electronics to perform functions now performed by electronic devices.⁶³ This forces the United States to rely upon Japan to supply a large portion of the total U.S. manufacturing consumption of those particular technology.

From the list, semiconductors provide one of the best known examples of a product where Japan's production and development has surpassed the United States'. As computer chips integral to any advanced technology such as computers, telecommunications, machine tools, robotics, and avionics, semiconductors are widely used in military applications. Therefore the significant decline in the U.S. domestic semiconductor industry could have a severe impact upon national security should its supply from Japan be disrupted. Specific types of weapons or weapons systems relying upon semiconductors are: nuclear missiles, precision-guided munitions, cruise missiles, surveillance and early warning

⁶³ Martin Tolchin, "Pentagon Tells Where It Lags in Weapons," The New York Times, National Edition, 22 Mar. 1990, p. D10.

systems, communications, aircraft, and an assortment of conventional weaponry.⁶⁴

A question intrinsic to this issue is determining to what extent the United States relies upon Japan's supply of semiconductors. The U.S. share in the market has dropped considerably, from 60 percent in 1975, to less than 50 percent in 1985 and below 40 percent in 1988.⁶⁵ In the key random access memory chip, or DRAM, the U.S. share has plummeted from 100 percent to less than five percent. All major U.S. companies, including AT&T, but excluding IBM, are now dependent upon Japan for a supply of semiconductors.⁶⁶

In the worldwide market for DRAM's, 50.5 percent are used in PC's/office automation, 20 percent in mainframe or large computers, 10.3 percent in telecommunications, 8.6 percent in consumer goods, 7.1 percent in industrial manufacturing, and 3.5 percent in military applications.⁶⁷ While the United States still has

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- 64 Daniel I. Okimoto et al, Competitive Edge (Stanford: University Press, 1984), p. 3.
 - 65 Richard C. Gross, "The Pentagon and ICs," Defense Science and Engineering, Sep. 1988, p. 7.
 - 66 Prestowicz, p. 69.
 - 67 Mel Mandell, "U.S. Chips are Down," High Technology Business, Mar. 1989, p. 12.

production capabilities, a disruption of the Japanese supply of semiconductors could decrease the functional readiness of U.S. defense weapons systems.

The semiconductor industry is indicative in general of the Japanese ascendancy within the microelectronic industry. The best example of this superiority is reflected in consumer electronics, where Japan supplies the United States with all of its VCRs (considered semiconductor "hogs"), and almost all of its TVs and audio equipment.

The Japanese have also come to dominate in the machine tool industry. The importance of this industry has been evident in every war the United States has fought in this century.⁶⁸ In the First World War it was given an "A" priority, along with battleships and submarines. The first item the United States embargoed from Japan during WW II was machine tools. During WW II, the lack of machine tools, hence production of weapons of war, led to a slow production causing needless deaths on the battlefields in some cases.⁶⁹ In 1955, Congress passed a resolution stating "We must not depend on foreign factories for our industrial mobilization base."

However, through a series of industrial development programs and initiatives, Japan concentrated on building

- 68 Prestowicz, p. 218.

- 69 Harrison M. Holland, Managing Defense: Japan's Dilemma (Lanham: University Press of America, 1988), p. 102.

machine tools and by 1986 had become the largest producer of machine tools, out producing the United States by three-to-one. Many numerically controlled tool manufacturers in the United States had become dependent upon the Japanese for their controls and thus for the technology of their equipment. The armed forces, which thirty years earlier had insisted on not being dependent upon foreign machine tools, has largely become so.⁷⁰

While the United States relies greatly upon Japan to supply microelectronics and machine tools, there may also be encroachments upon U.S. supremacy in other areas. One of those areas is information technology, which is driving economic and military transformations likely to prove as fundamental as any past industrial revolution.⁷¹ This field includes such areas as communications, computers, control systems, microelectronics and software. Indeed, the implications for military applications in information technology are great.

Military operations have come to rely heavily on information systems infrastructure for C3I, surveillance, and management. Specific applications are such things as the terrain-following guidance systems of American cruise missiles, the increasing accuracy of intercontinental

- 70 Prestowicz, p. 222.

- 71 Ferguson, p. 130.

ballistic missiles and of satellite-based verification and early warning systems, the survivability of command and control capabilities, and the American advantage in anti-submarine warfare.⁷² As the Cold War ends and the forward deployment of U.S. troops decreases, the military will be forced to use less hardware-oriented equipment such as tanks, rifles and men, in favor of devices leaning more to countering and monitoring general threats throughout the world.

a. Supply Disruptions

It is clear that until the issue of growing U.S. dependence upon Japanese technology for military applications is addressed, there is a possibility that military readiness could be hampered should supplies to the United States be disrupted. Fortunately, it is not likely that the supply of Japanese technology will be disrupted due to a dispute within the bilateral relationship. At the present time, the trade relationship between Japan and the United States is extremely strong. In April 1990, both nations concluded trade discussions in which a number of sensitive issues were resolved, and trade is proceeding at record levels.⁷³ Given the levels of interdependence in the relationship, and the continuing high level of U.S. military support to Japan,

- 72 Ferguson, p. 132.

- 73 Clayton Jones, "U.S.-Japan Trade Strain Lessened - For Now," Christian Science Monitor, 30 Apr. 1990, p. 6.

it is unlikely Japan would embargo technology needed for U.S. military readiness in the near future.

A different situation would emerge, though, in the event world hostilities erupt and intra-Pacific trade be disrupted through hostile actions. A total, unanticipated cut off would stop some weapons production for at least weeks, and possibly up to more than a year.⁷⁴ The principal assumption is that a foreign-source cutoff would occur only in the context of an actual, unanticipated, imminent large-scale conventional war. Then, a second implication is that even in the absence of a stockpile, or surge production capacity, it would take no more than 15 months for foreign-sourced components to be available from domestic producers.⁷⁵ As mentioned in the semiconductor and machine tool discussions, the United States still does retain some domestic production of the basic product. Assuming in wartime that military procurement has priority over consumer needs, the government would focus these industries to direct production to meet military demands. Finally, references to a disruption assume that it is unanticipated. If industry knew it would have some type of

- 74 Martin C. Libicki, Industrial Strength Defense (Washington, D.C.: National Defense University, 1988), p. 71.

- 75 Libicki, p. 87.

warning, it could stockpile supplies or use less vulnerable means of transcontinental transportation, such as air, rather than sea.

Relating specifically to Japan, our dependence upon them for high technology does not appear as vulnerable as other dependencies, such as raw materials or energy. Japan is a staunch ally, not as subject to internal disruptions as Third World countries, and located in a region not particularly susceptible to "brush-fire" conflicts. The only serious potential threat would come from the Soviet Union's power projection capability in the region. However, in light of 1989-90 world events and the changing nature of the bipolar world, it is not probable that a situation would develop where Japan would be totally isolated from the United States.

b. Potential Japanese Political Leverage

Another growing area of concern is the potential for Japan to use technology as a political device to manipulate Washington. If a new technical capability or a component vital to a weapon system is withheld by Japan, it could leave the United States unable to use this new capability or weapon system until Japan decides to export it. Logically, the more the United States relies upon Japan for critical items, the greater the possibilities exist for Japan to exert influence.

The probability that Japan would use the high-profile tactic of withholding critical technologies from its security partner is very low. The United States still provides the bulk of Japan's external defense and its global security umbrella protects Japanese worldwide trade interests. The Japanese would not likely risk a rupture in relations with the United States. The United States would certainly retaliate, possibly by refusing to protect any Japanese interest outside Japan. The Japanese would risk losing the U.S. protection afforded their oil lifeline from the Persian Gulf region. A political confrontation of this magnitude between Japan and the United States would not serve either nation's interest.

Another example of Japanese political leverage was cited by the commander of the U.S. Seventh Fleet, based in Yokosuka, Japan. He said the United States should not press Japan to assume all costs of forces stationed in Japan because that could give Japan too much say over U.S. operations in the region.⁷⁶ The fear is that if Japan pays a large share of the costs, and doesn't agree with the U.S. course of action elsewhere in the world, there may be some inclination to suggest that the force which Japan is paying for should stay closer to Japan.

- 76 Fred Hiatt, "7th Fleet Commander Seeks to Limit Japan's Paying Costs of U.S. Troops," The New York Times, National Edition, 8 Feb. 1990, p. A32.

2. Japanese Technology Transfer

Technology transfer is a major concern surrounding Japanese-American cooperation in military research and production, and the Japanese acquisition of American high-tech firms. As Japan gains access to new technologies possessing military applications, the possibility increases that the Japanese could either wittingly or unwittingly pass technologies to third party nations. These third nations could apply the acquired technologies to their military with minimal development costs, thereby diminishing U.S. (and Japanese) military superiority. Therefore, the United States must continue to identify particular technology transfer issues which pose a national security threat and develop a policy framework to control the problem.

One issue which the U.S. government has addressed is the Japanese acquisition of certain high technology firms. These firms are ones which if sold to the Japanese, would leave the United States almost wholly dependent upon Japan for specific high-tech components. In 1987, an incident surrounding semiconductors encouraged the U.S. government to subsequently pass legislation addressing the acquisition issue.

The Japanese electronic firm, Fujitsu, made a multi-million dollar bid to purchase Fairchild Semiconductor. At a public hearing held before the House Committee on Armed Services, then Secretary of Defense Weinberger stated that

the United States needed to assure its capacity to utilize domestically produced semiconductors.⁷⁷ His comments stirred debate within Congress on the subject. While no official action was taken to block Fujitsu, well-publicized government criticism of the possible sale led Fujitsu to withdraw its bid.⁷⁸ The fear generated by this situation encouraged Congress to pass legislation in 1988 authorizing the president to block certain foreign acquisitions if they threaten national security.⁷⁹

Following the Fujitsu incident, Japanese high-tech firms began to take a more prudent attitude because they felt a concern that the United States might decouple Japan technologically. Shortly thereafter, the Toshiba case was exposed. Toshiba Machine Ltd., violated Coordinating Committee for Multilateral Export Controls (COCOM) export regulations by illegally shipping machine tool technologies to the Soviet Union which enabled the Soviets to upgrade the quality of their submarine propellers.⁸⁰ This resulted in the U.S. government imposing sanctions against Toshiba.

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- 77 Takehiko Yamamoto, "Technological Innovation and Industrial Security: Emerging Frictions between Japan and the U.S.," Pacific Focus, No. 2 (1988), p. 45.
 - 78 Thomas Omestad, "Selling off America," Foreign Policy, No. 76 (1989), p. 130.
 - 79 Omestad, p. 129-130.
 - 80 Yamamoto, p. 52.

Incidents such as these two have added to U.S. suspicions that Japan can not be trusted in certain ways with having dominance in defense-related industries and some type of controls must be in place. If the United States decides to relax some restrictions on the transfer and use of DUT, it could fully degrade the advantages the United States holds generally in advanced technologies. The United States must keep control over technologies it transfers to Japan because too much easing of restrictions could damage the United States' overall economic well-being.

Interestingly enough, Japanese business reaction to recent overtures by COCOM to relax its controls has been mixed.⁸¹ Three export technologies are being considered for review: communication equipment; computers; and machine tools. Japanese communication equipment makers are very enthusiastic as they believe there will be great export growth. It is felt that communication equipment will be indispensable for future economic reforms and restructuring in Eastern Europe. Ironically, machine tool and semiconductor manufacturers are being very cautious and are expressing a "wait and see" attitude before launching into new ventures.

The business reaction is largely tempered due to past related United States actions in this area. The machine tool

⁸¹ "COCOM Embargo Relaxation, Japanese Business Reactions," The Japan Economic Review, No. 4 (1990), p. 11.

industry still remembers the 1987 Toshiba Machine Tool incident and subsequent U.S. response. The semiconductor and computer industries are still waiting cautiously. This is due to past COCOM rules controlling the exports of high-tech electronic products, especially smaller computers, to China, which were relaxed only after major American computer makers managed to get such COCOM rules released by lobbying with Washington.⁸²

Thus, while problems with Japanese technology transfer appear from time to time, the sometimes harsh U.S. reaction has left an indelible mark on the thinking of Japanese business. It is not certain, however, how much longer the United States can simply use the "big stick" when dealing with Japanese businesses who violate technology transfer laws or undermine U.S. national security objectives.

C. TECHNOLOGY AND ECONOMICS

In recent years, the Japanese have become the prime competitors to many U.S. high technology firms.⁸³ The United States had never been contested in technological superiority, now it appears that the sluggish introduction of new technologies and the growing technological capacities of

- 82 "COCOM Embargo Relaxation, Japanese Business Reactions," p. 11.

- 83 David E. Sanger, "Japanese Are Pulling Far Ahead in Computer Chip Research," The New York Times, National Edition, 21 Feb. 1990, p. A1.

other nations have combined to diminish the U.S. lead. Japan has a clear lead in a number of new technologies that will define global competitiveness into the 1990s. These include large-scale computer processors, magnetic disk storage devices, printers, semiconductor production equipment, biotechnological fermentation processes, and key components of fiber optic technology such as light sources.⁸⁴ Historically, American economic success has relied upon the technological advantage held by U.S. industries.

While it appears that the United States' technological advantage is decreasing, a broader concern arises: What are the implications of decreasing U.S. international economic competitiveness? One consequence could be a decrease in overall national security. The transition to a multipolar world and the increasing utility of economic power is forcing changes within the international system. There is a growing need for the United States to maintain symmetry between its economic and security component of foreign policy.⁸⁵ Past

- 84 Pat Choate and Juyne Linger in Yochelson, Keeping Pace (Cambridge: Bailenger Publishing Company, 1989), p. 20.

- 85 Donald C. Hellmann, "The Imperatives for Reciprocity and Symmetry in U.S.-Japanese Economic and Defense Relations," in John H. Makin and Donald C. Hellmann, eds., Sharing World Leadership (Washington, D.C.: American Enterprise Institute for Public Policy Research, 1989), p. 259.

United States national security policy has been based upon military dimensions, while economic factors have been taken for granted.

Indeed, considering the increasing economic challenges from Japan, concentration must be focused upon America's industrial sector as the heart of national security. The United States needs to meld economic and military policies to form a broader definition of security. A country will not be able to exert influence by simply floating a "Great White Fleet" around the world as Teddy Roosevelt did, but will have to use its economic might as leverage to place pressure on interdependent countries. (Of course, it is to one's advantage to retain a strong military to support worldwide economic initiatives should there be military confrontations.)

Within this broader security-related context, Government attention is increasingly focusing upon U.S. economic competitiveness vis-a-vis Japan. During 1989, the United States added Japan to its list of "unfair" traders and threatened to impose sanctions under the "Super 301" clause of the 1988 Omnibus Trade Act. In response to these threats, new concessions were made by the Japanese which may help to ease back the growing tensions developing between the two nations.⁸⁶ However, the government record on dictating

⁸⁶ Jones, p. 6.

economic policy remains poor. The U.S.'s economic doctrine (free trade) does not assign greater significance to one industry over another as its military doctrine does.⁸⁷ Unfortunately there is a very often a disconnect between government economic policy and national security, as highlighted in both the semiconductor and machine tool examples.

1. Problems with the U.S. Technology Industry

The loss of U.S. dominance to the Japanese in certain high-tech industries is one indicator that there could be a potential loss of international competitiveness. However, industrial success can still be maintained. The United States still retains the world lead in two distinct areas-technology in general and agricultural production. The United States needs to identify its weaknesses, then have industry and government cooperate to find feasible solutions.

U.S. economic progress has long been grounded in its capacity to innovate and apply new technologies. High tech industries provide 6.4 percent of all U.S. jobs, employ 25 percent of scientific workers, and constitute 43 percent of the total value of U.S. exports.⁸⁸ Advances in

- 87 Prestowicz, p. 242.

- 88 Choate and Linger, p. 19.

technologies are critical to U.S. competitiveness, boosting productivity through lower production costs while delivering higher quality goods and services.

However, technology has become more and more of a global resource, being transferred through a variety of ways; no longer is one country able to hold sole possession of a technology. Japan has used its close relations with the United States to gain quick access to developing U.S. technologies, then apply them to the production of various goods. The Japanese introduced the new products rapidly into the world market to compete against similar U.S. goods. This type of activity has had a major impact upon U.S. economic competitiveness.

Introduction of new technologies into markets gives a competitive edge to businesses in the United States, however many corporations practice techniques which are self-defeating in the face of the competition. In the United States, many companies intentionally slow the deployment of new technologies until the consumer is tired of the existing product.⁸⁹ At the present time, however, many Japanese corporations are introducing new products as quickly as possible, sometimes with little regard for covering overhead costs. This allows the company to stake out a share of the market, potentially driving a competitor with outdated

- 89 Robert Sobel, IBM vs. Japan (New York: Stein and Day, 1986), p. 153.

technology out of the market. Then the aggressive company is able to set the standards for the market, rather than contending for a share in a larger field of competitors.

Delaying the introduction of new technologies to regain capital happened because U.S. corporations have tended to aim at short-term profits rather than long term gains. The goal to show profits for each financial quarter leads a company to invest monies which return an immediate improvement upon its earnings.⁹⁰ Thus, instead of investing in new plants and equipment, assets are often simply manipulated to garner larger profits. The increased earnings help guard against hostile takeovers and please stockholders.

An example of how Japanese and American companies differ in investments deals with automation. Robots would significantly increase productivity, easing the current difficulties confronting some high-tech industries. This would help maintain U.S. technological advantage, but companies have not invested in them. The technologies needed to automate most manufacturing work in the United States exist, but have not been integrated into comprehensive

- 90 Richard Rosecrance, America's Economic Resurgence (New York: Harper and Row, 1990), p. 78-81.

applications in most industries as the Japanese have.⁹¹ These automated processes have been typically introduced piecemeal because the software and process engineering needed to link them have not been available. As a result, the United States has lagged behind Japan in introducing automation techniques. In 1980, the United States possessed 15 percent of the world's robots, but in 1990 only possessed less than ten percent.⁹²

Low domestic savings rates and a high federal deficit add to investment problems. As the government is forced to borrow against domestic capital, interest rates for industrial investment are driven higher because the pool of savings dollars shrinks substantially. American household savings rarely exceeds 3-5 percent of GNP, while the Japanese save about 18 percent of GNP.⁹³ Ironically, the Japanese have a high disincentive to save because of their tax system and historical factors. However, Japanese thrift is based on remembering hard times in the past and the uncertainty of the future, thus they save for their old age, even though it is

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- 91 Yasusuke Murakami, "Technology in Transition: Two Perspectives on Industrial Policy," in Hugh Patrick, ed., Japan's High Technology Industries (Seattle: University of Washington Press, 1986), p. 220.
 - 92 Choate and Linger, p. 23.
 - 93 Rosecrance, p. 86-87.

not to their financial advantage. As the Japanese population ages, they should begin to spend their savings, yet they have not started to do so.

The government has added to the confusion of introducing new technologies through domestic laws and administrative practices. Unlike their Japanese opponents, U.S. companies must obtain approval from the government pertaining to which technologies they are permitted to export. This slow, confusing, and inefficient process impedes U.S. exports of goods and services as well as technology transfers between U.S. companies and their own subsidiaries.⁹⁴

Another weakness of the U.S. government is not recognizing the important effects defense spending could have upon the U.S. economic sector. Pentagon programs which have massive effects upon American R&D effort and lead to the development of new technologies are never reviewed by economic or trade-policy groups in terms of their overall effect upon the U.S. economy.⁹⁵ Japan's government, on

- 94 The Electronics Panel, Committee on Technology and International Economic and Trade Issues of the Office of the Foreign Secretary, National Academy of Engineers, The Competitive Status of the U.S. Electronics Industry (Washington, D.C.: National Academy Press, 1984), p. 33-35.

- 95 Michael Borrus, Competing for Control (Cambridge: Ballenger Publishing Company, 1988), p. 252-254.

the other hand, funds monies for R&D which go directly into Japan's civilian economic sector, hence improving the overall competitiveness of the industrial sector.⁹⁶

2. Impact of U.S. Military-Industrial Spending

Considering the amount of government money poured into the U.S. Department of Defense for research and development of new technologies, it is necessary to explore the impact these expenditures have upon the general economy. Unlike monies funding research into new consumer products, defense spending does not immediately return many direct benefits into the economy. Critics call it "rat hole" spending, while supporters claim the expenditures are necessary to support national security interests. If the United States is to increase its economic health, one needs to explore the effects which defense spending has upon overall competitiveness.

a. Trends Since the Korean War

Defense spending has become an increasing priority since the end of the Korean War. Before that time, the United States maintained large standing armies only during wartime and quickly disarmed afterwards. Following the Korean War, the United States was faced with the prospect of countering an enemy who had the ability to project its military on a global scale. This forced the United States to

⁹⁶ Robert Bruce, Telecommunications: A Need for a Policy Framework, in Yochelson, p. 54-57.

keep a significant peacetime military capability to counter to any serious threat, costing roughly \$200 billion per year (in current dollars) from the 1950s to the early 1980s.⁹⁷

Fortunately, beginning in the 1950s, the United States could easily support large defense spending as its economy was growing and other government outlays were low. However, by the 1970s, other non-defense federal spending rose dramatically to where it consumed nearly 50 percent of the federal budget, while defense represented about 25 percent.⁹⁸ Since many of these non-defense expenditures went for support programs to the public, defense spending came under more scrutiny as an area to save government expenditures.

b. "Guns vs. Butter"

One of the dominant issues directly related to government defense spending has been the debate of whether to expend monies for weapons and defense or upon the needs of the people. While this argument will not be addressed in this discussion, it highlights the significant impact

- 97 Jacques Gansler, Affording Defense (Cambridge: MIT Press, 1989), p. 79-80.

- 98 Gansler, p. 79.

military spending has upon the economy.⁹⁹ For example, a defense budget of \$300 billion supports, directly and indirectly, between seven and 8.5 million jobs.¹⁰⁰

The large amount of defense spending by the United States has continually encouraged a debate on the merits of these expenditures. One side expresses the belief that military spending has encouraged overall industrial growth, thereby helping America to retain its international competitiveness. People opposed to military R&D think that the military and the Reagan/Bush Administrations have exaggerated the nation's defense needs and that selfish interests are overriding objectivity and common sense in the allocation of resources for national security. They want greater emphasis on education and on wide-ranging pure research that holds promise for major benefits to civilization.¹⁰¹

If considered an industrial policy, defense spending is inefficient, yet it provides timely financial and

- 99 For discussion concerning "guns vs. butter," consult G. Adams, "Defense Spending and the Economy," Center on Budget and Policy Priorities, Washington, D.C., Jul. 1987; Lloyd Dumas, "Innovation Under Siege," in The Political Economy of Arms Reduction, Symposium 1980, American Association for the Advancement of Science, 1982; Jacque Gansler, Affording Defense (Cambridge: MIT Press, 1989).

- 100 Gansler, p. 82.

- 101 Simon Ramo, "Memoirs of an ICBM Pioneer," Fortune, 25 Apr. 1988, p. 129.

technical help to companies struggling to be more competitive.¹⁰² Defense technological spending has helped strengthen some of the United States' most potent international competitors, such as aerospace, computers, scientific instruments, and communications equipment. Technical spinoffs, like the jet engine and computer were, still provide powerful incentives for companies to continue defense-sponsored research.

Critics of the heavy government R&D allocations to the defense industry believe that any other type of R&D program would likely yield greater returns on the investment.¹⁰³ If the money invested in defense was allocated to a comparable civilian corporation, 25 percent more jobs would be created. Furthermore, many scientists who would benefit consumer industries are involved in the U.S. defense establishment. Defense R&D has absorbed between one-third and one-half of all scientific talent since the beginning of the Cold War.

While the United States has remained on the cutting edge of defense technology, Japan has been able to concentrate its resources on commercial enterprises.¹⁰⁴ Thus, while U.S. scientists design weapons which will defend

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- 102 Bruce Steinburg, "The Military Boost to Industry," Fortune, 20 Apr. 1984, p. 12.
 - 103 Chacko, p. 32-40.
 - 104 Chacko, p. 40.

the Japanese, Japan's scientists and engineers are building consumer products which compete directly with the U.S. domestic economy.

3. Japanese Trade Practices affecting U.S.

Competitiveness

Some policies of the U.S. technology industry, coupled with inefficient government military spending, harm U.S. technological development and international trade competitiveness. However, certain Japanese trade practices and conduct have helped add to the problems facing American technology companies. The Japanese can not be blamed for causing current U.S. economic difficulties, but unfair Japanese trade policies must be recognized and corrected to ensure fairness in U.S.-Japan economic cooperation.

There is little doubt Japan's trade with the United States contains impediments. Edson W. Spencer, chairman of the Commission on U.S.-Japan Relations for the Twenty-First Century, points out an obvious signal. He says that even after an approximately 50 percent devaluation of the dollar since 1985, the U.S. trade deficit with Japan has not been reduced to the levels at which the deficits (or surpluses) with the European Community and Canada now stand.¹⁰⁵ After a devaluation this dramatic, the Japanese should be eager to purchase cheaper American goods. However, the trade

¹⁰⁵ Edson W. Spencer, "Japan as Competitor," Foreign Policy, No. 78 (1990), p. 153.

deficit between Japan and the United States was reduced only slightly. This situation leads one to believe some prejudice other than cost advantage exists, possibly cultural or structural.

a. The Semiconductor Industry 106

Japanese and American competition in the semiconductor industry provides an outstanding example of Japanese trade practices directed against a specific U.S. technological industry. There has been great change within industry. At the end of 1979, U.S. semiconductor producers held a 60 percent share of the world market, while Japanese producers held only 27 percent.¹⁰⁷ At present, U.S. chipmakers supply about 15 percent of the worlds' semiconductors, while the Japanese supply 77 percent.¹⁰⁸

The fundamental understanding of semiconductors was developed in the late 1940's and early 1950's through a

- 106 Telephone interview with Jeff Metzger, Senior Computer Design Engineer for Digital Equipment Corporation, Maynard MA, 23 Nov. 1990. According to Metzger, various terms are used interchangeably when discussing the semiconductor industry. The two most frequently used words are "semiconductor" and "DRAM," or Dynamic Random Access Memory Chip. Analogous to housebuilding, the semiconductor is the material used to make a computer chip, or the wood used in building a house. The DRAM is a small chip containing microscopic circuits which process and transfer information, or a house built with a semiconductor frame. In 1990, the Dynamic Random Access Memory Chip (DRAM) was the key element of the semiconductor industry.

- 107 Gene Gregory, Japanese Electronics Technology (New York: John Wiley and Sons, 1986), p. 195-197.

- 108 Mandell, p. 12.

series of inventions at the Bell Laboratories. A large market for semiconductors appeared as this technology was quickly applied to the telecommunications and infant computer industries. As a result, cost was decreased and volume output increased, both at rapid rates.¹⁰⁹

As more engineers and entrepreneurs applied their knowledge and business skills to the U.S. semiconductor industry, rapid developments took place. By 1971, Intel Corporation had invented the microprocessor, or the computer chip, enabling a room-sized computer to be placed upon a silicon chip the size of a fingernail.

Fearing foreign domination, Japan's government recognized the need to assist its computer industry in competing against the United States. There was no question that by the early 1970's, the United States was the dominant power in the computer and semiconductor industry. Thus the Japanese targeted International Business Machines (IBM), the leading U.S. computer corporation, as the company to compete against.

According to Clyde Prestowicz, a former U.S. Commerce official, Japan's Ministry of International Trade and Industry (MITI) took a number of steps to allow Japanese

- 109 Unenohara et al, "Background," in Daniel I. Okimoto et al, eds, Competitive Edge (Stanford: Stanford University Press, 1984), p. 9-12.

computer firms to compete directly against IBM.¹¹⁰ The first step was to raise Japanese computer tariffs and refuse IBM production permits in Japan. IBM had to license its basic patents to fifteen Japanese companies in order to manufacture in Japan. This would easily enable Japanese firms to acquire basic computer technology. IBM was virtually handcuffed if it wished to do business within Japan.

When Texas Instruments (TI) applied for permission to produce semiconductors in Japan, it received restraints similar to IBM's. However, Japanese companies had been infringing upon TI patents, and TI threatened to file a suit barring those Japanese companies from entering their product in the U.S. market. Japan's government agreed to let TI manufacture in Japan, provided it would not take larger than a ten percent share of the Japanese domestic market.¹¹¹

As American companies were refused to operate freely inside Japan, MITI directed resources to Japanese companies involved in computer and semiconductor production. Capital was funneled to selected computer companies, while computer-using Japanese firms were pressured to purchase only Japanese-made computers.

- 110 Prestowicz, p. 34-39.

- 111 Prestowicz, p. 35.

The American government's support for the U.S. semiconductor industry was very different. Confident in the supremacy of U.S. firms and fixated on defense security matters, large-scale support was directed on a specific end product, such as a missile system or a communications system.¹¹² Thus, basic technologies did not receive direct government support and semiconductor development focused upon specific defense applications, rather than the burgeoning consumer industry.

To complete the goal of effectively competing with American firms, the Japanese resorted to the illegal practice of dumping semiconductors upon the U.S. market. By cutting prices below cost, the Japanese were able to gain a market share in the United States as American buyers bought lower priced Japanese goods. Since the Japanese firms were financially supported by their government, they could withstand profit losses. They realized that dumping would allow them to drive American competitors out of the market. U.S. firms were not supported by the U.S. government. Once in control of the U.S. market, the vast volume sales would begin to cover losses and bring down Japanese overhead costs, thus generating good profits.

The final result is the current state of the U.S. semiconductor industry. From supplying 60 percent of all

- 112 Uenohara et al., p. 10-11.

semiconductors in 1979 to 15 percent today, while the Japanese have a 77 percent hold upon the market. Instead of producing semiconductors which can be applied to vast consumer markets such as VCRs and TVs, U.S. firms now produce semiconductors which are designed to meet specific needs of large high technology firms.¹¹³

b. Japanese Access to U.S. Technology

One of reasons Japan's semiconductor industry became very successful was the ease which it could acquire developing American technology. The openness of American society, its government, education system, and businesses, allowed the Japanese access to a wide variety of technological information. Japan has been extremely aggressive at penetrating the U.S. technology research base, while at the same time limiting the ability of American scientists and industry to secure information from Japanese sources.

As trading nations compete, access to the basic research that underpins further technological advance becomes increasingly important.¹¹⁴ More companies can work to develop advanced technologies and products, thereby increasing the number of competitors and fueling new research and development.

- 113 Interview with Metzger.

- 114 Choate and Linger, p. 26.

Japanese firms have virtually unlimited access to technological information in the United States. The Japanese are the largest foreign buyers of technical and scientific information disseminated by the U.S. government. They also have been extremely aggressive in establishing working alliances with U.S. universities engaged in technological research.

Massachusetts Institute of Technology (MIT) is a good example of how the Japanese have penetrated American universities. The Japanese have endowed nine chairs at MIT at \$1 million a piece, while 45 Japanese companies have paid \$30,000 to have primary access to MIT research. Japanese money has become so important to MIT that the university now has an assistant director for Japanese gifts, as well as a liaison office in Tokyo.¹¹⁵ Therefore, by using the powerful tool of money, the Japanese have been able gain access to advanced research at one of America's most prestigious schools.

While Japanese access to American research is not inherently bad, concern arises because the United States is not allowed reciprocal treatment in Japan. Two factors explain the poor Japanese treatment of U.S. scholars and firms. Unlike the United States, most of Japan's research is conducted in industrial research consortiums, not

- 115 Choate and Linger, p. 28.

universities. Industrial firms do not need monetary contributions as universities do, and certainly have no incentive to allow competing firms access to basic research. Secondly, Japanese universities have been closed to U.S. scientists. One American was teaching at a Japanese school in 1985, only after the Japanese Education Ministry changed a century-old law prohibiting foreigners from teaching in a Japanese school.¹¹⁶

Japanese firms have also used U.S. intellectual property rights (IPR) to their advantage. IPR --patents, trademarks, and copyrights-- are an important incentive for corporations to invest substantial resources in the development and production of new technologies. Companies can feel safe in the knowledge that they have recourse against potential infringements upon their patent rights.¹¹⁷ However, if a product is to be sold in a foreign country, the foreign country can have significant influence upon the property rights.

The Japanese have used an interesting tactic which allows Japanese firms to acquire U.S. technology. The government decides which technologies are important for future growth in the Japanese high technology industry. When

- 116 Choate and Linger, p. 30.

- 117 Marjory E. Searing, "Working for Strong Intellectual Property Protection: A U.S. Priority," Business America, 25 Sep. 1989, p. 2.

a United States firm wants to sell that technology in Japan it petitions for a copyright or patent. The Japanese government will announce they are removing that technology from the protection of its copyrights laws. Thus, the American firm is forced to enter into a licensing agreement with a Japanese firm in order to protect the U.S. technology. This situation gives the Japanese company access to the U.S. technology while spending little money in its development.118

Losses to American firms from IPR violations has been staggering. The U.S. copyright industries calculate they lose \$1.3 billion annually in sales. U.S. software developers estimate that they lose \$500 million annually just from the piracy of microcomputer software.119 These losses can harm the competitiveness of U.S. firms. Since many product lines are expensive to research and develop, yet are inexpensive to produce, U.S. firms bear the brunt of expense on R&D, while Japanese firms can make substantial profits through production.

- 118 Searing, p. 3.

- 119 Dana Williamson, "Addressing Inadequate Intellectual Property Protection in the Uruguay Round," Business America, 25 Sep. 1990, p. 4.

4. U.S. Memories

The situation surrounding the demise of the U.S. DRAM consortium, U.S. Memories, highlights the major differences between American and Japanese high technology manufacturers. It demonstrates how U.S. firms will not cooperate with each other and their government in the manner which Japanese firms do. Also, it shows that the Japanese have the ability to act in an OPEC-like high technology cartel if they so choose.

U.S. Memories was proposed by seven American semiconductor and computer manufacturers citing the critical need for domestic production of computer memory chips. The goal was to produce advanced computer memory chips on schedule and in huge volumes, at low cost and with minimal waste.¹²⁰ IBM, Digital, Advanced Micro Devices, Hewlett-Packard, Intel, LSI Logic, and National Semiconductor felt that American companies were becoming too dependent upon Japan and could become vulnerable to unfavorable Japanese influence. The companies believed it was necessary for major U.S. technology firms to have a domestic source of computer chips. The impetus for the decision to cooperate was a 1988 Japanese DRAM shortage which raised DRAM prices for American firms and weakened some computer makers' earnings.¹²¹

- 120 Thomas C. Haynes, "'Paul Revere' of Chips Sets Consortium's Goals," New York Times, National Edition, 26 Jun. 1989, p. D4.

- 121 Lawrence M. Fisher, "7 Makers Plan Chip Venture," New York Times, National Edition, 22 Jun. 1989, p. D1.

The seven companies surmised they needed a \$1 billion budget to be successful. \$500 million would be in equity provided by these companies and other companies which would join in the future. The remaining funds would be generated from debt financing and other sources. The Federal Government was not going to be asked to contribute directly, but only asked to grant anti-trust clearance and perhaps to guarantee some of the loans.¹²²

The ambitious program began with a number of obstacles. Curiously, the Japanese chip shortage which existed in 1988 had disappeared by 1989. By the time U.S. Memories was announced in June, there was a glut of chips on the market and the price had dramatically decreased for American purchasers. Within a few months, many U.S. technology firms declined to become involved. Cypress Semiconductor, Sun Microsystems, Apple Computer, Tandy, and Unisys all stated they would not join in the chip venture.¹²³ The opponents felt the consortium would imperil smaller entrepreneurial chip companies to bolster a few large players. Many of the smaller companies had also

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- 122 Andrew Pollack, "Big Goals and Hurdles for New Chip Maker," New York Times, National Edition, 12 Jul. 1989, p. D1.
 - 123 Fisher, "Cypress Opposes U.S. Memories Concept," New York Times, National Edition, 28 Sep. 1989, p. D2.

entered into long-term agreements with enough chip suppliers to insure adequate supplies.124

Because of the reluctance of many smaller U.S. companies to join in the program, U.S. Memories was cancelled in January 1990. The president of the cooperative, Sanford L. Kane, was extremely critical of the computer industry for its shortsightedness and a lack of cooperation. He pointed out that while the Japanese worked as a team and kept winning, American firms were being driven out of business one by one.125

From a short-term viewpoint, the falling prices made U.S. Memories appear unnecessary. The venture was conceived when memory-chip supplies were scarce, and the high price meant that investors would recover their investment quickly.126

The demise of the consortium may lead to future problems. There is a plentiful supply of chips at the moment and U.S. firms have solid supply commitments from Japanese manufacturers. Even though it is not likely Japan will cut off the chip supply, it is possible Japanese producers could

- 124 Pollack, "Sun and Unisys Will Not Join Chip Venture," New York Times, National Edition, 16 Nov. 1989, p. D1.

- 125 Pollack, "Joint Venture for Memory Chips Officially Declared Dead," New York Times, National Edition, 16 Jan. 1990, p. D2.

- 126 David E. Sanger, "Contrasts on Chips," New York Times, National Edition, 18 Jan. 1990, p. D1.

delay shipping components to the U.S. market. This would allow Japanese firms to control some of the pace of American technology. Many of the Japanese chip suppliers are direct competitors of the U.S. firm they are supplying.

An ironic twist happened hours after the failure of U.S. Memories was official. One by one, Japan's largest chip makers announced plans to cut production of chips. They claimed the supply was too large and unless production was cut, prices would continue to fall dramatically.¹²⁷ This cartel-like action should indicate that the Japanese could choose to exercise significant influence upon their U.S. customers.

- 127 Sanger, p. D1.

IV. THE IMPACT UPON THE UNITED STATES, JAPAN, AND THEIR STRATEGIC RELATIONSHIP

Technology plays a prominent role in U.S.-Japanese relations. Arguably, Japanese technology is becoming more important to U.S. national security. An increasing number of U.S. weapons systems rely upon certain Japanese parts to function effectively, while U.S. economic security is partially defined by America's capabilities to compete with Japanese high technology firms. At the same time, Japan recognizes the importance of the high technology relationship with the United States. Japanese external defense is secured through the superiority of the U.S. global security network, while a substantial portion of Japanese economic strength comes from technology developed in the United States, implemented and produced by Japanese firms. This section will discuss what effect the U.S.-Japan technological relationship is having upon the United States, Japan, and their strategic relationship.

The first part will explore its impact in the United States. The loss of technological and economic dominance, coupled with overextended military commitments, is prompting some, highlighted in Paul Kennedy's "Rise and Fall of the Great Powers," to claim that the United States is in a period

of relative decline.¹²⁸ Another possibility is that the United States is simply settling back into its proper place in the international order, as a very powerful nation, but not a hegemonic power. Technological competitiveness problems are prompting both the Government and free enterprise to take some actions. A debate arises whether Government or business should take the lead in defining a strategy to cope with the technology problem.¹²⁹

The second part addresses Japan's reaction to the high technology situation in the United States. Unlike the split between U.S. business and government, the Japanese nation has a more concerted effort. However there are a number of different viewpoints on the U.S. problem.

The final part analyzes the growing pressures placed by the technological relationship upon U.S.-Japanese security cooperation. With growing economic strength, Japan may begin calling for a growing leadership role for itself in the

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- 128 For some further views on this topic, consult Allen Tonelson, "America in a Multi-polar World-- Whatever That Is," SAIS Review, Summer 1989, p. 45-59; Christopher Layne, "Continental Divide: How to Disengage in Europe," SAIS Review, Summer 1989, p. 19-44; David Calleo, Beyond American Hegemony: The Future of the Western Alliance (New York: Basic Books, 1987); Robert Gilpin, War and Change in World Politics (New York: Cambridge University Press, 1981) and The Political Economy of International Relations (Princeton: Princeton University Press, 1987).
 - 129 A good point-counterpoint discussion is in The New York Times, National Edition, 19 Feb. 1989, p. C2. "Pick Key Industries and Exploit Them," by Jacque Gorlin and "Make Federal Subsidies a Last Resort," by Claude Barfield pits economist against economist.

partnership. These demands could strengthen or weaken ties between Japan and the United States.

A. DEBATE OVER THE SITUATION IN THE UNITED STATES

1. The Declinist Controversy

One of the most powerful debates energizing the discussions about Japanese technological encroachment upon U.S. supremacy has been the Declinist controversy. In his highly provocative book, Paul Kennedy seeks to trace and to explain how the various Great Powers have risen and fallen, relative to each other, over the past five hundred years. He suggests that over a long period of time, there is a connection between a hegemonic nation's economic rise and fall and its growth and decline as an important military power. Military "overstretch" and high defense spending capture the very investment capital needed to regenerate economic growth. This cycle stems from two related facts. The first being that a powerful economy is necessary to support a large-scale military establishment, while the second is that wealth and power are always relative to a state's trading partners and neighbors.¹³⁰ Considering that technological innovation has historically been central to American economic strength, competition with Japan becomes particularly relevant to Kennedy's argument.

- ¹³⁰ Paul Kennedy, The Rise and Fall of the Great Powers (New York: Vintage Books, 1987), p. xv.

The United States, entering 1991, appears to be faced with this situation. Following World War II, the United States held unquestioned military and economy supremacy throughout the world. The worldwide military and political commitments were easily supported by America's economic power. Since that time, other nations' wealth, especially Japan's, has increased relative to the United States', while the United States still maintains global security commitments. As the U.S. economy continues to be weak entering 1991, and the U.S. military is heavily committed in the Persian Gulf and in other world areas, great concern has been raised.

The Editor of "Foreign Affairs," William Hyland, acknowledges that the United States must set a new course. Its resources are no longer commensurate with the maintenance of post World War II policies, thus forcing it to conduct a "normal" foreign policy, relative to other nations. In the past, the United States was able to take unrestricted actions throughout the world giving it a position never before experienced in world history.¹³¹ Hyland links the current U.S. trade deficit, a factor of U.S. economic decline, to the rise of Japanese economic power.

Some Congressmen indirectly appear to be the most vocal proponents ascribing to the Declinist theory vis-a-vis

- ¹³¹ William G. Hyland, "America's New Course," Foreign Affairs, No. 2 (1990), p. 2-3.

U.S.-Japanese relations. Burden-sharing is often the key word used in Congress when discussing future Japanese cooperation.¹³² As the U.S. government is faced with the prospect of cutting budget deficits, yet maintaining worldwide defense commitments, many Representatives are calling for increased Japanese financial support for defense in Eastern Asia.¹³³ A vocal majority in Congress voted in September 1990, 370 to 53, that the United States should withdraw 5000 troops a year from Japan unless it pays the full burden of the U.S. military presence. Congress will probably not openly state that the United States is in decline, however by calling for increased burden sharing the premises in Kennedy's argument are met. The United States cannot financially sustain defense commitments with its closest trade competitor.

Those opposing the Declinist theory claim that America has not declined, and that any temporary decline can be easily corrected. Richard Rosecrance in "American Economic Resurgence," strongly advocates that while the United States has declined, it can and will come back due to its commitment to free-market policies. The most often cited

- 132 Oka, "Congress Pressures Japan to Pay More of a Defense Bill," The Christian Science Monitor, 24 Nov. 1990, p. 6.

- 133 Dan Morgan, "House Votes Troop Pullout From Japan," The Washington Post, 13 Sep. 1990, p A10. Representatives Pat Schroeder, David Bonior, Stephen Solarz, and Don Ritter were extremely angry over the poor level support Japan has given the United States for operations in the Persian Gulf.

statistic is the United States' share of the world GNP. With the exception of the late 1940s and most of the 1950s, American world GNP has remained at about 23-25 percent since 1935.¹³⁴ No one should have expected the United States to retain its 40-50 percent share of world GNP during the 1940s and 1950s. Also, American military spending has decreased since the 1940s and 1950s. America devoted ten percent of its GNP to defense in the 1950s, while it is only devoting 6.5 percent in 1990.¹³⁵

Indeed, Samuel Huntington, who opposes the declinist theory, argues that if the United States has declined, so has Japan.¹³⁶ Kenichi Ohmae feels that Japan has adopted some bad practices from the United States and may be poised for a potential downturn by borrowing against overinflated land value prices.¹³⁷ In the 1960s the Japanese experienced an annual growth of about ten percent.¹³⁸ However, during the 1970s and 1980s, Japan has been averaging around four percent

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- 134 Roscrance, p. 33.
 - 135 Rosecrance, p. 37.
 - 136 Samuel Huntington, "The U.S.-- Decline or Reversal?" Foreign Affairs, No. 5 (1988), p. 83-84.
 - 137 Kenichi Ohmae, "Why Japan Could Take a Fall," The Washington Post, 15 Jan. 1989, p. C1.
 - 138 Emerson and Holland, p. 67.

a year. While Japan made quick gains upon the U.S. economy, the two nations should maintain the current balance for the near future, considering the size of the American economy.

R. Taggart Murphy, managing director of Japan private placements at Chase Manhattan Asia Limited in Tokyo, believes that the United States can quickly overcome its problems. He acknowledges that America will never be in the situation comparable to the 1950s, yet U.S. leadership is still critical to the U.S.-Japan relationship.¹³⁹

2. Economic Health

As the Declinist controversy continues over whether the U.S. economy can support global security commitments, an important related issue needs to be addressed. Has Japanese technological competitiveness helped or hurt the American economy? The United States has lost certain industries due to intense Japanese competition, but during the 1980s many new jobs were created in the high-technology industries and the American economy had consistent growth. This argument appears to place free-marketeers against protectionists.

a. Free Market View and Options

The loss of some high technology industries to the Japanese does not concern economic analysts who favor a purely free market economy. Open trade with Japan in the

¹³⁹ "Why Japan Would Rather Be No. 2," Interview by Joel Kurtzman of R. Taggart Murphy, The New York Times, National Edition, 2 Apr. 1989, p. C2.

technology area provides obvious benefits to the U.S. consumer and American industry. Competition is promoted between highly concentrated U.S. industries which almost always benefits the consumer by providing more choice among products. Domestic industries are forced to keep costs to a minimum and the quality high. Companies can purchase some basic technologies inexpensively for advanced applications. Inefficient firms are forced out of business and their skilled labor can be used by more efficient firms.¹⁴⁰

U.S.-Japan trade also creates a sense of interdependence. The Japanese recognize the importance of the United States domestic market and U.S. exports to their own economy. A person supporting free trade would argue that U.S. firms who can not compete on the international market have no one to blame but themselves. Japanese industry is simply more efficient and can offer higher quality products. Japan is not out "to get" the United States.¹⁴¹ Because of the high interdependence Japan's economy would suffer

- 140 Jim Eggert, Invitation to Economics (Los Altos: William Kaufman, Inc, 1984), p. 269.

- 141 However, a number of people argue differently. Pat Choate's book, "Agents of Influence," (New York, Alfred Knopf, 1990), contends that Japanese companies help shape American policy through influence upon the U.S. political system. Senators Max Baucus, Lloyd Bentsen, and John Danforth have been pressuring the Bush Administration to retaliate against Japan because it purposely impedes trade (New York Times, 13 Jun. 1990, p. D7). Lawrence Summer claims that Japanese mercantilism while should be aggressively confronted, has made the United States more aware of U.S.-Japan problems (The New York Times, National Edition, 3 Dec. 1989, p. C2).

equally, if not more, should severe economic problems beset the United States.

Former U.S. Defense Secretary Harold Brown points out that Japan should not be castigated. The United States should look at its technological relationship with Japan as an opportunity to share knowledge and collaborate in developing technologies and solving global problems. Rather than relying on a U.S. technological supremacy, which no longer exists, or conceding it --and with it economic leadership-- to Japan, the U.S. needs to expand technological links.¹⁴²

The theory of comparative advantage also supports increased U.S.-Japanese technological trade. Both nations are capable of producing most technological products. However, Japan can produce certain products, such as TVs and semiconductors, at a much cheaper and efficient rate than the United States. America can produce large computers and aircraft better than Japan. If both nations concentrate on producing their most efficient product, then trade, Japan and the United States will both increase their wealth. The consumers in each country have the opportunity to enjoy more of both products. The standard of living improves by specialization.¹⁴³

- 142 Harold Brown, "Compete --and Cooperate-- With Japan," The Washington Post, 26 Mar. 1990, p. A11.

- 143 Eggert, p. 275.

Columnist Michael Kinsley makes a good argument countering claims by Japan revisionist James Fallows that free trade principles can not be applied in the U.S.-Japan relationship.¹⁴⁴ Fallows seems to doubt views that the trade imbalance with Japan will correct itself once the Japanese begin to spend their wealth. Since Japan is a society geared towards production, and domestic consumption is suppressed by the government, Fallows believes there should be unilateral action by the U.S. (tariffs) to correct the trade gap. If not, the Japanese will accumulate so much wealth, they will be able to greatly influence the United States by purchasing U.S. assets.¹⁴⁵

Kinsley disagrees with Fallows by arguing that no matter how Japanese business and society is structured, it is to the advantage of the United States to import from Japan. Kinsley makes the extreme argument that if the Japanese produce indefinitely, and the United States consumes indefinitely, Japan will eventually have enough dollars to buy up all U.S. assets. How much influence will Japan have over the United States? There is an old saying that if one owes the bank \$1000, the bank controls that person, but if one owes the bank \$1 billion, that person controls the bank.

- 144 Michael Kinsley, "Japan Won't Make Us Poor," The Washington Post, 23 Nov. 1989, p. A27.

- 145 James Fallows, "The Japanese Difference," The Washington Post, 5 Feb. 1989, p. D1.

The Japanese can not move Mt. Rushmore, and in the worst possible scenario the United States could nationalize all Japanese assets held in America.

While Kinsley and Fallows both seem to resort to extreme examples to make their point, the argument for free trade is stronger. The Japanese are selling us products which the American consumer wishes to buy. In return, the Japanese are acquiring assets in the United States. The American citizen appears to benefit the most. Both agree, however, that what may impoverish the United States is its failure to save and invest, a basic free market principle.

The American dollar is a unique asset which allows the United States unparalleled opportunities on the free market. People subscribing to Kennedy's argument that the United States is in a period of decline comparable to Britain's earlier in the century have overlooked the dollar. Even though U.S. economic dominance has declined since the end of World War II, the United States still plays the central role in the new, more unified world economy. The dollar is the principal reserve and trading currency. Even though America has lost part of its overseas market, the dynamic U.S. domestic economy makes the country the focal point of global capital investment.

Kenichi Ohmae claims that because of the unique status of the U.S. dollar, the United States has in effect

extended its domestic economy across national borders. It has created a "greenback empire" and enables the United States to compile trade deficits, yet the U.S. can expect continued investment from foreigners to boost industrial development as dollars return from abroad.¹⁴⁶

Thus, the unique role of the dollar as the world's money give the United States unparalleled advantages.¹⁴⁷ If the United States owes money to Japan, it is in dollars, not Japanese yen. The world oil market is based on dollars. This allows the United States not having to produce goods to pay debts or correct trade imbalances, but simply to come up with dollars. However, this advantage, if abused too long, can lead the country to destroy its allure to foreign investors.¹⁴⁸ This situation would cut off capital inflows and severely harm the American economy.

b. Trade Protectionism and "Managed Trade"

Proponents of free-market ideas have many solid points and valid economic theory about the benefits of global free trade. However, the proponents of protectionism and managed trade may have the most political power. Very often, unrestricted trade, while providing benefits for American

¹⁴⁶ Ohmae, "Life in a Borderless Greenback Empire," The New York Times, National Edition, 29 Apr. 1990, p. C13.

¹⁴⁷ Leonard Silk, "Unique Asset: The U.S. Dollar," The New York Times, National Edition, 28 Aug. 1987, p. D26.

¹⁴⁸ Silk, p. D26.

consumers, harms specific domestic industries located in the home districts of powerful Congressmen. This causes intense lobbying upon elected officials, who have strong influence over trade bills and policies. Protectionism can come in many forms. Tariffs, quotas, subsidies, special specifications for foreign goods, import licenses, and many other subtle and not so subtle measures.

There are a number of arguments to be made for trade protectionism. The strongest is job protection, most commonly demanded by the manufacturing area. When an domestic industry is competing with a foreign industry, wages are a very important factor. In new technologies, such as the computer field, the United States retains a competitive edge and can afford to pay higher wages while maintaining a profit margin. However, in older industries, such as semiconductor manufacturing, many other nations have equal abilities to produce, and often have lower labor costs. In a pure free market environment, the foreign company would drive the domestic company from business. Thus, in order to retain the jobs in that industry, and possibly the industry itself, a tariff may be placed on imports, or import quotas established. While these actions would save the jobs, the cost of the product will be higher to the domestic consumer.149

- 149 Eggert, p. 282-283.

The United States came extremely close in early 1990 to taking open protectionist measures against Japan. In 1989, Japan was cited for violating the "Super 301" clause of the 1988 Omnibus Trade Act. The United States claimed Japan had barriers to imports of foreign satellites, supercomputers, and wood products. Within a month of the deadline, pressure forced Japan to acquiesce to U.S. demands and the Bush Administration dropped Japan from the unfair trader list.¹⁵⁰ While trade sanctions never happened, it is obvious that threatening Japan with possible sanctions can have significant effects upon U.S.-Japan trade. However, the United States must be careful because if Japan ever calls the bluff, it could cause unexpected economic damage to both nations.

Managed trade has become a popular concept, since it does not appear as harsh as protectionist measures, yet strives to accomplish the same objectives. Another phrase synonymous with managed trade is "results-oriented" trade.¹⁵¹ In the case of trade between the United States and Japan, the U.S. government would pressure Japan into exporting less and importing more U.S. goods. This would help to balance the trade deficit and could be measured in

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- ¹⁵⁰ Jones, U.S.-Japan Trade Strain Lessened -- For Now," Christian Science Monitor, 30 Apr. 1990, p. 6.
 - ¹⁵¹ Paul Blustein, "Instead of a 'Managed' Trade Policy, Why Not Just Cut the Budget Deficit," The Washington Post, 23 Aug. 1989, p. B3.

dollar values or units. For example, the United States would allow Japan to export ten Hondas for every IBM computer they purchased. The advocates of this policy argue that Japan does not play by American-style rules of free competition.¹⁵² The best example of managed trade is a 1986 U.S.-Japan semiconductor accord which stipulates Japan should undertake to increase semiconductor chip imports to at least 20 percent of the Japanese market by 1991.¹⁵³

Robert Reich, a political economist at Harvard University, advocates "a dose of outward-looking nationalism." The United States would strike a balance with its trading partners, wherein it would seek to improve the capacities of its citizens, while working with its trading partners to ensure improvements don't exploit either nation. The United States would invest in infrastructure and award subsidies to targeted companies which begin high value-added production. At the same time, the United States would negotiate with its trading partners appropriate levels of subsidies. These negotiations would preclude international companies from bidding against one another, thereby inhibiting growth.¹⁵⁴

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- 152 Bluestein, p. B3.
 - 153 "Chip Makers 'Miffed' at U.S. Industry's Request," FBIS/EA/Daily Report, 11 Oct. 1990, p. 7.
 - 154 Robert Reich, "Everyone Gives, Everyone Benefits," The New York Times, National Edition, 1 Apr. 1990, p. F1.

Managed trade is directed specifically at Japan by Rudiger Dornbusch, an economist professor at MIT. Japan must be given a target percentage for import increases of U.S. products. If Japan does not meet the set goals, an automatic tariff surcharge will be placed on Japanese exports to the United States. Dornbusch claims that if drastic measures are not taken with Japan now, another recession in the United States will lead to U.S. import restrictions damaging the free market trading system.155

3. The Debate over Government's Role

There is certainly no consensus existing within the business community over what role the U.S. government should play. Ironically, while some in business call for increased protectionism, they hesitate to ask the U.S. government for help. At the same time, entrepreneurs who made fortunes because of the American laissez-faire system think that the country's very survival as an economic power is endangered without government involvement.156

Intensifying overseas competition, similar to that which weakened the U.S. steel and auto industry and wiped out the consumer electronic industry, is driving the growing debate over consistent electronic industry strategies. Some

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- 155 Dornbusch, "Give Japan and Target and Say 'Import,'" The New York Times, National Edition, 24 Sep. 1989, p. C2.
 - 156 Evelyn Richards, "Tug-of-War Over High Technology," The Washington Post Weekly, 27 Nov. -3 Dec. 1989, p. 32.

in the high-tech field such as Robert Noyce, the person synonymous with the creation of Silicon Valley, feel that the government needs to get involved. They argue that small amounts of federal funding for technologies with applications in both civilian and military sectors can have a significant impact upon America's ability to maintain a strong defense, compete in increasingly competitive markets, and maintain a healthy standard of living.¹⁵⁷

Unfortunately, the U.S. government has not had clear policies or laws covering its involvement with the high-tech industry. The Federal Government, since the 1980s, has stressed the importance of a "pipeline" approach to science and technology. This approach centers upon funding for basic research which may lead, through industrial applied research, to new commercial technologies. The basic research money generally goes to Federal laboratories and to large research universities.¹⁵⁸

While most of the research coming from federal funding is available to American industry, only about ten percent of the lab results have ever produced a commercial product.¹⁵⁹ There have been poor results thus far because

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- 157 Richards, p. 32.
 - 158 Glenn J. McLoughlin, "Technology Policy in Japan and the United States," Congressional Research Service Review, July 1989, p. 8.
 - 159 Schneiderman, p. 26.

until the passage of the 1986 Federal Technology Transfer Act, government operated labs could not collaborate with other organizations, including business. However, restrictions still remain. The labs have limited authority to conduct proprietary research. Under the law, research is nonproprietary unless business pays all of the costs.¹⁶⁰ Few firms wish to invest funds which will be available to competitors.

Congressional initiatives, up to 1990, have only focused in two policy areas. The first is legislation to address the trade imbalance between the United States and Japan. The Omnibus Trade Bill was passed over concerns about the U.S. trade imbalance with Japan. Congress also approved funding of SEMATECH, a semiconductor research consortium aligned with U.S. industry.¹⁶¹

The second policy area addressed by Congress is designed to provide assistance to U.S. industry and Government in understanding how Japan sets policy and targets technology. The Japanese Technical Literature Act of 1986 gave statutory authority to the Commerce Department to

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- 160 Richard L. Chapman, "Implementing the 1986 Act: Signs of Progress," Journal of Technology Transfer, No. 1 (1989), p. 5-6.
 - 161 McGloughlin, p. 9-10.

transfer Japanese-language scientific information for the U.S. Government, industry, and academia.¹⁶²

4. Status of the Debate in the United States

a. Japan Revisionists

At the forefront of the debate within the United States are the Japan specialists labeled "revisionists." These are influential people who come from different backgrounds, former government officials, journalists, and academics, who attempt to portray Japan as not inherently evil or wrong, but simply different. Unfortunately, sometimes they have been called "Japan-bashers," or are accused of harboring prejudices.

The revisionists purpose is to find a way to sustain the world trading system in general and the U.S.-Japan relationship in particular. Revisionism believes the central American problem is that its policies have been based on an inaccurate assumption that Japan will evolve toward a consumer-driven, individualistic system like the United States.' Instead, Japan may evolve in a different direction. Thus, Japan should not be coerced to change its ways, but efforts should be made to recognize differences and

- 162 McGloughlin, p. 9.

set out appropriate solutions without each party blaming the other.163

Trade policies are addressed by the Japanese revisionists as something which should not be treated as taboo. While the United States professes to be a free market economy, it and many other countries are engaged in managed trade to some extent. Any discussion of government intervention or protectionist measures must consider all the costs and benefits associated. If the United States has a particular industry deemed important, then the United States must ensure its success, not harass Japan to abandon its own efforts.

Probably the best known revisionist is Clyde Prestowitz, a former trade negotiator for the Reagan Administration. Prestowitz believes the responsibility for forming a new Japan policy should rest with the President, who must recognize that the U.S.-Japan relationship is the most important American bilateral relationship, to include the Soviet Union. Current U.S. policies towards Japan must be redefined between both nations. The past policies are "bankrupt" and have led to trade deficits, growing political tension, poor U.S. investment strategies, and a general decline in U.S.-Japanese relations. Prestowitz proposes a

- 163 James Fallows, Chalmers Johnson, Clyde Prestowitz, and Karel van Wolferen, "Beyond Japan Bashing," U.S. News and World Report, 7 May 1990, p. 54-55.

mini-Bretton Woods conference with Japan, placing everything on the table, in order to resolve differences.164

Prestowitz' central view is that Japan's industrial priorities and practices are different from the United States,' yet U.S.-Japanese relations continue a "forced friendliness which whitewashes the differences without solving them.165 His research organization, the Economic Strategy Institute, was founded in 1990 on the premise that U.S. businesses should not become stateless global enterprises. They should concentrate research, development, and production in the United States, rather than abroad, taking advantage of the skilled and productive workforce. Currently, foreign production and research has made foreign subsidiaries an increasing source of new technologies, instead of domestic facilities.166

The view that Japan is inherently different is echoed by James Fallows, editor of the Atlantic Monthly. For the most part, the United States has behaved as a pro-consumer capitalist nation, while Japan has not. The welfare of Japanese consumers is overshadowed by a desire to

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- 164 Prestowitz, "First, Admit Past Policies Are Bankrupt," The New York Times, National Edition, 20 Aug. 1990, p. C2.
 - 165 Prestowitz, "George and Toshiki-- The Odd Couple," The New York Times, National Edition, 10 Mar. 1990, p. A25.
 - 166 Louis Uchitelle, "New Research Group Wary of U.S. Global Enterprises," The New York Times, National Edition, 5 Jun. 1990, p. D1.

preserve every person's place in a productive system.¹⁶⁷ Fallows believes that the United States needs a trade crisis with Japan to bring change about. A crisis would force American firms to analyze their mistakes and correct them, while curbing overconsumption by U.S. consumers. In Japan, a trade crisis would make Japanese consumers think more of themselves, rather than the company or state.¹⁶⁸

The United States must make its relationship with Japan more symmetrical military and economically, according to Japan revisionist Chalmers Johnson. The United States must design a narrow, focus Japanese policy that puts economic objectives first, while downgrading security relations to a secondary and supportive role.¹⁶⁹ At the same time, Japan must be encouraged to accept a regional role commensurate with its economic status.

To some, Japan is viewed as a highly skilled competitor, using its newfound economic wealth to shape American trade and economic policies. Pat Choate is the most visible of this group. In his book, "Agents of Influence," Japan is portrayed as influencing American politics through

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- 167 Fallows, "The Japanese Difference," p. D2.
 - 168 Fallows, "We Need A Good, Healthy Trade Crisis," The Washington Post, 4 Mar. 1990, p. C1.
 - 169 Chalmers, Johnson, "Strategic Trends in Northeast Asia: The Future of Japanese-American Relations." Paper presented for a conference on National Strategy in the Asia-Pacific Region: Critical Issues for the U.S. Army, 22-23 Feb. 1990, Monterey, California, p. 5.

Congressional, gubernatorial and mayoral campaigns, bankrolling think tanks and universities, and planting stories in the press. Japan's most potent weapon is the hiring of former U.S. Government officials as lobbyists, lawyers, and publicists. Critics appear to focus solutions upon U.S. relations with Japan, rather than concentrate upon U.S. internal problems.

b. Government

Some members of Congress appear to be leaning towards managed trade policies. The most vocal proponent is House Minority Leader Richard Gephardt, who has made a number of calls for legislating policy against Japan to compensate for the U.S.-Japan trade imbalance.¹⁷⁰ This avenue should not be unexpected, however, as Congress must pay particular attention to their constituents. Elected representatives do not have the luxury of tenure, thus they often resort to the most accessible power they can exercise -- legislation.

Strong feelings linger in Congress. In April 1990, when the Bush administration indicated it would not name Japan an unfair trading partner, a strong reaction arose.¹⁷¹ Senator Lloyd Bentsen warned that a failure to

- 170 Other vocal congressional members calling for legislating policy include Max Baucus, Lloyd Bentsen, Jim Leach, Stephen Solarz and John Danforth as reported in "Japan Trade Pact Brings Skepticism in Congress," The New York Times, National Edition, 20 Apr. 1990, p. D2.

- 171 Stuart Auerbach, "Sanctions Unlikely for Japan: Hills," The Washington Post, 26 Apr. 1990, p. E1.

name Japan for unfair trade practices could result in Congress not approving some important Bush Administration objectives. Representative Peter DeFazio claimed that a wood product agreement did not go far enough to ensure that the lumber industry would not suffer. DeFazio placed increased pressure upon the Administration by saying that if a better agreement was not reached, it could undermine other desired trade talks. Gephardt contended in 1990 that President Bush was "gutless."¹⁷² He argued that the only way to deal with Japan is to go in and forcibly open their markets to American goods. If the Japanese don't, then the United States must retaliate.

The Bush Administration has tried primarily to follow free market principles, not interfering with international trade. This mindset was clearly shown when threatened sanctions were never imposed upon Japan under the "Super 301" clause of the Omnibus Trade Bill. The United States and Japan had not actually agreed on any specific solution, but Japan agreed to negotiate certain trade complaints. The unwillingness of the Administration to impose sanctions indicates a reluctance to hamper free trade.

A growing concern over the Bush Administration's handling of the Japan problem was demonstrated in the

¹⁷² Hobart Rowen, "The Wrong Way to Deal With Japan," The Washington Post, 3 May 1990, p. A25.

internal conflicts on how exactly to compete with Japan. The Commerce Secretary, Robert Mosbacher, appeared to favor an increased role for the Government. Mosbacher pressed for more Government activism to strengthen high technology industries, thereby making them more competitive with Japanese firms.¹⁷³ The interventionists claim that Japan's national strategy of dominating several important technologies has hurt corresponding American industries by closing the Japanese market.

Opposing government intervention within the Bush Administration are Michael Boskin, the chairman of the Council of Economic Advisors, Richard Darman, the budget director, and Roger Porter, domestic policy advisor. They believe that the United States should stay on a free market course as the situation with Japan will correct itself. The Japanese have made a number of mistakes in government-industry partnership which should also help discourage the United States from doing the same.¹⁷⁴

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- 173 Clyde H. Farnsworth, "The Bush Team Has Competing Ideas on Competing With Japan," The New York Times, National Edition, 24 Jun. 1990, p. D4.
 - 174 Farnsworth, p. D4.

c. Generic

Reading editorial columns in newspapers gives one a good sense of where informed people stand, who are not directly involved in the debate. The arena once filled with calls for actions against Japan, now appears to be shifting its focus and calling for the United States to get its own house in order before condemning Japan.

The editor of the New York Times, in an piece entitled "The Whine Industry," calls Japan-bashing a "puerile, pointless pleasure."¹⁷⁵ Americans have always complained that the Japanese have a special competitive edge because their government, business, and politicians work together. He counters that the United States has a competitive edge being a great continental power. He calls for a coherent national strategy for dealing with Japan, while setting educational and business priorities.

Hobart Rowen discounts Japan's trade surplus and claims that if the budget deficit is reduced, the problem will correct itself.¹⁷⁶ Paul Bluestein agrees with Rowen, citing that cutting the deficit would make capital cheaper in the United States, thus spurring economic growth.¹⁷⁷

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- 175 A.M. Rosenthal, "The Whine Industry," Editorial, The New York Times, National Edition, 31 Mar. 1990, p. A35.
 - 176 Hobart Rowen, "By Any Name, Protectionism," The Washington Post, 7 Sep. 89, p. A23.
 - 177 Bluestein, p. B3.

The underlying theme within the generic debate is that the United States must fix its own problems before it blames them on the Japanese. In 1991, there is a good chance this argument may rise to the forefront as budget discussions are certain to produce friction between the Administration and the Congress. This will add to the decreasing confidence Americans have in the abilities of their government to maintain sound financial health. As government economic confusion continues, it will be more difficult for people to be convinced that Japan should be blamed for problems in the U.S. economy.

B. JAPAN'S REACTION TO THE U.S. DEBATE

If the United States was having trade difficulties with the Japanese in 1960, it would have either ignored them or pressured the Japanese into acquiescing to U.S. demands. However, in 1990, Japan's situation is very different with respect to the United States. Thus, the Japanese response to the current debate about U.S.-Japanese technological/economic relations has a variety of viewpoints.

1. Japanese Nationalists

The most vocal counteraction to American concerns over U.S.-Japanese relations has come from the Japanese nationalists. Once confined to the far right of Japanese politics, nationalistic themes have begun to enter the into

mainstream of political discussion.¹⁷⁸ A primary catalyst propelling the discussion into the Japanese public was the publishing of a book entitled "The Japan That Can Say No," by Akio Morita and Shintaro Ishihara.

The thrust of the Morita and Ishihara book is that Japan no longer needs to act deferentially to the United States and should become more independent from it. A theme which appears throughout the book is the belief that America's power is declining throughout the world and the U.S. has not yet recognized its dependence upon Japan for technology and financial resources. In the first chapter of the book, Ishihara goes so far as to claim that if Japan sold computer chips to the Soviet Union instead of the United States, it would upset the entire military balance of power.¹⁷⁹

While the extreme views expressed in the Morita and Ishihara book still appear to be confined to a minority of Japanese, that minority is influential and appears to be

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- 178 Sanger, "Seeing a Dependent and Declining U.S., More Japanese Adopt a Nationalistic Stance," The New York Times, National Edition, 4 Aug. 1989, p. A7.
 - 179 Akio Morita and Shintara Ishihara, The Japan that Can Say "No." The New Japan-U.S. Relations Card, Unofficial Translation, p. 4.
 - 180 Sanger, p. A7.

growing.¹⁸⁰ Morita is possibly the best-known Japanese entrepreneur throughout the world and Ishihara has been in Parliament for a number of years and has held Cabinet posts.

2. Japanese Public

Fortunately, the nationalists' views do not appear, as yet, to have significantly altered perceptions within the Japanese public. Most Japanese are grateful to the United States for rebuilding Japan after World War II. There also appears to be a growing fascination with America- for its resources, military strength, and its culture.¹⁸¹

A poll conducted in March 1990 showed surprising support among average Japanese towards American demands that Japan open up and restructure its economy.¹⁸² This result would seem to contradict the nationalist position that the United States is trying to bully Japan on some trade issues. The poll results even supported opening Japan's rice market, which many nationalists have treated as a sacred cow.

However, other surveys have shown that Japanese resent a feeling of being pushed around by the United States. Many Japanese also believe that the United States is more responsible for its own problems than it will admit.

- 181 Sanger, p. A7.

- 182 Margaret Shapiro, "Poll: Japanese Public Supports Freer Economy, The New York Times, National Edition, 28 Mar. 1990, p. F1.

These sentiments within the Japanese public may be linked to the growing feelings of dissatisfaction and increasing travels by average Japanese outside Japan. As Japan's wealth grows through international trade, many Japanese consumers are forced to live in very small apartments, and have smaller selections of goods to purchase. Japanese citizens become painfully aware of these conditions as they travel to advanced industrialized countries, especially the United States.

3. Japanese Government

Generally, the Japanese government has been low key and reactive in its response to the American debate about U.S.-Japanese technological relations. In early 1990, the Japanese government agreed to negotiate on many U.S. complaints about "unfair" trading. At about the same time, it agreed to admit foreign companies to some Government and industry research projects, after heavy criticism by the United States.¹⁸³

A recent advisory report issued by the Ministry of International Trade and Industry (MITI) addressed many of the demands made by the United States in 1990 trade talks. The government report said that Japan must turn inward and set

¹⁸³ "Shift by Japan on Research," The New York Times, National Edition, 4 Jul. 1990 p. A47.

its own house in order. Financing priorities, once primarily directed at industrial growth, should shift to infrastructure and orient itself towards frustrated consumers.¹⁸⁴

Many of these gestures from the Japanese government would seem to indicate Japan is not yet ready to forcefully challenge U.S. demands. However, the situation must be reviewed carefully. Is Japan simply paying lip service to U.S. demands, or is it convinced it must change ingrained, cultural traits? Unfulfilled Japanese promises have become commonplace in recent years. Japan's Government has realized that by issuing statements, the U.S. Government is often placated and its attention gets directed elsewhere until the problem resurfaces.

C. EFFECTS UPON U.S.-JAPAN SECURITY COOPERATION

The Security Treaty between the United States and Japan is probably the strongest link between the two nations and offers a unique framework for continued cooperation. The treaty's emphasis has always been upon the defensive cooperation between the Japan and the United States. Often overlooked are the economic provisions within the agreement. The second paragraph expresses a desire for the two nations to encourage closer economic cooperation. Oddly enough, security aspects are not brought up until the fourth

- 184 "Japan Goals for 1990s," The New York Times, National Edition, 6 Jul. 1990, p. D16.

paragraph. Article II states that Japan and the United States will seek to eliminate conflict in their international economic policies.¹⁸⁵

There have been a number of technology-related agreements based upon the framework of the 1960 revision of the Mutual Security Treaty. Three of the cooperative protocols have been: the 1983 Exchange of Notes on the Transfer of Japanese Military Technologies, the 1984 Report of the Defense Science Board Task Force on Industry-to-Industry International Armaments Cooperation, and a new U.S.-Japan Science and Technology Cooperation Agreement was signed at the Toronto Summit in June 1988.¹⁸⁶ These agreements lay out specific ground rules for cooperation and focus on comparable access and reciprocity concerning research in seven scientific fields.

Recent strains between the United States and Japan have not had a significant impact upon the security treaty. While both the U.S. and Japanese Governments have called for some changes within the agreement, there have not been any serious calls for abrogating the treaty. Indeed, in October 1990, the Japanese Foreign Ministry's annual diplomatic "Bluebook" cited the U.S.-Japan security relationship as having undiminished importance for stability in the Asia-Pacific

- 185 Maki, p. 221.

- 186 Gregory P. Corning, "U.S.-Japan Security Cooperation in the 1990s," Asian Survey, No. 3 (1989), p. 268-270.

Region.¹⁸⁷ However, it appears that Japan and the United States are beginning to view the treaty in different terms.

1. Debate in Japan

A good portion of the credible debate in Japan concerning the U.S.-Japan Security Treaty centers upon changing perceptions of the external threat to Japan. One argument assumes that the Soviet threat in the Pacific was the basis for the Security Treaty. Thus, since the threat from the Soviet Union is decreasing in the Pacific, the treaty should be reassessed. Japan should then consider its world role in terms of international economic security, not regional military security.¹⁸⁸

This argument falls precisely in line with the Japanese viewing national security in economic terms. However, an important aspect of Japanese economic security is open sea lines of communication. Sea-lane defense is an important duty of joint U.S.-Japan maritime power and if the treaty is changed significantly, the Japanese could lose the protection afforded them by the United States.

- 187 "Annual 'Bluebook' Reaffirms U.S. Security Ties," FBIS/EA/Daily Report, 16 Oct. 1990, p. 2-3.

- 188 "What Will Become of Japan-U.S. Security Structure; Heated Arguments!; Will It Continue or Be Abolished." Chuo Koron, Mar. 1990, as translated in American Embassy, Tokyo, Political Section, Office of Translation Services, Jul. 1990, p. 9.

2. Debate in the United States

Most of the discussions about the U.S.-Japan Security Treaty in the United States have centered upon stability or burden-sharing. Paul Wolfowitz, Undersecretary of Defense, stressed that in spite of historic changes in the security relationship in Europe and the retreat of Soviet military threat, there is no change in the policy of adhering to America's alliance with Japan.¹⁸⁹ Part of the impetus for this position is that Asia, unlike Europe, has no umbrella security setup, nor has there been any dramatic change in regional security. The Soviet presence in the region has not greatly diminished, North Korea still poses a military threat to South Korea, and there is continued unrest in China. Thus, the Security Treaty would maintain continued stability.

There may also be some reason to believe that if the Security Treaty was cancelled, Japan itself could be an unstable factor in Asia. An April 1990 Bush Administration report pointed out that should Japanese military power increase in a form which compensates for an American military decrease, Japan could become an object of concern for other Asian nations.¹⁹⁰

"Burden sharing" has become the U.S. Government buzzword when discussing the U.S.-Japanese security

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- 189 "Looking at 30 Years of Security Treaty," FBIS/EA/Daily Report Supplement, 23 Aug. 1990, p. 11.
 - 190 FBIS/EA/Daily Report Supplement, 23 Aug. 1990, p. 12.

arrangement. Many in Congress and in the Government have felt that Japan has been receiving a "free-ride" on defense. The Japanese have spent relatively little on defense, have economically flourished, and now possess large amounts of wealth; all while the United States has provided for the bulk of Japan's external defense. A current Congressional plan calls for Japan to meet 100 percent of the costs associated with stationing U.S. troops in Japan (minus U.S. salaries), amounting to about \$5.5 billion.¹⁹¹

The 1990 Persian Gulf Crisis has brought the burden sharing argument to a head. Congress' call for a U.S. withdrawal of troops from Japan, unless Japan pays the full burden, was largely a result of the low level of Japanese support for U.S. operations in the Persian Gulf. The Japanese are approximately six times more dependent upon Gulf oil than the United States, thus they benefit greatly from the U.S. actions.¹⁹²

Robert Hunter, of the Center for Strategic and International Studies, regards the failure of Japan to enthusiastically support U.S. policy in the Persian Gulf as a fault line in the security relationship. The Crisis has brought up good reasons for reevaluating the treaty. Burden sharing must be codified for indisputable common security

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- 191 Oka, "Congress Pressures Japan to Pay More of Defense Bill," p. 6.
 - 192 Morgan, p. A10.

concerns not directly related to the treaty. Hunter argues that Japan need not send military forces into a region, but must economically contribute to any activity relating to mutual security concerns.193

- 193 Robert Hunter, "Sharing the Burden in the Gulf," The New York Times, National Edition, 16 Aug. 1990, p. A25.

V. RECOMMENDATIONS AND CONCLUSIONS

There is no question that the relationship between Japan and the United States has dramatically evolved since the end of World War II. In the past 40 years, Japan has been transformed from a nation with little industrial capacity into the world's second largest economic power. At the same time, the United States has seen its share of the world GNP change from 50 percent to 25 percent. Two-way trade, once less than \$1 million per year, now amounts to over \$150 billion, 40 percent of total world trade. While the Japanese used to be extremely dependent upon American technology transfer for industrial development, as of 1990, 40 percent of U.S. imports from Japan are high technology equipment. Clearly, Japan and the United States have become very interdependent.

While economic aspects of the U.S.-Japan relationship have changed dramatically, security and political features have not changed substantially. The United States still provides for the bulk of Japan's external defense and all of its nuclear deterrent. Japan continues to spend about one percent of its GNP on defense, while not projecting military power more than 1000 miles from its territory.

On the international scene, the United States still significantly pressures Japan to support U.S. policies. In

East Asia, the United States often asks Japan to contribute monies to U.S. aid initiatives, as in the 1989 Philippine Aid Initiative. During the 1990 Persian Gulf Crisis, Japan was heavily pressured to contribute some type of military force to the multinational force in Saudi Arabia. This pressure has severely affected the Kaifu Cabinet.¹⁹⁴

Considering the changes in the economic, political, military, and technological relationship with Japan, the situation must be reassessed. This section will analyze the previous information discussed in this paper, and make some recommendations on the course of action the United States should take vis-a-vis Japan.

A. U.S. POLICY IN THE ASIA/PACIFIC REGION

For the United States to begin addressing problems with Japan, it must first reassess policy towards the Asia/Pacific region. While geopolitical change has not been as quick to occur in Asia as in Europe, economic power has been steadily evolving since the 1950s and threat perceptions may be changing.

A redefined role for the United States in Asia must focus upon the overall Asian situation and not be limited to the past Cold War mentality. Most U.S. policies and agreements have been made with geopolitical motives in mind,

¹⁹⁴ David Gergen, "America's Gulf With Japan," U.S. News and World Report, 3 Dec. 1990, p. 80.

first to counter the "Communist monolith" in Asia, then later to offset growing Soviet hegemonic intentions in the region.

The United States needs to shape its role in Asia vis-a-vis Japan through a derivative of the current alliance system in Asia. Individual economic policies will have to be formulated towards each Asian country. As the utility of military force decreases, economic power will become more important and a better tool to persuade various countries to fall in line with U.S. objectives. Already there are many indicators that the United States will begin to scale down its military forces in Korea, Japan and the Philippines. However, it seems to be driven more by budgetary restraints than a new "strategic vision." Smart reduction and changes in the U.S. military presence and posture in Asia must be made.

A positive factor for the United States may be that a consensus remains among many Asian nations which holds that the United States is still the only acceptable provider of regional security.¹⁹⁵ They view the United States as having benign political motives and having the largest domestic market needed to develop regional prosperity. While these feelings still remain strong and the United States can tout the "winning of the Cold War," it is imperative that the opportunity to change should be brought about.

- 195 Sheldon W. Simon, "United States Security Policy and ASEAN," Current History, No. 545 (1990), p. 97.

There is, and most likely will be, a continuing need for the United States to maintain a military presence in the Pacific. The region is not united by any particular threat as each individual country has its own fears and concerns. With the possible exception of India, no other regional power possesses a military force which can project itself on both land and water as the United States can. Military forces would allow the United States leverage in the area and unparalleled support for its economic interests. Thus, instead of military alliances dictating a relationship with the United States, economic ventures would come with an unspoken, assumed measure of U.S. military force protecting United States' and the host countries' interests. This may alleviate some countries feelings that they are not receiving the benefits they deserve for hosting permanent U.S. bases and help to defuse rising perceptions of the United States infringing on sovereign nations.

In general, most nations in the Western Pacific have benefited from the presence of U.S. military forces in the region, and it would be to their advantage to have a continuing presence in the area. The United States has provided a constant balance to any potential hegemonic actor in the region, thereby encouraging trade and potentially diffusing hostilities between various nations. As the Asia-Pacific region continues to be an area of intense economic competition, if there is not a guiding force in the

region, conflicts could likely erupt. This situation could severely harm economic interests. It should be important for the United States to continue its military role in the region.

Most people will admit that the United States is the only remaining superpower in the world, possessing the economic, military, and political components to retain the position. In order to continue to carry the heaviest responsibility, while maintaining good relations with allies, rational policies must be formulated. The non-productive military burden should be shared proportionally with prosperous entities such as Japan, while concentration is placed on reinvigorating continued economic leadership.

B. U.S. POLICY TOWARDS JAPAN

The time has come for American and Japanese leaders to reevaluate their relationship. Two factors have begun to play important roles, virtually demanding that the relationship change: economics and a changing world order. These changes have made clear that the past unbalanced U.S.-Japanese relationship cannot be continued.

The first factor revolves around the health of the American economy. While still possessing the world's largest economy, the United States must address its growing economic problems. It must realize that it can no longer continue to have the world's largest military and still be the economic

engine of the world. There must be new policy which brings the military commitment in line with the economic constraints.

The second factor dictating a reassessment is the sweeping geopolitical change throughout the world. Since the end of World War II, the foundation of the U.S.-Japanese relationship rested on containing and countering the threat of the Soviet Union. In order to elevate Japan to a position where it was a viable counterforce to Soviet Far Eastern aspirations, the United States gave Japan preferential economic treatment, assumed a disproportional share of its defense burden, and encouraged Japan to follow U.S. foreign policy initiatives. However, as Japan made great economic gains, and established itself as a world economic power, little encouragement was given to Japan to change its international policies or views of its U.S. relationship. If the worldwide reduction of East-West tensions continue, and some of spillover effects reach Asia, there is no reason to continue an unbalanced relationship with Japan simply to counter Soviet hegemonic intentions in the Pacific.

1. Regional Economic Policy

If American economic health continues to be challenged and current geopolitical change continues, it is likely that tensions will continue to build between the United States and Japan unless the relationship is redefined into a more effective partnership. Past U.S.-Japanese joint

policy towards Asia now seems particularly ludicrous. The United States essentially provided the political and military security in Asia allowing Japan to develop economically under the umbrella. This policy is beginning to garner great criticism within the United States and people are calling for the end of Japan's "free ride" on the back of the United States.¹⁹⁶ On the Japanese side, there are increasing calls for Japan to develop a foreign policy commensurate to its economic power and more independent from American influence.¹⁹⁷

No matter what frictions Japan and America may have with each other, it is to each's mutual advantage to remain close associates. It would appear that the potential for U.S.-Japanese cooperation to "guide" development and security in Asia is high. Asia will likely continue to display regional hostilities as no impetus appears to exist for a central power broker to emerge similar to the European Economic Community. Japan may be able to guide economic activity in the region, but with the history of distrust between most Asian countries, it is doubtful any type of political umbrella will be feasible, especially led by Japan. The United States has the military leverage which Japan lacks

- 196 Morgan, p. A10.

- 197 Kenneth B. Pyle, "The Burden of Japanese History," in Sharing World Leadership?, John H. Makin and Donald C. Hellmann, eds. (Washington, D.C.: American Enterprise Institute for Public Policy Research, 1989), p. 255.

and does not desire to have, while Japan has the cultural affinity and close proximity to other Asian nations, as well as a current surplus of capital. The United States and Japan are well suited for cooperation, as long as divisive problems are worked out.

The United States will have to take the first step in realigning the relationship. Japan appears to be relatively comfortable with its position in Asia and the "special relationship" with the United States. For all the press Japan has been receiving lately regarding its new "internationalization," Japan looks upon it as a duty, rather than a desire.¹⁹⁸ Japan's domestic economy often drives its regional foreign policy. Also, Japan does not have the military power to support a regional leadership role, nor do the Japanese want it. Japan, as well as its neighbors, have had World War II inextricably placed into their memories. Thus, it will be up to the United States to develop a new "strategic vision" with regards to its policy towards Japan and the rest of Asia.

A decent model for future U.S.-Japanese economic cooperation may be found in the multi-lateral aid initiative to the Philippines. While the Philippines needs monies and investment, they have some reservations about dealing exclusively with the Japanese. By the United States working

- 198 Paul Maidment, "The Yen Block," The Economist, 15 Jul. 1989, p. 15.

jointly with Japan, Filipino hesitations can be somewhat alleviated knowing that the United States is involved in the transaction and will keep Japanese interests in check. On the other hand, the United States also profits politically because more money can be offered to the Philippines by combining resources with the Japanese.

2. Regional Military Policy

On the military side of the relationship, the first step is to clearly define the purpose and value of U.S. forces in the Pacific which provide protection for Japan. Granted, the United States gains greatly by stationing troops in Japan, but the Japanese benefit handsomely by not investing monies in defense. Once a clear strategic framework has been established, Japan should either pay the United States accordingly, or provide some other form of economic compensation to the United States. Unlike clearer policies in Europe, U.S. forces in the Pacific may eventually be considered "Gurkas" unless a clear mission is established.¹⁹⁹

There are a number of reasons, presently, for Japan to value the presence of U.S. forces in its country. Regardless of the current outward signs of the Soviet Union, its intentions in Asia are still widely viewed as uncertain

¹⁹⁹ Donald Hellman, Personal Interview, Monterey, CA, 23 Feb. 1990.

and its armed power remains potent.²⁰⁰ Granted, if world geopolitical changes stay on course, within a few more years the Soviet presence will not seem so ominous to a distrustful Japan.

If changes are enacted between the United States and Japan in the near future to strengthen and balance the relationship, numerous benefits can be realized. Both America and Japan will continue to prosper and lead development within the region, giving newly developing countries a chance to begin industrialization, thereby increasing regional stability. The United States will be able to bring its military commitment in line with economic constraints, reducing domestic pressure to return to a period of "Fortress America," which would not be good for either the United States or the rest of the region. Since the end of World War II, America has provided a great service to the region, allowing the Pacific to develop under a "blanket" of U.S. protection. As nations such as Japan mature and prosper, it simply becomes time for them to begin accepting more responsibility and increasing their commitments to regional prosperity and stability.

- 200 Steven R. Weisman, "Japanese-U.S. Relations Undergoing a Redesign," The New York Times, National Edition, 4 Jun. 1990, p. A2.

C. U.S. TECHNOLOGY POLICY TOWARDS JAPAN

It is imperative for the United States to have a coherent high technology policy towards Japan. Previous chapters in this paper discussed problems endemic to the present high technology relationship between the United States and Japan. These problems need to be addressed as technology plays two roles critical to future U.S. national security. One role is in defense weapons systems and the other is in U.S. economic competitiveness.

1. Defense Technology

There is no question that Japanese technological components are an integral part of some U.S. defense systems. However, U.S. reliance upon Japanese parts is not in and of itself a threat to national security. There appears to be little chance that a supply disruption will occur between Japan and the United States. Trade between North America and Asia is not likely to be blocked or hampered by a hostile nation. Also, the Japanese would not likely embargo or restrict the flow of technological parts to the nation responsible to its external security.

National security concerns may arise from the loss of U.S. production capabilities for specific military-applicable technologies. The U.S. semiconductor industry, while being dwarfed by Japan's, can still produce significant quantities of semiconductors. Should the United States lose the capability to produce semiconductors, Japan could supply its

needs. However, should a future situation arise where the semiconductor supply is threatened, it would take the United States markedly increased time to resume domestic production necessary to support DOD needs.²⁰¹ The U.S. machine tool industry is in a situation similar to the semiconductor industry.

If the United States Government should deem an industry necessary to national security, there appears to be two ways to ensure its viability. The United States must either protect the industry, or encourage cooperation and interdependence between Japanese and U.S. firms.

Protection of a domestic industry through government funding or tariff and non-tariff barriers would provide some clear benefits. The United States would ensure itself an uninterrupted supply of the technology. Jobs and the knowledge accompanying the technology would be preserved for the future. Furthermore, that particular industry would not be susceptible to foreign leverage.

The costs associate with protecting industries, however, are daunting. If trade barriers are erected, the free trade principle of comparative advantage would disappear. While the technology would be readily available for defense industries, prices for the technology would rise and could be devastating for non-defense industries used to

- 201 Libicki, p. 87.

purchasing large quantities of the technology inexpensively from Japan. If this happened to the semiconductor market, this situation could have severe effects upon the overall economy.

The alternative to trade barriers, government subsidies, would probably be a better solution, albeit a costly one. To protect an industry, the government could pick out specific companies, then pay them what is needed to keep their operations running and competitive with Japanese firms. This would increase government spending, but would not be as potentially ruinous to the overall economy.

Protecting industries will accomplish the goal of ensuring domestic production of a technology, but a more feasible option would be U.S.-Japan cooperation. The foundation already exists through the 1983 Exchange of Notes on the Transfer of Japanese Military Technologies, and the 1984 Report of the Defense Science Task force on Industry-to-Industry International Armaments Cooperation.²⁰²

If Japanese and American industries worked together, many benefits could be realized, but controls would be necessary. One stipulation may be that a certain percentage

- 202 Corning, p. 269.

of production must take place in the United States under the control of a U.S. firm. This would secure a domestic supply of the product in the event of some disruption.

The President has the power, in the name of national security, to block the sale of a U.S. company to a foreign firm. Had Fujitsu actually attempted to purchase Fairchild Semiconductor in 1987, instead of blocking the sale, the President could just have added constraints to the sale. The threat would be that if certain guidelines were not followed in the future, the firm would be nationalized on national security grounds. This would probably encourage the foreign firm to follow Government guidelines, yet not interfere with free-market principles as nullifying the sale would. An approach such as this would also not cost the Government as much money. By blocking the sale of companies, the Government may be obliged in the future to subsidize the company if it can not compete in the free market.

Another area which would need to be controlled in defense cooperation would be technology transfer. Following the Toshiba incident, Japanese firms became very aware of U.S. sensitivities about technology transfer to third parties. Japan will have to be encouraged to tighten technology transfer procedures. The General Security of Military Information Agreement serves as the vehicle to

monitor this situation with other nations.²⁰³ The United States and Japan should have a similar type of agreement.

2. Economic Competitiveness

Developing a successful technology policy for U.S. economic competitiveness would be a monumental task. For the Government to attempt initiation of a policy would be a signal that America is shifting away from pure laissez-faire principles, towards a more Japanese style of government-industry cooperation. Should American business leaders institute some type of technology policy amongst themselves, they would be detouring from 100 years of U.S. business practices, not to mention likely violations of anti-trust laws.

Solutions to the problems associated with the economic competitiveness of technological industries rest more with reevaluating existing structures, programs, and business practices than changing the way Americans do business. America's edge above the rest of the world has been its strong technological innovation and skilled work force. As James Fallows points out "if we try to act like the Japanese, we're going to lose the trade war."²⁰⁴

The first step needs to be a recognition that economic security is equal to military security. Donald

- 203 Corning, p. 284.

- 204 Fallows, "America's Secret Weapon Is America," The Washington Post, 26 Mar. 1989, p. D2.

Hellmann explains how economic foreign policy has no coherent structure, but is initiated from Congress and lobbying groups and regulated by the President through negative actions (vetoes, etc).²⁰⁵ There needs to be some form of aggregate structure to deal with economic foreign policy. This does not mean developmental or industrial priorities are set, but that laws, government technology funding, and foreign policy are all reviewed and considered part of the national security interest.

A good example of a poorly managed resource is government and military R&D. No trade policy group reviews current developments in military R&D to see what potential value spinoff technologies could have if made available to business. Also, there is a plethora of technology available from government-sponsored research which is not taken advantage of by companies because laws inhibit investment. An effective trade policy organization would review these policies, taking both national security and economic health into account. This would lead to better management of government resources benefiting both government and business, while retaining free-trade principles the United States has built its success upon.

- 205 Donald C. Hellmann, "The Imperatives for Reciprocity and Symmetry in U.S.-Japanese Economic and Defense Relations," in Makin and Hellmann, eds, p. 64.

One step the government could also take would be to change its tax system to reward long-term capital investment, rather than short-term gains.²⁰⁶ To develop new technologies, a company needs to constantly reinvest monies into R&D, not simply please shareholders. A system structured for long-term gain would strengthen high technology industries on the leading edge of new developments, historically America's economic strong point. This would focus economic development upon America's industrial centers, rather than its service industries.

Another means to increase and cheapen capital would be to have better incentives for Americans to save, rather than borrow, and cut the federal budget deficit. The restructuring of the income tax laws in 1986 did not necessarily increase the incentive to save, but simply decreased the incentive to spend. If the federal budget did not increase and the deficit began to decrease, more capital would be available for investment as well.

The United States must be more firm when dealing with Japan on technology-related issues. U.S. intellectual property rights need to be protected in Japan as they are in the United States. If the Japanese are allowed to participate in U.S. research centers, American researchers need access to Japan's. The two nations continually stress

- 206 Rosecrance, p. 13.

how interdependent they are, yet there is no clear two-way flows of information. If the United States Government had a specific office or department to deal with economic foreign policy matters, many of these situations may improve.

D. CONCLUSION

On balance, the relationship between the United States and Japan has dramatically evolved since the end of World War II. Japan currently relies on the United States to provide for its external defense. At the same time, the United States has come to rely upon Japan to supply a number of technological items critical to U.S. security, such as semiconductors, machine tools, and the purchasing of U.S. Treasury bills to finance the federal government. This relationship demonstrates clearly the world trends towards interdependence.

The United States needs to address some potential national security problems which may arise from its relationship with Japan. Most noticeable is the increasing U.S. dependence upon Japanese technology along with the accompanying economic challenges, and the implications this dependence may have upon U.S. national security and economic competitiveness. If these problems are ignored and animosities between the United States and Japan continue to

rise, a rupture in the relationship could be extremely harmful to both countries, each sacrificing portions of its overall national security.

The United States also needs to recognize that developments in the American-Japanese high technology relationship would seem to be a reflection of the overall situation between both nations, as technological industries have become the backbone of Japan and the United States. Both countries need to work out differences and play by the same rules when cooperating on the development and production of technological related industries; they both could learn from each other and continue to maintain healthy economic growth.

In light of the changing world order, the first step for the United States to take is to accept the notion that economic power's utility is increasing relative to military power. Since World War II, we have considered our national security primarily in geopolitical terms, while Japan has concentrated on its economic security. As a result, the relationship between the two nations has become unbalanced, with the United States providing military defense for a country, Japan, which presently has a much healthier, faster growing economy.

The national security of both America and Japan depends on continued cooperation between the two nations, both in the

economic and military sectors. It appears both parties are beginning to recognize the value each holds for the other. One can only hope that this increasing awareness leads to constructive cooperation with both side sharing equally in the work and the benefits derived from their bilateral relationship.

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