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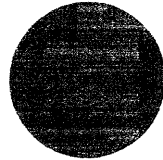
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COCOM IN A PERIOD OF CHANGE

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COCOM in a Period of Change

By Paul Freedenberg,

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## COCOM in a Period of Change

Along with NATO (the North Atlantic Treaty Organization), COCOM (Coordinating Committee for Multilateral Export Controls) is at the core of the post-war struggle with the Soviet Union that came to be known as the Cold War. This non-treaty organization, which was organized by the United States in the same year as NATO and the Berlin Air Lift (1949) has had remarkable success and stability over its four-decade history.

The premise is a simple one. Since the Soviet economic and technological base is not able to produce weapons systems and technology of a sophistication equal to that of the Western Alliance, it is in the interest of the United States and its allies to deny the Soviets the technological tools to close the gap. That is particularly important, because, after the Western defense build-up of the early 1950s, it was decided not to match the Soviet Union and its allies man-for-man, tank-for-tank, or plane-for-plane, but rather to rely on the technological superiority of Western weapons systems as the means of offsetting the numerical superiority of the East. Our strategy is based on the force-multiplier effect of Western technology.

So far, this strategy has served the United States well. In the few examples of head-to-head confrontation with Soviet weapons systems, Western technology has been the clear winner.

In 1982, Israel and Syria engaged in an air battle over the Bekka Valley in Lebanon. The Syrians flew Russian MIG-21 and MIG-23 jet fighters, while the Israelis flew U.S. F-15's and F-16's. At the end of the engagement, the score was an impressive victory for Western technology: 81 Syrian fighters were shot down compared with a single Israeli fighter lost to ground fire. Certainly, a great deal of credit must be given to the excellence of the Israeli

pilots and their ground crews. However, the sheer magnitude of the numbers demonstrates the clear superiority of the U.S. weapons and their command and control systems.

Similarly, the success of the 1986 U.S. attack on Libya was due in part to the ability of U.S. electronic countermeasures to silence Libya's Soviet-supplied air-defense weapons systems. Once again, credit must be given to the American pilots and their support crews. It was U.S. technology, however, that was the decisive factor.

As a final example, the face of the war in Afghanistan changed dramatically after U.S. hand-held Stinger missiles were supplied to the rebel forces. The effectiveness of Soviet air power and the willingness to commit helicopters to combat was significantly diminished by American technology.

#### The First Three Decades of CoCom

From its very beginning, there have been disputes among the allies in COCOM as to what is the proper level of strategic trade control. Not surprisingly, the United States, with the lowest percentage of its economy accounted for by foreign trade and without a historic record of significant trade with the Soviet Union or Eastern Europe, was the most conservative in its approach as to what ought to be controlled and what constituted strategic trade. Throughout the first decade of COCOM there were constant disputes as to the scope and the criteria for the embargo list. Japan joined COCOM in 1952, after signing its Peace Treaty with the United States, and from the beginning it sided with the Europeans who wanted to restrict the list only to that which would have direct military value to the Soviet Union. For its part, the United States Government wanted to include products that could contribute to Soviet economic recovery and growth. With its economic pre-eminence and alliance leadership unchallenged, the U.S.

invariably won the COCOM debates in favor of conservatism in defining what constituted a strategic, dual-use product or technology.

This almost-total embargo imposed by COCOM continued through the 1960s, with the organization going about its work quietly and with comparatively low-level bureaucrats making list review and licensing decisions at COCOM headquarters in the U.S. Embassy Annex on a back street of Paris. There was very little dispute and very little attention to COCOM, considering the fact that it was responsible for coordinating such a massive embargo of the Soviet Union and its allies and, in the process, was compelling the Western Allies to license tens of billions of dollars of trade among themselves and the rest of the world.

By the end of the 1960s, U.S. companies began to complain about being shut out of Soviet and East European markets, and the Export Administration Act of 1969 reflected a relaxation in what had been, until then, an almost-total embargo on technological trade with the Soviet Union. The policy of detente initiated by President Richard Nixon and his National Security Advisor Henry Kissinger was premised on the assumption that a web of economic relations could be constructed in such a way as to ensnare the Soviet Union into a more peaceful attitude by orienting them toward economic rather than military competition. While this policy did not achieve its objective, before it ended in 1979 -- with the Soviet invasion of Afghanistan - - it caused a profound change in the U.S. Government's behavior in COCOM. Not only did we take a more indulgent attitude towards our Allies' trade with the East, but by the middle of the decade we had become the leading requestor of exceptions from the embargo list, with 57 percent in 1976 and 63 percent in 1978. With the U.S. taking such a strong position in favor of exceptions to the list, the allies followed suit with enthusiasm.

During this period of laxity in COCOM, suspicions began to surface that the U.S. was using COCOM for commercial purposes. Since it was the leading requestor of exceptions, the U.S. Government tended to lose its moral platform when it exercised its veto with regard to the requests of its Allies. Nonetheless, the idea that the U.S. Government has ever used its COCOM veto to gain advantage for an American firm would be met with incredulity by U.S. companies, who are uniformly convinced that their government is the most severe in judging U.S. commercial products and technology against COCOM standards and consistently errs on the side of caution when making export licensing and COCOM decisions. By contrast, these same firms would argue that their competitors in other COCOM-member countries would consistently get the benefit of the doubt if their product is at or near the margin of the COCOM cut-off line. The fact that throughout this period the U.S. Government exercised unilateral controls on dozens more products and technologies than any other member of COCOM would tend to refute the accusation of a commercial purpose behind U.S. policy in COCOM.

Combined with suspicion and assumptions of bad faith was a high degree of laxity in enforcement characterizing both the United States and its Allies during the 1970s. The U.S. Government, which was reputed to be the most serious about enforcement of its export control laws and regulations, actually put very few resources into this effort. The Commerce Department, as the lead agency in the effort, had less than a dozen agents handling enforcement and, in general, the prevention of illegal technology transfer seemed to have a very low priority and few resources devoted to it during this period.



## Reagan Administration Technology Transfer Policy

The Reagan Administration took office determined to reverse this trend with regard to technology transfer. President Carter had already announced an end to the practice of approving exceptions to the COCOM embargo list in March, 1980. This was done in response to the Soviet invasion of Afghanistan. President Reagan, however, enshrined this "no exceptions" policy as the centerpiece of a new COCOM policy that would see a complete reversal of the U.S. technology transfer policy of the 1970s. The theme of detente was already dead, but the theme of the Soviet Union as the "evil empire" fit into the new President's policy of strengthening U.S. and Western defenses and of putting particular reliance on Western technological superiority to gain advantage over the Soviet Union. In addition to the enormous defense build-up, President Reagan embarked on a significant strengthening of export licensing and enforcement, which resulted in a tripling of the budget and resources devoted to preventing illegal technology transfer at the Commerce Department alone. Similar increases were made at the Defense Department and the Customs Service. His Secretary of Defense, Caspar Weinberger, argued that this was necessary so that the Soviets would no longer be able to offset Western technological superiority by means of theft and espionage of technology and secrets.

Central Intelligence Agency and Defense Department analyses had already documented the significant extent to which the Soviet military had taken advantage of illegally acquired Western technology. Captured documents revealed more than 3,500 successful incidents of technology theft over the previous five years and detailed plans for continued activity. The evidence suggested that during the decade of the 1970s the KGB had made the acquisition of Western technology one of its primary tasks. It was critical not only to the improvement of

missile accuracies and other significant military applications but also to the enhancement of the efficiency of Soviet military industries.

Contemporaneous with the Soviet drive to acquire Western technology was another equally significant development. During the 1970s, the U.S. lead in many aspects of high technology dwindled or disappeared. For the first time in the post-war era, U.S. high-technology firms saw their foreign markets taken away by aggressive new competitors, and even their domestic market share challenged. This meant that export controls and other constraints, which served as a nuisance in earlier times of unquestioned U.S. high-technology dominance, could possibly make the difference between holding on to an important market or losing it, or the difference between penetrating a lucrative new market or forfeiting it to a foreign competitor.

America's reliance on qualitative superiority makes it uniquely dependent on the innovative capabilities of high-technology industries for national security. To maintain battlefield advantage, it is not enough to make marginal improvements in current weapons systems. Rather, it has to develop weapons with capabilities that may have been thought impossible five years before. This technological "leapfrogging" can only be accomplished with a healthy and vigorous high technological industrial base. Unfortunately, by 1980 the procurement requirements of military agencies were no longer sufficient to guarantee the vitality of that critical national resource. This is a distressing change from the situation during the 1960's, when military purchases alone were sufficient to maintain our high tech industrial base.

At that time, the U.S. military accounted for up to 100% of the demand for the most advanced integrated circuits, and represented up to 50% of the domestic demand for

semiconductors. During the decade of the 1980's, military procurement represented less than 10% of that market.

More alarming was the fact that the Department of Defense was no longer a leader of technological innovation. Formerly, the development of advanced weapons systems provided many spin-offs to the civilian market. During the past ten years, the opposite has been the case; advances in civilian technology provided spin-offs to military weapons and command and controls systems.

U.S. weapons systems deployed during this period incorporated electronic components that were up to eight years behind the state-of-the-art available in civilian products. Few military systems incorporated advanced 16-bit microprocessors such as the Intel 80286, which is the heart of the now-aging IBM AT Personal Computer. This role reversal for the Department of Defense has created a real dilemma for national security strategists.

Since 1949, one important element of U.S. security strategy was the control of exports of high technology in order to keep them out of the hands of the Soviet Bloc. Originally, the strategy was to err on the side of caution and keep export controls fairly tight. The rationale being that since the United States was the largest market for high-tech products, the commercial and competitive effects of controlling exports would be minimal. This idea was supported by the fact that technology had not diffused widely in the world economy, and U.S. producers had the dominant market position.

That changed dramatically during the 1980's. Advanced technology diffused widely throughout the world, and U.S. producers had to compete against strong foreign competitors in a truly global market. From 1981 to 1985 alone, the growth in world trade for

five critical high-technology industries (computers, machine tools, aerospace, telecommunications equipment, and microelectronics) increased 37%. The U.S. share of exports in these industries was under constant attack. In 1981, the U.S. accounted for nearly 26% of world exports of microelectronics, while by 1985, that figure had dropped to just over 23%. Similarly, for computers, the U.S. had nearly 41% of exports in 1981, but by 1985, it had dropped to just over 32%.

The dilemma faced in the area of national security export controls was rather simply stated: since national security was dependent on the ability of high technology industries to innovate, and since technological innovation depends on the ability of those industries to compete successfully in a global market, what was the long-term benefit of unduly restricting access to those markets with export controls?

This dilemma engendered a debate within the U.S. Government that continued throughout the Reagan Administration. The two sides of this debate were genuine in their concern for preserving national security. Unfortunately, however, their concern took them in two diametrically opposed directions.

One side argued that any contribution to the Soviet economy, even if directed solely to the civilian sector, undermines the national security of the United States. This view is based on the assumption that Western contributions to the Soviet civilian sector allow Soviet economic planners to divert their own scarce resources to military purposes. This was generally the position of the Defense Department under Secretaries Caspar Weinberger and Frank Carlucci.

The other side held the view that some level of nonstrategic trade with the Soviet Union was inevitable because the United States could not unilaterally affect international trade.

and because of the wide diffusion of advanced technology. Accordingly, they urged national security planners to focus their attention on that technology which would make a direct and significant contribution to Soviet military capabilities. Commerce Secretaries Malcolm Baldrige and C. William Verity were identified with this view.

Of course, both arguments have validity. It is unassailable that any contributions to the Soviet economy will raise the level of basic industrial capability. It is equally true that the United States cannot single-handedly control all Western trade with the Soviet Union. The latter point is well demonstrated by the fact that many Western European Governments have indicated their support for an increased level of trade between their countries and the Soviets.

The fundamental questions revolved around how the United States maximized its influence over Western trade and technology transfer with the Soviet Union in order to minimize the adverse national security effects of such commercial activity. Within this minimization/maximization analysis, an important question was: what was the definition of "any acceptable level of risk."

In some areas of technology, the unacceptable risks were rather easy to define. For example, there is unanimous agreement within the U.S. Government that the diversion of even a single very advanced computer (a so-called "supercomputer") to the Soviets would present grave national security concerns. This type of computer is capable of breaking the codes that protect the transmittal of vital intelligence information. They are also an extremely useful tool for the design of nuclear weapons and ballistic missiles.

As a consequence of these indisputable risks, the export of supercomputers has been subject to an extremely restrictive control regime. The purchaser of such a device has to

agree in advance to certain limitations on the use of the machine. In addition, the host government must agree to assist the U.S. Government in policing how the machine is used. Without these assurances, the U.S. Government would not agree to the proposed export. Below the level of advanced computers, telecommunications, and semiconductor manufacturing systems, however, defining an acceptable risk was anything but easy. A good example was the area of low-technology, U.S.-Soviet joint ventures. A recent case is illustrative of this problem.

An American company wanted to establish an "Engineering Center" in the Soviet Union to train Soviet technicians in the maintenance and repair of the devices which the company had been exporting to Soviet customers for some time. Since the case involved the export of "technical data" to the Soviet Union, the license required coordination with the Department of Defense.

The Defense Department objected to the concept of an engineering center, and, accordingly recommended that the license be denied. The irony of this case was the fact that the products themselves could be sold anywhere in the world without an export license. In addition, both U.S. and COCOM regulations allowed the company to provide training to the technical staff of their customer at the site where the equipment was installed. The only reason a U.S license was required was because the training would take place at a location other than at the customer's factory.

In retrospect, it might have been better if the company had not called the training facility an "Engineering Center." However, this case required a Cabinet-level meeting to resolve the dispute and approve the project -- hardly a productive use of the time of the President's closest advisors.

The other element that needs to be factored into the analysis of risk minimization is the fact that the United States cannot, by itself, control the flow of high technology to the Soviets. Maintaining the technological advantage requires the close cooperation of all the COCOM allies. COCOM operates on the basis of the consensus of its members, which means that all members must agree on the level of technology to be controlled. Consequently, every proposal to add or delete an item from the list of controlled technology must receive unanimous agreement.

By the 1980s, the international list of controlled technology had become an extremely technical document, identifying specific types of products (such as computers) which member countries had agreed to subject to export controls. The controls on products are defined in terms of technical performance parameters. The list prescribes the performance level above which an export to the Bloc must be submitted for full COCOM review. If any country objects to a proposed export, the license must be denied. Exports of products below that level may be approved by the exporting country as a matter of national discretion.

The veto power of COCOM members over individual exports is a rather extraordinary limitation on the sovereignty of the other members. It is all the more remarkable since the organization operates on an informal basis without the benefit of a treaty or other formal instrument.

From the beginning of his tenure as President's Reagan's Secretary of Commerce, Malcolm Baldrige called for a radical reduction of the COCOM control list. The number he most often used to quantify this radical reduction was 40 percent. The Defense Department, however, was in no mood for radical reductions--or streamlining, as it was called--of the list.

Commerce Department proposals for list reduction invariably were reduced to minor technical adjustments to commodity definitions of items on the list and little reduction resulted from repeated proposals. An alternative to reduction of the overall list was proposed in February 1987 as the so-called "Baldrige reforms." The concept put forward was to resolve the impasse with the Defense Department by focusing on the reduction of the number of products that needed validated licenses to Western destinations, rather than trying to reduce the size of the overall list. The particular advantage of this approach for Secretary Baldrige was that West-West trade was an area over which his department had almost complete jurisdiction (while Commerce and Defense shared authority for licenses to the East).

The theory behind the "Baldrige reforms" was that products and technology are controlled to Western destinations only because of the possibility that they may be diverted to the East. But anything going to Japan or to Western Europe is likely to be produced in those countries as well.

U.S. export controls, therefore, can only be as good as those of its Allies. Willingness to cut individual validated licenses for shipments to the West was linked to efforts to strengthen the national enforcement policies of other COCOM countries. Confidence that enforcement had been significantly strengthened led to an approximate 25 percent cut in the number of products being licensed to the West during 1987.

The Trade Act of 1988 followed logically from the Baldrige reforms. The export control section of the Act removed the requirement for licensing of products to COCOM destinations below the level of technology that could be sold to the People's Republic of China without COCOM review. That additional cut in West-West licensing removed yet another 50



percent from the universe of products under control to allied destinations. Mainframe computers from Digital Equipment Corporation, IBM, Unysis and other major computer producers, semiconductor production equipment down to an accuracy of two microns, precision machine tools, and a number of products of reasonably high sophistication were available without an individual validated license.

That meant that, despite a doubling in the dollar value of U.S. exports between the first quarter of 1986 and the last quarter 1988, individual validated licenses showed a downward trend during that period, with 110,000 in 1986, 105,000 in 1987 and 97,000 in 1988.

The Baldrige reforms also established a new de minimis level. Previously the U.S. Government claimed jurisdiction over any product that contained any controlled U.S. part or component. In 1987 a de minimus level of 10 percent was established to Soviet, PRC, and East European destinations, and 25 percent to the rest of the world. The 1988 Trade Act eliminated the distinction between Eastern and Western destinations, and established an across-the-board 25 percent de minimus level before U.S. jurisdiction could be asserted. This means that for the vast majority of products there is no need for U.S. re-export authorization. That was enacted, because in most cases (although these re-export authorizations were being requested from all companies) the only companies that complied were the generally law-abiding large European and U.S. multinationals.

The companies the U.S. Government really wanted to keep track of simply ignored the re-export authorization requirement, since they believed themselves to be only under their host country's jurisdiction. Assertion of extraterritorial jurisdiction was not getting the U.S. Government very far, and it turned out to be a very effective way of de-Americanizing the

components of a number of products overseas. One example was a large European multinational corporation. They which revealed that they were about to cut out \$60 million worth of orders from one Boston-based company in 1986, because of the re-export authorization needed in order to use those products in their medical equipment. That cut would have eliminated about one-third of that U.S. company's sales for the year. This cut was contemplated only because of the European company's desire to get out from under the U.S. Government's assertion of extraterritorial re-export jurisdiction. Early in 1987, the Commerce Department withdrew the assertion, changed the regulations, and subsequently the European company decided against that cancellation.

An additional example was a 1986 letter from the British Aerospace Company that said to its subcontractors that to the greatest degree possible they should not use American parts. It instructed them to use such parts only as a last resort. Once again, this was done to obviate the need for U.S. reexport authorization.

In February 1989, the Commerce Department published regulations eliminating unilateral export controls on selected technical data and chemicals. The requirement for U.S. authorization to re-export American products into COCOM countries was eliminated as well. This was part of the effort begun in the Baldrige reforms and continued in the 1988 Trade Act to get rid of, to the degree possible, U.S. extraterritoriality. Clearly, it was counterproductive to U.S. commercial interests, and, moreover, it was not being followed by the target companies. Only a small portion of the intended targets ever submitted requests for re-export authorization (an average of 20 percent by Commerce Department estimates). Thus, in addition to

undermining American business interests in the West, it was only minimally affecting the flow of technology to the East.

#### The "Toshiba Affair" and Japan's Export Control Regime

During this period there was also a dramatic reduction in the amount of time it took to process licenses. In 1984, the average processing time to Free World destinations was 60 days; to COCOM destinations that timeframe was 46 days. By 1988, those times were reduced to 14 days for the Free World and only four days to COCOM countries. Through a combination of management improvements and the installation of modern data processing systems, including electronic mail and optical character readers, the burden on U.S. business and on foreign companies wishing to purchase U.S. products was significantly reduced.

During this same period the U.S. Government was pushing its Allies to increase the resources they devoted to export licensing and enforcement. The plans for increased effort fell on deaf ears until the uncovering the now-famous sale of precision machine tools and software by Kongsberg Vaapenfabrik of Norway and the Toshiba Machine Company of Japan. In the fall of 1986, U.S. intelligence agencies discovered an on-going scheme by these two companies to supply nine-axis submarine propeller milling machines and the necessary software to the Soviet Navy propeller production facility in Leningrad--the Baltic Shipyard. The equipment included computer-aided design and computer aided manufacturing software, so-called CAD/CAM, as well as the numerical controllers from Kongsberg and the actual machine tools supplied by Toshiba Machine. The transaction began in 1981 and continued until the time of its discovery in 1986. It involved shipment and installation of the machine tools, as well as modification of the software to meet the specifications of the shipyard.

The products involved were strictly controlled by COCOM and needed the submission of false end-user certificates and falsified model numbers and specifications in order to be granted approval by the Norwegian and Japanese export control authorities. There was never any question of innocence or misunderstanding on the part of the individuals involved. It was a conspiracy, pure and simple. The only question that remained was: how high up in the two corporations was there knowledge of the conspiracy?

The export control violations were brought to the attention of the Japanese and Norwegian Governments in late 1986, and there was a full-scale presentation of the case against the two companies at a COCOM meeting in February, 1987. Both governments vowed to take strong action, but it was inevitable that violations of this magnitude would leak to the press.

The story broke in spring 1987, and from the beginning the focus was almost entirely upon Japan and Toshiba. Kongsberg Vaapenfabrik was at least as guilty, if not more so, since it supplied the crucial numerical controllers and the software, even going so far as to modify the software on location to fit the needs of submarine propeller manufacture. Nonetheless, Kongsberg was almost forgotten in the flurry of denunciations against Toshiba and Japan. When members of Congress took sledgehammers to Toshiba products on the steps of the Capitol, televisions and copy machines were featured--but not one can of Norwegian salmon or sardines was to be seen.

Hearings were held and bills introduced to sanction the two companies for their wrongdoing (both companies were noted, but the amendments were always referred to as the "Toshiba Sanctions"). The Norwegian Police Report, initiated to investigate the scope of this problem, concluded that more than a hundred violations of COCOM export control had occurred

during the previous decade and that Great Britain, France, Germany, and Italy all had companies which violated the COCOM guidelines in their dealings with the Soviet Union and the People's Republic of China. This, however, had little affect on a Congress fixated with Japan and Toshiba's role in the violations.

To exacerbate matters, Fred Ikle, the Under Secretary for Policy of the Department of Defense, came out with an estimate that it would take from \$17 to \$30 billion to restore U.S. anti-submarine capabilities to the level they had attained prior to the acquisition of the machine tools by the Soviet Union. Obviously, great harm had been done, but even within the Defense Department there was significant debate as to what the proper estimate ought to be. A subordinate of the Under Secretary for Policy, Assistant Secretary Richard Armitage wrote a letter to Congress questioning the high estimate of the damage, since it was impossible to provide a baseline of what Soviet capabilities would have been in the absence of the machine tools.

Congressional critics, however, put no credence in the low estimates of damage, citing instead the \$30 billion estimate as though it had been arrived at by precise scientific calculation rather than being the product of a rough "guesstimate" by one part of the Defense Department. Nor would they listen to Administration witnesses who pointed out the fact that the technology involved was purely Japanese and that, therefore, the United States Government had no jurisdiction whatsoever. The Administration argued that it was up to the Government of Japan to punish the wrongdoing and that the matter was being pursued in Japanese Courts under the applicable laws.

Senator Jake Garn, of Utah, became the leader of the group wanting U.S. sanctions against Toshiba and Kongsberg. With his position as the ranking Republican member

of the committee of jurisdiction in the Senate and his longtime interest and leadership on the issue of export controls, his colleagues tended to defer to him. His position on the issue was a harsh one: the Toshiba Corporation ought to be banned from selling its products in the U.S. market for a period of five years (Kongsberg was included in this ban as well, but the Kongsberg effect would only be on a few defense contracts, and from the beginning Garn and his colleagues were willing to make exceptions for national security purposes--which meant that Kongsberg would, for all intents and purposes, be unaffected). The Toshiba sanctions amendment was added to the pending Omnibus Trade Bill. It provided retroactive sanctions for the sale of those specific machine tools to the Soviets, but is made all other such bans from the U.S. market prospective rather than retrospective. In other words, even if other violations of COCOM were discovered of an equally serious nature, they would not be covered by the sanctions. Only new violations, occurring after the date of passage of the legislation, would be subject to these sanctions.

In the debate over the amendment, while the focus of the dispute was national security and export controls, it was clear that the widening trade deficit with Japan and the uneven defense relationship played an equally significant role. The opportunity to punish a Japanese corporation for its wrong doing was popular with voters, and there was little interest or knowledge of the niceties of corporate structure, chain of command in Toshiba, or U.S. legal jurisdiction for that matter. Even the fact that Japan would have a strong case in the GATT had little effect on the vast majority of Congress.

The Administration took a strong position against the so-called "Toshiba sanctions," but since the sanctions were likely to be included in a very popular and bipartisanly

supported Trade Bill, there was little chance of defeating the sanctions in a straight vote. The best that could be hope for was moderation and alteration of the sanctions.

The high-level meeting of the representatives of COCOM countries, held in Versailles, France on January 28 and 29, 1988 was conceived originally as the best hope of leading off harsh sanctions by the Congress. Clearly, more than just Toshiba was at stake. COCOM operates by consensus and without a formal treaty. It is tolerated by the parliaments outside the United States, but there is hardly what could be called enthusiastic support. The principle that any company domiciled outside the United States and not using U.S. parts, components, or technology, could nonetheless be subject to U.S. sanctions for violations of the COCOM embargo list was a dangerous precedent. It was all the more objectionable because the Toshiba case was at that time moving through the Japanese court system. Every country in COCOM voiced its objection to the United States. Formal Aide-Memoirs were presented to Congress by the European Community and many other individual countries.

Despite all the objections, it was understood by the member governments of COCOM that the Toshiba-Kongsberg incident, and other revelations of similar violations in its wake, indicated a fundamental weakness in COCOM. Representatives to this high level meeting, therefore, pledged their governments to a number of reforms with regard to their respective domestic export control systems: documentation would be improved and standardized with other members; administrative and criminal penalties would be increased where appropriate; additional personnel and resources would be devoted to export control licensing and enforcement functions; and additional information about export controls would be made available to exporters, so that every high technology exporting company would be aware of its responsibilities. Additionally,

it was agreed to create an executive committee within COCOM to provide political guidance on an on-going basis, to regularize export control arrangements with cooperating non-COCOM members, and to meet at least once per year at a high level to decide the political direction of the organization.

Getting a commitment to such far-reaching reforms was a major achievement for the United States, one that had been an objective since the beginning of the Reagan Administration. The so-called southern tier of COCOM--Spain, Portugal, Italy, Greece, and Turkey--had been particularly deficient in a number of the areas where commitments were made. Particularly at a time of lessening Cold War tensions, to get a pledge of additional resources and legislation for the stiffening of penalties for violations was quite an accomplishment. Getting France to agree to regular high level meetings and executive committee political guidance in COCOM, when she rejected that same principle in NATO was also something of a coup. Subsequent to Versailles, a number of COCOM members followed up on their commitments with additional resources and legislation on penalties for export control violations. Spain, Italy, Norway, and the Federal Republic of Germany made notable progress, with the FRG doubling its export control personnel and increasing its budget by \$35 million.

Most importantly, Japan made the most far-reaching changes in its export control system since joining COCOM: sanctions and penalties were significantly increased, with the statute of limitations becoming seven years (from three); MITI (the Ministry of Trade and Industry) tripled its export control staff (to more than 100 personnel); a number of inter-agency councils were created to better coordinate export control policy; and MITI greatly expanded its outreach programs to Japanese companies so that they would understand their responsibilities



under the export control law. Significantly, both the Japanese Government and Japanese industry spokesmen, such as the Keidanran, acknowledged publicly the important role that export controls played in Japanese national security. These far-reaching changes were by no means inevitable. It took great political courage on the part of the Nakasone Government to undertake them, despite--not because of--the political debate that was going on in the United States over Toshiba.

The effect on Japanese export control regime was nothing short of dramatic. Not only did the time it took to process a license lengthen considerably (from an one week average to nearly a month--while the United States system was going in the other direction), almost overnight companies found licenses denied, or sent back for additional information. Some reported being discouraged from doing business in the East. A number of U.S. companies with products transiting Japan on U.S. licenses encountered difficulties in obtaining approval from MITI if their final destination was in the East. The most significant result, however, was to be found in the larger Japanese high technology corporations, who adopted U.S.-style internal control compliance programs for their companies, modelled on the U.S. distribution license system, even though the Japanese Government had yet to adopt the U.S. system of bulk licenses with reliance on the companies themselves to police the shipments. Essentially they were following U.S. export control regulations even though they were under the jurisdiction of Japan regulations. The theme was clearly "no more Toshibas." Within a year, Japan went from having one of the least effective export control systems in COCOM to having on of the best.

Meanwhile the U.S. legislative process continued, apparently taking little note of the dramatic changes going on in Japan. While millions of dollars were spent on lobbying against the Toshiba sanctions, the most effective lobbying was done by U.S. companies who

stood to lose critical components or subcontractors if Toshiba were banned from the U.S. market. Such household names as Carrier, Apple, Motorola, Uniden, and Audiovox made their dependence on Toshiba products known.

In the final Trade Act, the Toshiba Amendment was considerably toned down. Toshiba Machine, one of 300 subsidiaries of the parent corporation, the original perpetrator of the illegal sale, was banned from the U.S. market for a period of three years. The Toshiba Corporation, as a whole, was banned from participating in U.S. Government procurement for two years, but the Toshiba parent was not banned from selling its products into the U.S. market, nor were products containing Toshiba components banned from U.S. Government procurement contracts. The net loss from the Toshiba Machine ban was estimated \$100 million per year, but the \$3 billion sales of the Toshiba parent were unaffected.

The Toshiba incident could certainly be viewed as an example of how not to conduct U.S.-Japan relations. The approach taken by the Congress was bullying, one-sided, and unfair. It was certainly not a way for equals to conduct diplomatic business with one another. COCOM certainly could not survive many more "Toshibas." But, ironically, it may have been the only way to reform both COCOM and Japan's export control system. Abstract discussions of the Soviet strategic threat are not very convincing, but few would argue with the proposition that Japan (and Western Europe's) technology is a strategic asset well worth protecting. Further, that technology is a bargaining chip which can be played to receive concessions from the Soviet side. That chip is not playable if technology can be easily obtained through illegal means, or if there is no unity among the high technology powers of the world, so that each is trying to outbid the other to gain favor and lucrative contracts from the Soviets. Thus, it could be argued that

it took a dramatic and palpable event, such as the transfer of critical submarine propeller technology, to gain the necessary political consensus in order to create a more effective export control system throughout COCOM.

### The Third Country Initiative

One missing link in the high technology fence around the Soviet Union was the non-COCOM, non-aligned countries, who nonetheless produced high technology products, or had access to high technology through sales. Therefore, beginning in the mid-1980s, the Reagan Administration embarked upon an intensive effort to reach agreement with these countries to cooperate with COCOM. The core of these bilateral agreements was an understanding that a condition of receiving COCOM-controlled technology is the commitment not to resell that technology to the East without the originating country's permission. In many cases there is also agreement not to sell indigeously manufactured products containing COCOM parts, components, or technology, or even indigenously manufactured products that would be controlled by COCOM if produced in a COCOM country. This means further that the non-COCOM countries have to have an export control system that assures the United States Government that it can keep track of products and technology sold to it.

The Export Administration Amendments Act of 1985 created a provision, known as Section 5-K, that allows the U.S. Government to confer COCOM-like treatment in export licensing on any non-COCOM country with an export control system that provides protection "comparable in practice" to that of COCOM countries. The list of countries receiving either full "5-K" status, or some part of the liberalized licensing benefits is quite extensive. Among those who have been granted the status are the following: Austria, Switzerland, Finland, Sweden,

Singapore, South Korea, and even Pakistan and India. Obviously, the lure of access to U.S. and COCOM high technology is so great that these countries are willing to forgo at least part of their non-aligned status (with the exception of South Korea which never considered itself non-aligned) and to also forgo trade in high technology products to the East as well. This program has been a large success in tightening the net against high technology leakage to the Soviet Union despite the fact that not every COCOM country conducts its trade with these countries as conditionally as does the United States. Today, Brazil and Taiwan are the only countries producing high technology products and obtaining high-tech components from the United States that do not have some sort of export control understanding with the United States.

#### CoCom's Effect on the Soviet Union and The People's Republic of China

Finally, it would be useful to turn our attention to the Soviet Union and the People's Republic of China to discuss the effects of U.S. COCOM policy on those two countries. First, an important distinction must be made between these two countries. In 1985, at the urging of the United States, the PRC was granted a special status. More favorable treatment was granted in 17 categories of goods (later expanded to 33), among which were found the most frequently traded items: computers, semiconductors, semiconductor manufacturing, scientific instruments, telecommunications equipment, and machine tools all fell into these categories. This became known as the China Greenline, and was liberalized again in 1987 and 1988. Within its parameters, items on the COCOM list which otherwise would need the unanimous agreement of all the COCOM members could instead be licensed to the PRC at national discretion.

The value of two-way trade with the PRC increase dramatically during the decade, with the dollar value going from less than \$1 billion in 1980 to \$14 billion in 1988. The high

technology export portion of that trade went from an insignificant \$100 million at the beginning of the decade to more than \$5 billion by 1988, with more than \$1 billion commercial aircraft and aircraft components becoming the third leading export to the PRC (after wheat and lumber). More importantly, the progressive liberalizations encouraged U.S. high technology companies to establish joint ventures in China. Companies such as Wang, Hewlett-Packard, United Technologies, and McDonnell-Douglas created JV's. In addition, Boeing created an off-set arrangement with the Xian Aircraft factory.

Allowing such high technology companies (plus their European and Japanese counterparts, such as Siemens, Philips, and Hitachi), to not only sell products but to create joint ventures where Chinese engineers would be taught the fundamental manufacturing principles behind some of the West's highest technology products was directly counter to U.S. technology transfer policy since it was articulated in the Bucy Report, made to the Defense Science Board, in 1976. This task force had recommended controls on critical design and manufacturing processes, essential manufacturing, inspection and test equipment, and operations, application, and maintenance data accompanying products. This so-called "critical technologies" approach was followed assiduously for exports to the Soviet Union and Eastern Europe but ignored in the Reagan Administration's approach to the PRC after 1985.

By the time of the Tiananmen Square massacre, the PRC had developed the capacity to produce its own 32-bit micro-computer (from Western components) and manufacture semiconductors down to an accuracy of 2 to 3 microns. It was also producing MD-80 aircraft out of its Shanghai factory joint venture with McDonnell Douglas that were good enough to pass the U.S. Federal Aviation Authority inspection for service in the United States. Mainframe

computers were made available to the PRC up to a speed of 550 million bits per second, the speed of all but the most powerful in the IBM and Digital Equipment Corporation line. In the military sector look-down/shoot-down radar was sold, as well as powerful replacement engines for MIG aircraft.

The policy of differentiation in favor of the PRC was based on the assumption that China was no longer a strategic threat to the Western Alliance and that none of the technology would be transferred to the Soviet Union or Eastern Europe. Experience since 1985 indicates that those assumptions were correct. The Chinese export control authorities were assiduous in providing end use certificates and in monitoring the use of licensed products. They even sent their people for training in the United States. The value of technology transfer cannot be underestimated, and it was the number one topic for all official visits between the PRC and COCOM countries.

The United States Government has had difficulty conducting a coherent export control policy since the Tiananmen Square massacre. The immediate reaction was to cut off military sales but to leave the dual use greenline unaffected. Indeed, although the Congress imposed sanctions on PRC satellite launches just after the massacre, President Bush recently announced a national security waiver to that sanction. The greenline was not established because the United States approved of the human rights record of the PRC. Rather, it was because of a calculation that China would not pose a strategic risk to the United States if the dual use products and technology necessary for modernization of industrial infrastructure were made available. This was the theory behind the so-called "China Card," which posed little risk for the U.S. and its allies but did make the Soviet nervous about the PRC's future capacity to wage war

on the Asian mainland. The Government of Japan seemed to agree with this calculation as well in approving the original greenline and the liberalizations of 1987 and 1988.

The allies and particularly Japan, had never claimed to have made COCOM decisions on the basis of approval or disapproval of a communist regime, or on its human rights record. The United States, by contrast, argued repeatedly that the Soviet and Polish human rights record in the 1980s should be taken into consideration when deciding export control policy. Thus, it was difficult for President Bush to argue the opposite after the Tiananmen Square massacre. Strategic calculations of risk had not changed, but certainly the PRC human rights record had a salient blemish. While the allies backed the U.S. unwillingness to roll back dual use export control liberalization for the PRC, American post-Tiananmen Square policy made earlier human rights sanctions against the Soviet Union and Eastern European regimes seem hypocritical.

The contrast between the PRC and the Soviet Union could not be more stark. Trade between the United States and the Soviet Union has never been significant. The U.S. share of total COCOM trade with the Soviet Union has averaged less than 5% over the past decade, most of that in agricultural and raw materials. The Soviet share of U.S. exports has averaged less than 2% during the same period, with \$2.1 billion in 1987 and \$3.5 billion in 1988. The Soviet share of total U.S. manufactured exports has ranged from 1/6 to 1/2 of 1% over the past five years.

This low volume of trade has been no accident. It has been the result of decades of hostility and tensions, but more specifically it was the result of the victory and ascendancy within the Reagan Administration of the school of thought that saw any manufactured exports to

the Soviet Union as dangerous. In the debate between Commerce Secretaries Baldrige and Verity and Defense Secretaries Weinberger and Carlucci, the Defense Department clearly won. As noted, their view was that any Western manufactured export to the Soviet civilian sector allows Soviet economic planners to divert their own civilian resources to military purposes.

While extreme and overstated in assuming that all trade would somehow benefit the military sector, this perspective as based on years of observing how the Soviet economy innovated and on intelligence studies of the strengths and weaknesses of the system. The National Academy of Sciences report in 1987 noted that Soviet science and industry are characterized by:

- an incentive system that does not strongly support technical innovation and implementation;
- Research activity that is highly concentrated, both organizationally and geographically;
- rigidly hierarchical lines of authority and communications;
- subjugation to political factors (such as the Party and the military); and
- difficulty in incorporating new scientific ideas into a development and production phase.

Add to all of these factors excessive secrecy, an archaic telecommunications system, and a reward system in industry that provides high penalties for failure and few rewards for success, and one begins to get an idea why there was such a great emphasis on illegal technology transfer and espionage as a substitute for indigenous technological innovations.

Of all the means of acquiring modern manufacturing capability, theft and espionage are the least effective. First, there are likely to be gaps in what is acquired. Second, if scientists and technicians have not progressed in their own knowledge through all the preliminary steps



of innovation, it is extremely difficult, if not impossible, to jump to the highest step in development. This is particularly true in the intricate technology of micro-electronics. An IBM engineer at a super-computer facility once remarked to the author that he was more worried about his new central processing unit falling into the hands of his rival at Fujitsu in Japan than he was about the Soviets getting hold of it. Since the Soviets were no where near IBM's level of research and development, he did not believe they would know what to do with it, and the loss would be limited to the immediate problem of the specific unit. Reverse engineering of the device would be impossible for the Soviets with their huge gaps in the fundamental steps that led to the latest development in central processing units for computers.

Recent intelligence estimates put the Soviets a decade behind in computers and semiconductor production. They are still having trouble getting good yields out of their 64K DRAM, a standard memory chip in the West for the last eight years, while the U.S. and Japan are developing the 16 megabit DRAM. While IBM and Cray super-computers can run for 10,000 hours, between maintenance, Soviet scientist consider 100 hours of trouble-free performance out of a mainframe an accomplishment. Moreover, while the Soviet are able to produce one-of-a-kind, "boutique" computers for their space program, they are simply incapable of mass production in this area. There are approximately 40 million computers in the United States, or one for every seven people. In the Soviet Union the number is just 300,000--one for every 900 people. This in a planned economy, which, is anything, needs computers more than a free market economy. Similar gaps exist in most basic areas of modern technology: machine tools, scientific instruments, telecommunications.

The Reagan Administration policy was to oppose all joint ventures and turn-key projects that taught the Soviets anything about Western manufacturing techniques. The policy of "no-exceptions" to the COCOM list meant that nothing of any sophistication could be transferred by the other COCOM members. Moreover, the "general technology" note of the COCOM list provided that the technology for manufacturing micro-electronics needed a general exception vote by COCOM even if the technology was related to the section of the COCOM list that was left to national discretion if it involved a product sale. Thus, there was virtually a total embargo on the transfer of micro-electronic technology throughout the 1980's.

#### 1990: A Year of Decision for COCOM

1989 was a year of breath-taking change. It would be hard for any international organization to keep up with that pace of change, but COCOM policy has been remarkably unresponsive. Unless U.S. leadership turns COCOM in a dramatic new direction in 1990, the institution is likely to disintegrate.

On May 29, 1989, in response to the Soviet withdrawal from Afghanistan, President Bush declared the end to the "no exceptions" policy in COCOM. A month later Secretary of Commerce Robert Mosbacher made a finding of "foreign availability" for the IBM-AT level, 80286 micro-processor driven micro-computer, raising the decontrol level for micro-computers from 6.5 million bits per second to 69 million bits per second. Despite concerns raised publicly by Secretary of Defense Richard Cheney, this seemed to indicate the beginning of a innovative new policy by the Bush Administration.

Unfortunately, the rest of the year was a disappointment. Vague comments were made by Secretary Mosbacher about willingness to treat Hungary and Poland better than the

Soviet Union and the rest of Eastern Europe, but no concrete plan was laid out. Indeed, at the high level meeting of COCOM in October, the United States distinguished itself as a minority of one against 16 to oppose change, and it was particularly against revising the machine tool list, which had not seen revision since it was adopted in 1974. At Versailles, 21 months earlier, such toughness, combined with calls for improved enforcement, might have carried the day. But in the midst of revolutionary change in the East, such a position only led to U.S. isolation. The pressures for streamlining the control list are overwhelming in Europe. Throughout the 1980's, the U.S. Government, at Defense Department insistence resisted any and all streamlining. Even the list reduction exercise undertaken after Versailles, as a quid-pro-quo for European and Japanese improvements in licensing and enforcement, had a very disappointing result, with few items cut from the list.

COCOM, like NATO, is a creature of the Cold War and of the Soviet threat. As the threat perception recedes, COCOM even more than NATO is likely to seem unnecessary and anachronistic. NATO, however, has institutional support from the military institutions and industries of all its constituent countries. COCOM, by contrast, is merely a constraint on trade with new emerging markets and has no institutional constituency whatsoever. The amazing thing about COCOM is that it has survived intact so long, given the sacrifices that it imposes on its member country industries. Unlike NATO, there is not sector of the constituent countries that benefits from its existence.

Therefore, in an era when General Secretary Gorbachev is one of the most popular figures in almost every COCOM country's national poll; in a era when the leader of the Soviet Union seems to be pushing out dictators and promoting democratization in Eastern Europe; in

an era when the chief spokesman for the Soviet Union, Gennady Gerasimov, declares that the "Brezhnev Doctrine" has been replaced by the "Sinatra Doctrine," so that each East European country could say, "I did it my way;" in such an era, COCOM must change rapidly or it will be pulled apart by its constituent countries.

Over the past year there have been few public breaks with the United States over its conservative policy. The Japanese Government, with memories of Toshiba fresh in its mind and with still unresolved territorial claims against the Soviet Union over the Northern Islands, has not been critical of U.S. policy. But Margaret Thatcher has publicly disagreed with U.S. objections about a machine tool controller project in Armenia, early in 1989, and told the U.S. Government to stay out of the issue, since the British authorities had already decided the project met COCOM standards. A resolution calling for West German withdrawal from COCOM participation in everything but the munitions list was introduced in the Bundestag by the Social Democrats on December 15, 1989. It was defeated on a straight party vote, but Chancellor Kohl and Foreign Minister Genscher are hardly strong supporters of COCOM, nor will they be able to defeat future resolutions of this sort if the U.S. Government persists in a conservative, no-change approach in COCOM. The lure of lucrative projects in the GDR (German Democratic Republic) and, indeed in the Soviet Union, which has been a traditional market for Germany, will simply be too strong to resist.

The major factor that has diminished the pressure on COCOM over the past year has been the economic confusion and lack of direction in the Soviet Union itself. The Soviets do not have a great deal of hard currency to spend. Their general approach has been to propose joint ventures, with the pay-back for the project being the sale of the product of the JV in the

West. This makes economic sense with energy and chemicals, which are readily marketable. But is much less appealing with any kind of consumer good, or light industrial product, which is likely to be of questionable quality and unavailable for sale in less than five years. Although their \$30 billion debt to Western banks is the easiest to service in all of Eastern Europe, and their credit rating is high, the Soviet Government has been very conservative about incurring debt, seemingly worried about giving Western banks and their governments leverage over them.

U.S. joint ventures in the Soviet Union amount to a mere few dozen, and--due to COCOM restraints--none have been in what could be called the high technology sector. The FRG has been the most active with more than 100 JVs. But the results have been disappointing, and the major role of the FRG has been encouragement and support for Gorbachev and Perestroika.

Nonetheless, the Soviet Union, with its 300 million people and its vast natural resources, poses a very attractive market for Western industrialized countries. The fact that it is so technologically backward is, in part, a tribute to the success of U.S. policy and COCOM unity over the past 40 years. But assuming that Gorbachev stays in power and his policies continue to prevail, United States policy in COCOM will have to undergo radical revision, supporting the pruning of the control list down to the key strategic products and technologies, or it will find itself alone in its willingness to continue restraining trade with the Soviet Union.

#### Conclusion and Recommendations

If the objective of COCOM has been to deny dual use technology to the Soviet Union, then it has been very successful. Although there have been notable failures, such as the Toshiba/Kongsberg affair, the Soviet Union has not been able to compensate for its own

technological shortcomings by stealing or diverting technology from the West. Despite friction and complaints throughout its forty-year history COCOM--and therefore U.S. technology transfer policy--has achieved its objective.

Those who have said that the task assigned to COCOM was too large and far-reaching have been proven wrong. Those who said that technology was too diffused to control have been proven wrong. With a very few exceptions, the technology-producing countries of the world, both within and outside of COCOM, cooperate with the United States in keeping dual-use technology out of Soviet hands.

Indeed, the trend over the past few years has been towards greater unity and cooperation within COCOM, not less. COCOM has been given political direction on an on-going basis after the 1988 Versailles meeting through the creation of the Executive Committee and the commitment to hold high-level meetings at least once per year. Export licensing and enforcement systems outside the United States have been enlarged and strengthened, and penalties for violations have been increased.

If it were not for General Secretary Gorbachev's reforms, one would have to conclude that COCOM has never been stronger. But, as it has been argued above, the United States has become complacent, a victim of its own history of success.

Obviously, although the threat perception of the West regarding the Soviet Union is at an all time low for the post-war ear, a strategic threat still exists. The Soviet army still occupies Eastern Europe. It's forces will soon be cut by 500,000 men. Their readiness and forward positions will be diminished, and it is estimated that the warning time for a major attack will be extended from two weeks to a month or more. Nevertheless, the Soviet armed forces will

still exist in forward bases threatening Western Europe. General Secretary Gorbachev has proven to be very adroit at handling his opposition in the Politbureau. At the present time he seems secure and his policies of perestroika, glasnost, and retreat from the post-war imperial policies of his predecessors have been grudgingly accepted by the Communist Party. But it should be remembered that he is only one man, and as Nikita Krushchev's fall from power has shown, it is possible for a popular Soviet leader to wake up one day and find himself out of office. If perestroika fails miserably, or if the Soviet military feels threatened by the unilateral concessions being offered by the General Secretary, or if the centrifugal forces of the various nationalities discredit the conciliatory policies of Gorbachev, the West could find itself dealing with a Soviet leader who resembles Joseph Stalin more than he does Mikhail Gorbachev. Even if Gorbachev and his policies do survive and persist over the next five years, the transition from the cold war to a less tense and more conciliatory relationship between East and West is likely to be a gradual one. At present the Soviet Union still has the largest army in the world, backed by tens of thousands of nuclear weapons. Thus, there is going to be a role for NATO in the foreseeable future, and likewise, there going to continue to be a role for COCOM. The West should be able to see a significant peace dividend from reduced arms expenditures, but that will not mean that it will be in the interest of the Western Alliance to suddenly remove all controls on technology transfer and provide the Soviets with the technological tools to upgrade the accuracy of their missiles and the quality of their weapons systems.

What can happen over the next few years is a significant amount of sales of products that can increase the standard of living of the average Soviet citizen. The West does have an interest in seeing perestroika and glasnost succeed, and it can provide tangible examples

of success to the Soviet people. Finished computers for civilian projects in banking, oil production, medical products, and consumer goods modernization can be provided. Technology for oil and gas production efficiency and energy conservation can be provided. Modern telecommunications can go a long way towards further opening Soviet society and further liberalizing the political system.

There are numerous projects and opportunities for technology transfer that would reinforce the current trends towards liberalization and modernization of Soviet society, products which would not at the same time provide the Soviet military with valuable modernizing tools for their weapons systems. The fact that COCOM has been so restrictive throughout the 1980s provides a great deal of leeway for revision of the list without endangering Western security. Of course, until there is a great deal more confidence building and arms reduction, it would not be prudent to transfer the technology to manufacture micro-electronics, computers, or modern aircraft--even of a civilian variety. Nor would it be prudent to set up sophisticated joint ventures between Soviet enterprises and Western high technology companies. There is much that can be learned by the military sector from jointly producing even slower computers and less sophisticated semiconductors if the teachers are engineers from IBM, Intel, or Mitsubishi. Such JV's will have to wait for a time in the future when the level of confidence and trust is far higher than it is today.

Such a technology transfer policy would require a strong and united COCOM, and current trends do not look promising. In an era of increasing globalization of high technology companies; at a time when borders are coming down in the European Community; even during a period of sharply reduced tensions with the Soviet Union; COCOM is still relevant. But it is



an institution that must be adapted to the changed environment, or it will begin to disintegrate just at the time when its policy has begun to pay dividends.

In order to avoid the further weakening of COCOM, the Bush Administration policy-makers must adopt a new policy based on the following principles:

1. The COCOM list must be radically shortened, concentrating the embargo on technologies of compelling military importance, such as precision machine tools and high speed computers. The criterion for control should be biased towards technology for the production of militarily valuable products, such as micro-electronics, computers, and aerospace. This streamlining of the list must be accomplished within 1990 or there will be a high probability that European and Japanese legislatures will begin to unilaterally make up their own lists outside of COCOM.
2. Given the proven inability of the Soviets to reverse engineer micro-electronics of sufficient intricacy and complexity, certain categories of goods should come off the embargo list altogether. Civilian telecommunications is one such example. Increased communications from both within and outside of the Soviet Union could only serve to liberalize further the political climate there and make it more difficult to reverse the current trend toward a more open and plural society.
3. The "Third Country Initiative" has been a substantial success in inducing non-COCOM countries to cooperate with COCOM in enforcing the high technology embargo on the Soviet Union. Nonetheless, it cannot be truly effective until all high technology producing countries agree to cooperate. Notable non-cooperating

countries, such as Brazil and Taiwan, must be signed up. Also, there needs to be a stronger agreement among COCOM countries to harmonize the conditions they put on the sale of products and technology to the cooperating countries and to require standardized documentation from these countries as well. This will be particularly difficult to accomplish in a period of reduced threat perception. But it is absolutely essential to the continued functioning of an effective COCOM.

4. Finally, the United States Government must resolve to treat its COCOM allies as true equals. The days of delaying tactics and unilateral vetoes of list reviews and streamlining efforts must end. Just as the Japanese Government and industry have resolved to have "no more Toshibas" by improving their export control system, so must the United States resolve to have "no more Toshibas" in dealing with its allies--no more bullying tactics, no more extra-territorial legislation, and no more unilateralism.