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Arms Acquisition and National Security in the Third World

Andrew L Ross

Department of Political Science
University of Kentucky

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There is perhaps no issue of greater concern to national security policymakers than the matter of arms acquisitions. Secure and reliable sources of weaponry are a vital component of a country's defense posture. Yet many third world countries must cope with threats to their national security in the face of insecure and often unreliable sources of arms. Even though the most dependable and invulnerable sources of arms are those that are found within one's own country, the vast majority of developing countries must still import the bulk, if not all, of their military hardware. A total of only 51 out of some 120 developing countries produce conventional weapons of some kind. Thirty-four of those 51 produce at least one of the four major types of conventional weapon systems: aircraft, armored vehicles, missiles, or naval vessels. Production in the other 17 countries is limited to small arms and ammunition. Only seven third world countries -- Argentina, Brazil, Egypt, India, Israel, South Africa, and Taiwan -- have developed an across-the-board production capability.¹ Even those developing countries that have initiated defense manufacturing programs must still rely on arms imports to acquire needed military equipment.

In this chapter I will examine various forms of the arms acquisitions options available to third world countries and the impact of alternative acquisition strategies on national security. Of special concern is the relationship between specific arms acquisition strategies and a country's political and military autonomy. The maintenance of policy and behavioral

autonomy -- the minimization of external constraints on policy and behavior -- is at the heart of national security. Yet policy and behavioral autonomy may be severely circumscribed if the optimal mix of acquisition strategies is not adopted.

ARMS ACQUISITION OPTIONS

For both developed and developing countries, there are three analytically distinct options -- two pure options and one mixed option. A country may seek to rely solely on either (1) producing arms domestically or (2) importing arms from abroad. Or (3) it may choose to manufacture some weapons locally and to import others. Even though there are only three distinct options, however, there are numerous forms of each of the different options. The discussion here, following the third world's experience, will proceed temporally, beginning with the arms import option and then continuing with a consideration of local production and the mixed strategy.

The Arms Import Option

Given the historical context of military relations between the advanced industrial countries of the Northern core and the developing countries of the Southern periphery, it should come as no surprise that developing countries initially had little choice but to acquire arms through the arms import "option." Prior to having acquired formal political independence, local military establishments of the then colonies were fully integrated into

the command structures of the colonial powers. Indigenous military forces were commanded, trained, equipped, and financed by the European colonial powers. Since a modern manufacturing capability was virtually nonexistent, procurement of military equipment within the colonial territories was either impossible or limited to small arms and ammunition and non-lethal supplies such as uniforms. Manpower alone was locally generated.

The new countries, consequently, were in a state of military as well as economic underdevelopment at the dawn of independence. The revenue collection systems needed to raise the resources to finance the armed forces and other state operations either were not yet in existence or were unreliable. Few experienced officers were available -- colonial training, after all, had emphasized administrative skills and following orders over generalship and initiative. And, most importantly, there were no indigenous sources of military equipment.

The lack of a viable military infrastructure served to exacerbate the all too numerous security challenges confronting many of the newly independent countries. The artificiality of many third world countries generated both domestic and international conflicts. All too often the new countries were a crazy patchwork quilt of diverse national, ethnic, tribal, and religious groups that were typically at odds with one another. The lack of fit between state and nation made internal conflict unescapable. Groups previously united in a joint struggle to oust colonial rulers came to contend for state power and domi-

nance. Contending ideological factions, which had subordinated their differences and collaborated in the overthrow of colonial rule, turned on one another in the attempt to seize control of the state apparatus. Priorities were assigned not to building a viable state and society, but to the more primordial groups that, despite the conflicting claims of modernization, still laid claim to the loyalty traditionally expected of their members.

The poor correspondence between state and "nation," or society, contributed to conflict among as well as within the new countries. State boundaries established by the former colonial powers were often ill-defined and ill-conceived. Lands traditionally occupied by particular communal/ethnic communities were in many cases split between two or more sovereign countries, thereby leaving such communities without a clear national homeland. Not surprisingly, these torn and displaced communities became the source of international conflict. Territorial disputes reinforced by territorially divided communal groupings have been a major cause of conflicts among developing countries.

To counter these long-term internal and external threats, the newly established countries had only with poorly trained and equipped armed forces, forces that had been mere appendages of Europe's far-flung imperialist military establishments. Even after the withdrawal of direct political and military control, the new countries remained militarily dependent -- initially upon their former colonizers and subsequently upon the two superpowers.

that have sought to build neo-colonial empires. Their dependence was most dramatically evidenced by their continued reliance upon external sources of military equipment. Confronted with external threats to their security and often even more threatening domestic conflict, possessing inadequately armed military forces, and lacking the industrial/technological base required to manufacture essential military equipment, developing countries had little alternative but to import massive amounts of foreign military hardware to equip their armed forces. Consequently, the third world's dependence upon arms imports from the advanced industrial countries, the former colonial powers, became the defining characteristic of post-colonial North-South military relations.

Single/Predominant Source Acquisition

It was during the immediate post-independence period that single/predominant source acquisition, the first of the two forms of the arms import option, was most in evidence. Though there were exceptions (such as the Algerian-French nonrelationship), developing countries tended to acquire arms from their former colonizers during the immediate post-colonial period. Having served with and been trained by core militaries, many third world militaries were quite reluctant to sever the close ties established between the armed forces of the core and the periphery under colonialism. Militaries accustomed to being commanded by a foreign military elite, and the equipment, training, and standard

operating procedures of that elite, were typically inclined to turn to their former rulers for arms. Thereby was the colonial military relationship perpetuated in the post-colonial world. Former British colonies, for instance, imported military hardware from the United Kingdom, while the former French colonies turned to France. In Africa, France remained the near exclusive supplier for former colonies such as the Central African Republic, Chad, Dahomey, Gabon, the Ivory Coast, Malagasy, Mauritania, Niger, Senegal, Togo, and Upper Volta. France was also Morocco's exclusive source of military supplies in the 1950s and remained a major source of armored vehicles through the 1960s. Kenya after independence acquired its arms primarily from Britain. Britain was also the dominant supplier of Ghana and Nigeria, providing virtually all of the armored vehicles and naval vessels acquired by the two countries. And Britain was South Africa's primary supplier through the 1950s. In other areas, Britain was the dominant source of military equipment for Jordan, Kuwait, Oman, Brunei, Sri Lanka, and even India until the 1960s.² During the late 1950s and the decade of the 1960s, of course, the United States and the Soviet Union, in their Cold War scramble for post-colonial empires, displaced the former European colonial powers as the major arms suppliers to the developing world. Thereafter, one of the two superpowers tended to assume the role of single or predominant supplier.

The arms transfer policies of the advanced industrial countries fostered the third world's dependence upon Northern

arsenals Though commercial transfers have become increasingly important since the early 1970s, during the 1950s and 1960s developing countries were often able to acquire arms from what had become the two dominant suppliers, the United States and the Soviet Union, through grant aid or other financially attractive means. American arms transfers to the third world during the 1950s and 1960s were primarily in the form of grant aid And the Soviet Union provided arms on extremely generous terms, offering 40 percent discounts, eight to ten year loans at the far below market interest rate of merely two and one-half percent, and accepting payment in soft currencies and even commodities.³

Even though US grant aid declined dramatically during the 1970s and the Soviet Union has toughened the terms of its arms sales -- reducing the number and size of grants and often requiring payment in hard currencies⁴ -- by having provided arms through grants or at bargain basement prices, the two leading suppliers had, purposely or not, discouraged the pursuit of alternative arms acquisition strategies Providing military equipment at low or no cost had reduced the incentive to initiate costly military import substitution programs The great cost disparity between importing arms and producing arms locally made it difficult to justify the more costly option, especially in the face of widespread economic difficulties Its low economic cost made military dependence appear relatively benign And once addicted to foreign arms, developing countries found it difficult to terminate their dependence upon Northern suppliers

Most third world leaders, however, soon came to a full realization of the vulnerabilities and limitations inherent in dependence upon foreign arms suppliers, especially dependence upon a single or predominant external source of arms. Singapore's former foreign minister, S Rajaratnam, vividly portrayed the dangers of military dependence in an address before the General Assembly of the United Nations

. the most dangerous consequences are political. The flow of arms carries with it a measure of dependency on the part of the client on the seller of arms not unlike that prevailing under the old imperial system.... The massive flow of arms to the third world confronts it with a new danger. It is, first of all, a drain on the economies of third world countries; but even more important is the fact that it creates a new form of dependence on the great Powers, which can exploit the third world's dependence on them to manipulate them, to engineer conflicts between them, and to use them as proxies in their competition for influence and dominance.⁵

The greatest danger to the security and autonomy of third world countries posed by military dependence is the threat of arms embargoes. The flow of arms can be cut off at the whim of capricious suppliers. Embargoes, especially during ongoing hostilities, severely restrict military autonomy and represent a direct threat to a country's security. The vulnerability of developing countries to arms embargoes has been demonstrated on a number of occasions. In September 1965, the U.S. and Britain both imposed embargoes following the outbreak of the Indo-Pakistani conflict of that year. Pakistan at the time was almost entirely dependent on American equipment and Britain was India's most important supplier. During the 1971 Indo-Pakistani war, the

U S. again exercised its power to cut off supplies. Despite the U S. "tilt" toward Pakistan, Pakistan as well as India was subjected to an arms embargo. Export licenses for more than \$3 million worth of military equipment bound for Pakistan were cancelled and \$11.3 million worth of military and other "sensitive equipment" earmarked for India remained undelivered ⁶ In 1967, France terminated Israeli arms supplies following the Six Day War. France had been Israel's single most important source of arms prior to the war. The United Nations in 1963 imposed a voluntary arms embargo on South Africa and followed the voluntary embargo by the mandatory embargo of 1977. And in April 1982, when Argentina invaded the Falkland Islands, the European Common Market voted to cut off the flow of arms to Argentina.

Militarily dependent developing countries have had to contend with interruptions in the flow of spare parts, upon which the continued operation of foreign equipment depends, as well as interruptions in the supply of complete weapons systems The British in 1973 refused to supply spare parts for Israel's Centurion tanks. Subsequent to Sadat's expulsion of Soviet advisers in 1972, the Soviet Union refused to provide needed spare parts for Egypt's Soviet weaponry, prompting Sadat to characterize much of his military equipment as "nothing but scrap" ⁷ And the United States refused to supply Khomeini's Iran with spare parts for its American military equipment after the Iranian Revolution and the taking of the American embassy hostages

Foreign arms purchases bring not only arms but also the foreign technicians and advisers required to train local militaries in the maintenance, repair, and operation of sophisticated military systems, thereby injecting an irksome and sometimes insidious external presence into the core of the national security apparatus. Singapore's Minister of Foreign Affairs and Robin Luckham have both pointed out the dilemmas inherent in introducing foreign weapons and the following train of advisers and technicians. According to Foreign Minister Rajaratnam,

The weapons now being imported are not only highly sophisticated but also packaged as parts of a very complex, very comprehensive and very expensive weapons system. When a country buys a weapon system it imports not only weapons but a whole array of experts and advisers. Arms contracts today include provisions for training, technical support and the establishment of facilities to maintain and repair equipment. Often these contracts include provisions for foreign experts to build roads, communication networks and other facilities which come under the term 'infrastructure.'⁸

Luckham's analysis echoes Rajaratnam's evaluation

The implications of military training and assistance programs for external dependence are easy to see. They train soldiers in the use of the technologies of the donor countries. They give sustenance to the social relations of force around which the professional armies of both metropolis and periphery are organised. They create networks of professional contacts both with the metropolitan military institutions and among course-mates in different peripheral countries. And they are often explicitly intended.. to promote the political philosophy and interests of the country which provides the training⁹

The United States and the Soviet Union have been quite adept at following up their arms deliveries to third world countries with an infusion of logistical support and training

teams. In 1975, for instance, the United States had 9,535 people serving in 132 technical assistance and training teams in 34 countries, with the largest contingencies in South Vietnam, Saudi Arabia, and Iran.¹⁰ Almost 40,000 Americans were involved in military activities in Iran before the Shah was ousted.¹¹ In Saudi Arabia, the U S. Army Corps of Engineers has been kept busy since 1953 supervising the construction of a military infrastructure consisting of airfields, ports, and communications systems, and training Saudi military personnel.¹² During the period FY1950-FY1985, 33,396 military personnel from the Near East and South Asia, 268,101 from East Asia and the Pacific (excluding Japan), 9,562 from Africa, and 99,296 from Latin America were trained under the U.S. military assistance program.¹³

The Soviet Union and its Warsaw Pact allies, according to a CIA report, had 15,865 military technicians stationed in the third world in 1979 -- 6,825 in Africa, 110 in Latin America, 4,780 in the Middle East, and 4,150 in South Asia.¹⁴ The largest concentrations of Warsaw Pact military technicians were in Algeria (1,015), Libya (1,820), Angola (1,400), Ethiopia (1,250), Iraq (1,065), South Yemen (1,100), Syria (2,480), and Afghanistan (4,000) ¹⁵ During the period 1955-1979, the Soviet Union trained a total of 45,585 third world military personnel -- 14,420 from Africa, 7,590 from East Asia, 780 from Latin America, 16,370 from the Middle East, and 6,425 from South Asia ¹⁶

These data indicate the nature of the continuing military relationship that can accompany arms imports The military

assistance (i.e , training) programs that follow in the wake of arms imports can provide suppliers with a direct military presence on the territory of recipients and tend to reinforce military dependence by institutionalizing corporate and personal ties between the armed forces of the core and periphery. This military assistance relationship is, like the central relationship itself -- the arms supply relationship -- an instrument that can be wielded by the supplier to exert influence upon the domestic and foreign policies of recipients.

In addition to suspending deliveries of weapons and spare parts and complementing arms transfers with military assistance programs, arms suppliers have typically imposed restrictions on the end-use of military equipment. The United States, for instance, has traditionally provided military equipment on the condition that it be used solely for defensive purposes. Consequently, Turkey's use of American arms in the 1974 invasion of Cyprus resulted in the cancellation of U S. military aid and assistance in 1975. And before Portugal had divested itself of its last African colonial holdings, both West Germany and Italy had prohibited Portuguese use of their arms in Africa.¹⁷

Suppliers have also imposed restrictions on the resale of military equipment. Prior approval of retransfers, on a case-by-case basis, has long been a part of U S. arms transfer policy. When Saudi Arabia expressed interest in acquiring U S F-14s from Iran after the overthrow of the Shah and the seizure of the American embassy in Teheran, the U S halted the deal.¹⁸ Even

the sale of foreign military equipment containing American components is subject to U S. approval, as Israel discovered when it first attempted to sell its American-engined Kfir fighter to Ecuador and Taiwan In order to avoid unknowing participation in triangular deals, France, West Germany, and Switzerland have also forbidden retransfers without their formal consent.¹⁹

Developing countries that are dependent upon arms imports must also contend with the attempts of suppliers to use the supply relationship to exert influence on their foreign and domestic policies. The prospect of acquiring leverage over recipients is one of the major forces driving Northern arms transfers in the first place. Northern suppliers have long used arms transfers as a means of gaining access to foreign political and military leaders, shoring up alliance commitments, and instituting friendlier relations, all in the hope of obtaining influence, whether it be explicit or implicit. Barry Blechman and his former ACDA colleagues correctly noted that

The recipient's dependency on the donor for maintenance, spare parts, and replacement of major items of military equipment is seen to provide leverage in difficult situations. The arms donor need not actually threaten to curtail supplies because the two superpowers know that this dependency will influence recipient's decisions long before the donor would need to contemplate such threats ²⁰

Arms transfers have played a central role in the post-World War II U S -Soviet competition for influence in the third world Both superpowers have provided military hardware with the expectation, and often the explicit requirement, that recipients

would align themselves politically and militarily with the supplying country and would adopt policies that furthered the interests of their supplier. The United States, for instance, has seldom hesitated to draw upon the influence derived from its security relationship with the Philippines. Philippine leaders, both civilian and military, have relied heavily on the advice of the Joint U S Military Advisory Group (JUSMAG). In 1950, JUSMAG reorganized the Philippine intelligence apparatus and the military campaign against the Huk insurgency, and managed to assure the selection of Ramon Magsaysay as Secretary of National Defense.²¹ In 1953, American officials in the Philippines engineered Magsaysay's election to the presidency.²² And the Philippines loyally supported the U.S. during both the Korean and the Vietnam wars, going so far as to contribute a combat battalion to the cause in Korea and a civic action unit in Vietnam.²³

American attempts to exploit its security relationships with third world countries are not, of course, limited to the Philippines. The U S. has often manipulated the flow of arms to the Middle East in its efforts to prevent peace negotiations from collapsing. Israel was provided with F-15s and other weapons in return for its approval of the 1975 Sinai accords, and F-5s were sold to Egypt in 1978 to keep Sadat from breaking off talks with Israel.²⁴ The United States has on occasion terminated the flow of arms to countries judged to be violators of basic human rights. In 1974 the U S Congress adopted legislation ter-

minating arms sales and military assistance to Chile in an effort to curtail the severe repression being perpetrated by the military junta that had overthrown Salvadore Allende. Concern for human rights played an even more central role in the Carter administration's arms sales policy. During its first year in office, the Carter administration reduced the flow of arms to countries such as Argentina, Uruguay, and Ethiopia, all of which had been cited as human rights violators in the administration's first report on report on the subject. Latin American countries appear to have been special targets of Carter's effort to utilize the leverage thought to be derived from the military supply relationship in the administration's crusade to safeguard human rights and eliminate state violence and repression.²⁵

Multiple Source Acquisition

Not surprisingly, developing countries have sought to counter the constraints inherent in dependence upon a single or primary source of arms. The first of two counter-dependence strategies, and typically the first to be adopted, is to import arms from multiple sources. This first counter-dependence strategy is a short-run, relatively low-cost option, and has as its objective the distribution of dependence across a large number of suppliers so that no one supplier could seriously limit recipient political and military autonomy. The multiplication of suppliers has as its primary goal not so much the elimination of military dependence as the reduction of the relative significance

of any particular supplier. The aim is to reduce not the fact but the impact of arms import dependence by spreading it around and distributing it across a larger number of suppliers. It is assumed, not unreasonably, that a large number of suppliers will find it much more difficult to manipulate and exploit a country's dependence upon imported arms than would only one or two suppliers.

Numerous developing countries have turned to multiple source acquisition. Nigeria, after gaining its independence from Britain in 1960, quickly turned to a variety of sources for its military equipment. Although most of its naval vessels have been obtained from Britain, Nigeria has acquired its other military equipment from a large number of countries. Aircraft have been obtained from Austria, Belgium, Britain, Canada, Czechoslovakia, Italy, the Netherlands, the Soviet Union, West Germany, and the United States. Exocet ship-to-ship missiles have been acquired from France, Aspide, Albatros, and OTOMAT missiles from Italy, and Seacat missiles from Britain. Though most of the armored vehicles acquired during the 1960s came from Britain, Nigeria also acquired Panhard AML-60/90 armored cars from France in the late 1960s and T-55 main battle tanks from the Soviet Union in the late 1970s.²⁶

While Nigeria imported arms from a large number of countries soon after independence, most developing countries maintained close military ties to one of the four major suppliers -- the United States, the Soviet Union, France, and Britain -- and

turned to multiple source acquisition only in the 1970s. Egypt, for instance, though it initially relied on Britain for its military hardware, in the mid- to late-1950s turned to the Soviet Union. Since disassociating itself from the Soviet Union in 1972, when it ordered the withdrawal of 21,000 Soviet military technicians from its territory,²⁷ Egypt has acquired arms not only from the United States, its new patron, but from Britain, France, Italy, and the PRC. And Peru, which was dependent upon American arms supplies during the 1950s and 1960s, turned to Australia, France, Italy, the Netherlands, the Soviet Union, and West Germany in the 1970s.

The trend is clearly in the direction of multiple source acquisition for those countries that still rely on imported weaponry. In Africa, for instance, where few countries are able to produce a significant proportion of their arms, 25 countries were dependent upon a sole or predominant supplier during the years 1961-1971. Only nine (26 percent) had turned to multiple source acquisition during this period. During the years 1967-1976, however, 17 countries (41 percent) turned to multiple suppliers (though 24 still relied upon a sole or predominant supplier). Sixteen of 37 (or 43 percent) sub-Saharan African countries during the years 1974-1978 acquired arms from multiple sources. Twenty-one still depended upon a sole or predominant supplier.²⁸

Yet despite the increasing popularity of multiple source acquisition, there are major drawbacks to reliance on multiple

suppliers as a counter-dependence strategy. Apart from the fact that dependence on imported military equipment is not actually reduced but merely made to appear somewhat benign, multiple source acquisition often results in a polyglot assemblage of military equipment that poses significant training and maintenance problems. Technicians and operators must learn to maintain, repair, and operate not only the aircraft, armored vehicles, missiles, and naval vessels of one foreign country, but of a large number of countries. The operational and technical capacity of third world military establishments can be strained to the limit. Egypt, for instance, with its vast, heterogeneous array of American, Chinese, French, and Soviet aircraft, must cope with an extremely complicated logistical system.²⁹ Multiple source acquisition clearly means that the traditional goal of military standardization must be discarded.

Even though multiple source acquisition provides a degree of insulation from the effects of military dependence, any one supplier might still possess the ability to hinder military operations by withholding spare parts or withdrawing support and maintenance units for vital equipment, such as aircraft, that requires frequent or near-continuous service. The operation of essential systems could be seriously curtailed, or even terminated, by such tactics. Multiple source acquisition, therefore, is not a viable long-term counter-dependence strategy.

Military Import Substitution (MIS)

The innate inability of multiple source acquisition to insure military and political autonomy has prompted developing countries to turn to a second counter-dependence strategy military import substitution. Substituting indigenously produced for imported weapons offers the prospect, albeit long-term, of achieving a high degree of military self-reliance. By acquiring the capability to manufacture domestically a large proportion of the military equipment it requires, a developing country can begin to reduce, and in the long-term perhaps eliminate altogether, the vulnerabilities inherent in dependence upon arms imports, whether from single or multiple sources. Domestic production removes the constraints imposed by import dependence. When military equipment is acquired at home rather than from abroad, military planning and operations are no longer hampered by the possibility of arms embargoes, the withholding of spare parts, supplier efforts to use the supply relationship as leverage to exert influence, and the other circumscriptions of military dependence.

Military import substitution is a process that takes on different forms as it evolves through five distinct stages. The first stage involves simply the assembly of imported arms. Weaponry is still acquired from foreign suppliers, but is imported in the form of prefabricated components and assembled in-country. The foreign supplier provides technical training and assists in erecting the facilities necessary for weapons assem-

bly. Technical training includes not only assembly skills, but also the use of equipment needed to inspect, evaluate, and test the weapons being assembled. In the second stage, components are produced under license agreements with foreign suppliers. The complete weapon itself is still only assembled, but an increasing number of components are fabricated locally. It is in the third stage that MIS results in the actual production of complete weapons -- foreign military equipment is manufactured under license. In the fourth stage, developing countries engaged in MIS utilize the technological skills and capabilities acquired in earlier stages to modify/redesign or reproduce (through reverse engineering) foreign weapons systems. This is the first stage in which some element of indigenous research and development appears -- in the form of either system redesign or reverse engineering. In the fifth stage MIS finally results in the production of indigenously designed arms. Fifth stage production can take two forms (1) production based on local research and development but still incorporating foreign-produced or designed components; or (2) production based entirely on indigenous, independent research and development.³⁰

Large-scale military import substitution in the third world is a relatively recent phenomenon. Only four developing countries (Argentina, Brazil, Colombia, and India) were producing any of the four types of major conventional weapons -- aircraft, armored vehicles, missiles, and naval vessels -- in 1950.³¹ By 1980, however, 26 developing countries were producing one or more

of the major weapons systems.³² Of these 26 countries, fifteen were producing aircraft, six were manufacturing armored vehicles, nine were producing missiles, and twenty-four were building naval vessels. Six countries -- Argentina, Brazil, India, Israel, South Korea, and South Africa -- were producing each of the four types of weapons. A total of eighteen developing countries had demonstrated, by 1980, the ability to manufacture either aircraft, armored vehicles, missiles, or naval vessels that were the products of domestic research and development programs. The tremendous increases in the number of third world arms producers, the range of weapons produced, and the level of indigenous input are all the result of defense manufacturing and research and development programs initiated during the late-1960s and the decade of the 1970s.³³

That an increasing number of third world countries have turned to domestic arms acquisition in an attempt to wean themselves from their dependence upon external suppliers is beyond dispute. The success of military import substitution programs in actually reducing the level of external dependence and promoting military self-reliance and political-military autonomy has, however, triggered an as yet unresolved debate.

The growth of military manufacturing activities in the developing world has relied heavily upon imported military technology -- technology acquired from the same sources that third world countries have traditionally been dependent upon for imported arms. The third world's defense industries were

constructed upon a base of imported Northern military technology and many of its products continue to incorporate imported technology in the form of either foreign components or components manufactured locally under licensing arrangements with Northern suppliers. Consequently, dispensers of the conventional wisdom argue that little has changed with the expansion of the third world's defense production capabilities. According to this line of argument, military import substitution has not led to the reduction, much less elimination, of dependence upon imported arms. The declared goal of military self-reliance has not been, and will not be, attained. Instead, there has merely been a change in the form of dependence as countries have substituted locally produced for imported military equipment.

A number of observers are adherents of what has been identified here as the conventional wisdom. Anne Cahn and her coauthors have asserted that "Instead of creating independence, indigenous production usually creates a new set of dependencies."³⁴ Stephanie Neuman has claimed that ". . . self-sufficiency in weapons production is beyond the reach of less developed countries. Domestic production creates other dependencies."³⁵ According to the highly regarded International Institute for Strategic Studies, ". . . the dependence normally associated with arms transfers does not disappear with the establishment of domestic defense industries."³⁶ Another analyst, Michael Moodie, has argued that

Third World dependence associated with arms imports from industrial countries does not dis-

appear .. with the creation of local defense industries; the form of the dependence is changed ³⁷

The nature of dependence is transformed from one of reliance on industrial producers for arms to dependence on them for inputs to make arms ³⁸

... Third World arms producers have traded one form of dependence for another. They have shifted the nature of their requirements from the need for finished weapons systems to the need for the technologies to manufacture those systems ³⁹

Peter Lock and Herbert Wulf have gone so far as to argue that

The import of sophisticated capital-intensive technology and especially the establishment of complex arms production programmes increases the dependence on suppliers from industrialised countries.. ⁴⁰

And Wulf has concluded that

... for the time being there is no short-term or even medium-term fulfillment of the desire of developing countries to reach a high degree of self-sufficiency in arms production. ⁴¹

According to this received wisdom, therefore, as developing countries substitute locally manufactured weapons for imported weapons, technological dependence is simply being substituted for import dependence. Instead of achieving the proclaimed goal of military self-reliance, third world defense producers are merely exchanging dependence upon imported arms for dependence upon imported military technology

As I have argued elsewhere, however, it may well be that as military import substitution programs develop and mature, far more takes place than a mere change in the form of military dependence ⁴² The nature of military dependence undergoes a subtle but potentially profound transformation as developing

countries turn from arms imports to arms production. Instead of importing only a finished product, developing countries have begun to import and assimilate the technological capability necessary to manufacture, and eventually develop, weapons domestically. The third world's defense manufacturers have consequently been acquiring the means to alter the traditional North-South dependency relationship

A static dependency relationship is inevitable when a country relies upon foreign arms suppliers. But when arms production programs are initiated, and military production technology rather than arms are imported, a more dynamic relationship is established, one that has an inherent potential for the reduction, if not elimination, of military dependence. Promulgators of the conventional wisdom have failed to recognize the crucial difference between dependence on arms imports and dependence on technology imports the former engenders a static dependency relationship while the latter results in a dynamic relationship. The import of military technology has enabled a growing number of developing countries to build arms industries that may eventually provide the bulk of required military hardware, thereby greatly reducing the need for foreign hardware. As experience accumulates in the development and production of weapons, the world's newest defense manufacturers will also become increasingly less dependent upon foreign military technology. J. Fred Bucy, of Texas Instruments, was right on the mark when he wrote in a 1976 Defense Science Report that "The

release of technology is an irreversible decision. Once released, it can neither be taken back nor controlled. The receiver of know-how gains a competence which serves as a base for many subsequent gains."⁴³

Dependence on foreign military technology can be overcome in the long-term just as technological dependence in other industrial sectors can be superseded.⁴⁴ The transfer of military technology from the advanced industrial countries of the North to the developing countries of the South has set in motion a process that may well eventuate in a dramatic reduction of the developing world's military dependence on the North. As Steven Spiegel has written on the subject of North-South military technology transfers:

This kind of assistance has the greatest effect of any kind of military aid on a consumer's power in the long run, both in terms of military capability and in terms of economic spin-off on domestic industries and the ability to produce arms for export. The political implications of helping a nation to produce its own arms are also far reaching. Once a country has gained this capacity, an increased level of political independence and increased freedom to pursue its own foreign policy goals is implied.⁴⁵

The manner in which third world arms manufacturers have gone about MIS has insured the national autonomy of their defense industries. Even though foreign defense technology has played a major role in building up the third world's defense industries, foreign defense firms have not. The emergence and growth of defense production in the third world is not the result of Northern defense manufacturers shifting production operations

to the South. Whether defense production is concentrated in the public sector, as in India, the private sector, as in South Korea, or is spread across both sectors, as in Brazil, foreign defense firms have not been permitted to invest heavily in third world arms industries. Foreign direct investment in the defense sector has been strictly limited. Brazil, for instance, has sought to assure national control by restricting FDI in any given defense firm to 49 percent. Unlike many other industrial sectors in developing countries, therefore, the defense sector is not a penetrated sector.

This challenge to the conventional wisdom is more than a mere argument based solely on logic. There is an empirical as well as an analytical basis for the challenge. The most advanced of the third world's defense producers, producers such as Brazil, India, Israel, South Africa, and South Korea, have already been able to reduce the degree of their dependence upon both foreign arms and foreign technology. Brazil, in particular, has made tremendous strides. In 1970, just a year after Embraer, Brazil's premier aircraft manufacturer, had been founded by the state, only about 40 percent of the Brazilian Air Force's fleet was of local origin.⁴⁶ The situation was quite different by the mid-1980s. In 1984, approximately 77 percent of the Brazilian Air Force's total inventory of 740 planes and helicopters were of local origin. The tactical, maritime, transport, and training commands were all dominated by Brazilian-built aircraft. Furthermore, all 280 aircraft on order in 1984 were to be

procured from Brazilian firms ⁴⁷ And, most importantly, the Bandeirante transport/maritime patrol aircraft, the Xingu transport/trainer, the Brasilia transport/reconnaissance aircraft, and the internationally acclaimed Tucano trainer being acquired from Embraer are all not only built but designed by Embraer.⁴⁸ Embraer's aviation design expertise received international recognition in 1980 when Embraer entered into a partnership with two Italian aerospace firms, Aeritalia and Aeronautica Macchi, to develop the AMX, a fighter/bomber and ground attack aircraft scheduled for introduction in late 1987/early 1988.⁴⁹

Brazil's programs to substitute domestically produced for imported armored vehicles, missiles, and naval vessels are also at an advanced stage. The army has been acquiring Engesa's Cascavel and Urutu wheeled armored vehicles since the early 1970s and will soon have Engesa's Osorio main battle tank. Avibras Aeroespacial has been providing the military with Piranna air-to-air missiles, Carcara air-to-surface missiles, 70mm air-to-surface rockets, 127mm surface-to-surface rockets, and the Astros II 16-tube rocket system. Although somewhat less progress has been made in nationalizing the procurement of naval vessels, the navy has been able to acquire locally built and designed patrol craft and corvettes. These armored vehicles, missiles, rockets, and naval vessels, like Embraer's aircraft, were all designed by Brazilian firms ⁵⁰

As a result of the success of its military import substitution programs, Brazil during the first half of the 1980s no

longer had to import light military aircraft such as trainers, transports, and COIN aircraft, armored cars, armored personnel carriers, wheeled armored fighting vehicles, light tanks, rockets and missiles, small naval vessels, or small arms and ammunition ⁵¹ The success of its nationalization effort is indicated by the fact that Brazil's arms imports fell from a high of \$304 million in 1979 to only \$38 million by 1983. At the same time Brazil's arms exports rose from \$49 million in 1975 to a high of \$300 million in 1982 ⁵²

Although few other developing countries have been as dramatically successful as Brazil in their attempts to nationalize arms procurement, countries such as South Africa, Israel, India, and South Korea have experienced varying degrees of success in their efforts to reduce dependence upon imported arms. South Africa has become virtually self-sufficient and arms are no longer imported in significant quantities ⁵³ Israel has invested heavily in a technologically sophisticated and internationally competitive defense industry that provides for an ever increasing proportion of the country's needs. ⁵⁴

Military self-reliance has been a major preoccupation of India's political leaders since the country gained its independence in 1947. The fact that some sixty-three percent of the Indian Air Force's inventory of over 1500 aircraft in 1984 had been built by Hindustan Aeronautics Limited, India's state-owned aircraft manufacturer, is indicative of the success, even though limited, of India's military import substitution programs ⁵⁵ And

although India has acquired several hundred Soviet T-54 and T-55 tanks, the domestically produced Vijayanta comprised sixty-five percent of the Army's tank force in 1984⁵⁶ In addition, India was in the process of acquiring domestically built destroyers, frigates, corvettes, jet fighters, and helicopters in the mid-1980s⁵⁷ India's defense industry, unlike Brazil's, however, has relied heavily on licensed production of foreign equipment, such as Soviet MiG-23s, which comprise the core of the air force's fighting force.⁵⁸

Despite its special relationship with the United States and its reliance upon American weaponry and the presence of U.S. troops, South Korea too has had success in nationalizing its arms procurement South Korea, like Brazil, invested heavily in a defense industrial complex during the 1970s. As a result, according to a U.S. Congressional Budget Office Study, 50 percent of all required military equipment was being produced in-country by 1978⁵⁹ By the early 1980s, 70 percent of the weaponry needed by the Korean armed forces was being manufactured locally⁶⁰ Again like Brazil, South Korea's arms imports have been declining and its arms exports rising Arms imports fell from \$722 million in 1978 to \$278 million in 1983 while arms exports rose from a mere \$8 million in 1975 to \$950 million in 1982⁶¹

Due to the rapid economic growth of the 1970s, South Korea has also assumed the financial burden of its own defense In fiscal year 1966 the U S provided the funds for 85 percent of Korean defense expenditures By FY 1976 the U S was providing

only 12 percent of the country's military expenditures -- and two-thirds of the funds provided by the U S. in FY 1976 were in the form of Foreign Military Sales credits that would be repaid ⁶² By FY 1977 South Korea was " .. funding essentially all of its defense costs..."⁶³ Even though American troops remain in South Korea (though in declining numbers since the late 1960s), South Korea has clearly demonstrated its ability to reduce its dependence upon the United States.

Despite the success of countries such as Brazil, South Africa, Israel, India, and South Korea, not all of the third world countries that have turned to military import substitution have eliminated, or even will eliminate, the need for imported weapons and become self-sufficient. The need for external inputs remains. Argentina, for instance, even though it has long had an across-the-board production capability, still employed imported weapons against the British in its attempt to wrest the Malvinas from Britain in 1982 ⁶⁴ Egypt, with its more recently acquired across-the-board production capability, still relies heavily on arms supplied by the United States and various West European suppliers Other, less capable, producers, such as Chile, Indonesia, Mexico, Nigeria, Pakistan, Peru, the Philippines, Taiwan, or Thailand, are even further from the goal of military self-reliance And even the most advanced producers have not yet completely eliminated the need for imported weapons Israel still requires American supplies The most technologically sophisticated weapons in the Indian arsenal are

still imported. And even though South Korea produces some 70 percent of the military equipment its armed forces have acquired in recent years, it still purchases American weapons and U S. troops have not yet departed.

Those third world arms manufacturers that exist in a high-threat, technologically sophisticated military environment have found it extremely difficult to throw off the shackles of military dependence -- even when, as in the cases of Israel, India, and South Korea, the resources devoted to military import substitution programs have been far from insubstantial. While Brazil, situated in a relatively benign security environment, greatly reduced the level of its dependence upon imported arms in a short period of time, and South Africa, confronted only by militarily weak adversaries, has become essentially self-reliant, Israel, India, and South Korea have found the process of reducing military dependence to be somewhat more arduous. Israel is located in what is arguably the most volatile region of the world and is confronted with adversaries that have been able to acquire some of the most advanced conventional weaponry available. The threat to Israel's security is immediate, constant, and non-receding. India is confronted by two troublesome adversaries. One, China, has the world's largest military establishment. The other, Pakistan, has been armed with advanced American weaponry. And South Korea is confronted by an implacable foe a North Korea that maintains a military establishment that is larger than South Korea's and that is supplied and supported by two major

powers -- the Soviet Union and China

While Israel, India, and South Korea have been able to reduce the level of their dependence upon imported arms, it is inherently more difficult for them to become militarily self-reliant in the same sense that Brazil and South Africa have become self-reliant. Both South Africa and Brazil were able to utilize middle-level military technology in their quest for self-sufficiency. Given the nature of the threats they confront, however, Israel, India, and South Korea are compelled to acquire weaponry at the cutting edge of technology. In other words, the products of these three countries must be able to compete directly with those of the major arms suppliers -- the two superpowers and the countries of Western Europe.

Yet despite the numerous obstacles confronted by countries attempting to nationalize arms procurement and reduce the level of their dependence on arms imports, the manner in which third world defense producers acquire arms increasingly resembles the manner in which many of the advanced industrial countries procure military equipment. Thirty percent, for instance, of the defense contracts entered into by Italy in 1980 were for foreign military equipment. Over one-third of the military equipment purchased by Sweden during the 1970s was imported.⁶⁵ Britain, West Germany, Italy, and other West European members of NATO, like third world arms producers, continue to import some of the arms their military forces require. Many advanced industrial countries, again like third world arms producers, also manufacture military

equipment under license Britain, for instance, produces French Milan anti-tank missiles and American AIM-9 surface-to-air missiles, TOW anti-tank missiles, and Harpoon submarine-to-ship missiles, while Italy builds French Roland-2 surface-to-air missiles, Milan anti-tank missiles and a whole array of American missiles, helicopters, and armored personnel carriers ⁶⁶ The sources of military equipment for the third world's arms producers and the advanced industrial countries, therefore, are not terribly dissimilar.

Local Production/Import Acquisition (LP/IA)

As has become evident, those third world countries that have attempted to nationalize arms procurement have, in effect, adopted a "mixed" local production/import acquisition posture. The inability of even the most advanced third world defense manufacturers to produce 100 percent of the equipment their military establishments desire compel them to continue acquiring some of their requirements from foreign suppliers. Third world arms producers, therefore, like the Northern advanced industrial countries, manufacture what they can and import the rest. No third world military establishment relies exclusively on the products of local industry The pure form of domestic production does not yet exist in the third world (nor, of course, does it exist in the North -- even the United States and the Soviet Union import arms)

The 51 developing countries that had, by the mid-1980s,

initiated MIS programs, whether limited to the production of small arms and ammunition or committed to the development of an across-the-board production capability, had, de facto, adopted a local production/import acquisition strategy. A LP/IA posture can take a number of forms, ranging from limited production capabilities and extensive arms imports at one end of the continuum to extensive production capabilities and limited arms imports at the other end. Arms imports may be from a single/predominant source or multiple sources -- although countries that have made the effort to reduce military dependency by initiating MIS programs are more likely to import arms from multiple sources than from a single/predominant source.

All things being equal, a country's political and military autonomy is to a large degree a function of where they are located on the LP/IA continuum. Countries such as the Philippines and Pakistan that have only limited production capabilities and a high import-to-production ratio are vulnerable and may well experience serious constraints on their political-military autonomy, especially if they depend on a single or predominant external supplier. Countries such as Brazil and South Africa that have built up extensive indigenous production capabilities and have a low import-to-production ratio will find that while they may be somewhat sensitive to disruptions in the supply of foreign arms, they are no longer vulnerable and they in fact possess considerable policy and behavioral autonomy. Although a handful of developing countries, including Brazil, South Africa,

Israel, and South Korea, will be arrayed toward what they would certainly view as the positive end of the continuum (extensive production capabilities and a relatively low import-to-production ratio), the distribution of countries along the LP/IA continuum, given the limited capabilities of the majority of the third world's defense producers, is skewed toward the "negative" end of the continuum (limited production capabilities and a relatively high import-to-production ratio)

Of course, all things are not equal. As noted earlier, a high threat, sophisticated military environment complicates counter-dependence efforts. The level of indigenous content of locally manufactured equipment must also be taken into account. The further a country has advanced through the five stages of production, and the greater, therefore, the level of local input, the more likely it is that import dependence will have been reduced and autonomy enhanced. It is, however, quite possible for a country to have developed an across-the-board production capability but still be located closer to the negative end of the LP/IA continuum than expected -- either because production is stalled at stage three with no local research and design input (Egypt), or the security problems confronting a country are of such magnitude that even though stage four and/or five production of aircraft, armored vehicles, missiles, and naval vessels is taking place, military supplies must still be acquired from abroad, especially during crises (Israel)

A major determinant of the level of local content (or value

added) is a country's technological and industrial capabilities. Only when industrialization has spawned a corps of skilled workers, an industrial managerial elite, trained scientific and technical manpower, and when other industrial sectors, such as, for instance, the steel, chemical, electronics, and transportation sectors, are able to support the development of a local content-intensive defense industry is there any prospect for military self-reliance and policy and behavioral autonomy. Third world countries, such as Brazil and Israel, with relatively technologically advanced, diversified industrial economies have been more successful not only in building a defense industrial sector, and thereby reducing the range of weapons that must be imported, but also in turning out defense products that have a high degree of local content than less technologically and industrially capable countries such as Pakistan.

CONCLUSION

The countries of the third world have available to them the same set of arms acquisition options available to the advanced industrial countries. Of the three possible acquisition strategies, the arms import option, whether in the form of single/predominant source acquisition or multiple source acquisition, has proven to be the most problematic. Single/predominant source external acquisition results in military dependency and the loss of policy and behavioral autonomy. Multiple source external acquisition, even though it has been adopted as a counterdepen-

dence strategy, only enables an importer to spread its dependency across several suppliers. It does not reduce the level of dependency and serves to complicate training, maintenance, and logistical requirements

Military import substitution, the second counterdependence strategy, has enabled third world arms producers to reduce their dependence on arms imports by substituting locally designed and manufactured weaponry for imported weaponry. By diminishing dependence on external suppliers, a successful MIS strategy fosters policy and behavioral autonomy. Yet despite the potential counterdependence, autonomy enhancing impact of MIS, those third world countries that have initiated arms production efforts, even those with relatively mature, large-scale programs, must still, to a greater or lesser degree, depending on their technological and industrial capabilities, the magnitude of the threat confronting them, and the technological sophistication of their security environment, import arms

Since even the most advanced of the third world's arms manufacturers have not yet proven capable of relying solely on local production to meet the requirements of their military establishments, available arms acquisition options have been reduced, in effect, from three to two. Two analytically distinct options, the military import substitution option and the mixed, local production/import acquisition option, have been merged in practice. Those countries that produce arms also import varying quantities of arms. In the final analysis therefore, the choice

for third world countries (and the advanced industrial countries as well) boils down to either (1) acquisition from abroad -- whether of the single/predominant source or multiple source variety, or (2) local production/import acquisition. The latter option, even though it can not assure absolute autonomy, has proven to be more conducive to policy and behavioral autonomy than the former.

NOTES

1 These data on the extent of arms production in the third world are from M Brzoska and T Ohlson, "Arms Production in the Third World An Overview," in Michael Brzoska and Thomas Ohlson, eds , Arms Production in the Third World, (London and Philadelphia Taylor and Francis, for SIPRI, 1986), pp 7-34

2 See SIPRI, Arms Trade Registers. The Arms Trade with the Third World, (Stockholm Almquist and Wiksell International and Cambridge The MIT Press, 1975).

3 Andrew J. Pierre, The Global Politics of Arms Sales, (Princeton Princeton University Press, 1982), p 78

4 Ibid, pp. 46 and 79

5 Speech by Mr Rajaratnam of Singapore, Official Records of the United Nations General Assembly, Tenth Plenary Meeting, September 29, 1976, pp 149 and 150

6 W Norman Brown, The United States and India, Pakistan, Banqladesh, (Cambridge Harvard University Press, 1972), p. 224

7 Andrew J Pierre, The Global Politics of Arms Sales, (Princeton Princeton University Press, 1982), p 164

8 Rajaratnam speech, op cit , p 149

9 Robin Luckham, "Militarism Force, Class and International Conflict," in Mary Kaldor and Asbjorn Eide, eds , The World Military Order. The Impact of Military Technology on the Third World, (London The MacMillan Press Ltd., 1979). p 241

10 Philip J Farley, Stephen S Kaplan, and William H Lewis, Arms Across the Sea, (Washington, D C The Brookings Institution, 1978), p 30.

11 Andrew J Pierre, The Global Politics of Arms Sales, (Princeton Princeton University Press, 1982), p. 152

12 Pierre, p. 180.

13 Figures derived from Data Management Division, Comptroller, Defense Security Assistance Agency, Foreign Military Sales, Foreign Military Construction Sales and Military Assistance Facts As of September 30, 1985, pp 85, 87, and 89 For an examination of the role of the U S. military assistance program in the political socialization of third world military officers, see the following two works by Miles D. Wolpin Military Aid and Counterrevolution in the Third World, (Lexington D C. Heath and Company, 1972), and Militarism and Social Revolution in the Third World, (Totowa, NJ Allanheld, Osmun & Company, 1981), pp 27-42

14 See National Foreign Assessment Center, Central Intelligence Agency, Communist Aid Activities in Non-Communist Less Developed Countries, 1979 and 1954-1979. A Research Paper, ER-80-10318U, October 1980, pp 6 and 15

15 Ibid, p 15

16 Ibid, p 16. For an overview of the Soviet military assistance program, see Roger E Kanet, "Soviet Military Assistance to the Third World," in John F Copper and Daniel S Papp, eds , Communist Nations' Military Assistance, (Boulder Westview Press, 1983), pp. 39-71

17 SIPRI, The Arms Trade with the Third World, (Stockholm Almqvist & Wiksell, and New York Humanities Press, Inc., 1971), p 39.

18. Pierre, op cit., p 153.

19. SIPRI, The Arms Trade with the Tird World, pp. 37-39.

20. Barry M Blechman, Janne E. Nolan, and Alan Platt, "Pushing Arms," Foreign Policy, No 46 (Spring 1982), p 139

21 Stephen Rosskamm Shalom, The United States and the Philip-pines. A Study of Neocolonialism, (Philadelphia Institute for the Study of Human Issues, 1981), pp 75-76

22 Ibid, pp 86-93

23 Ibid, pp 75-109

24 Ibid, p 16, and Geoffrey Kemp with Steven Miller, "The Arms Transfer Phenomenon," in Andrew J Pierre, ed., Arms Transfers and American Foreign Policy, (New York New York University Press, 1979), p 49

25 See Lars Schoultz, Human Rights and United States Policy Toward Latin America, (Princeton Princeton University Press, 1981), especially Chapter 6, "Military Assistance," pp. 211-266

26 SIPRI, The Arms Trade Registers: The Arms Trade with the Third World, (Cambridge and London The MIT Press, 1975), pp 81-83

27 For an account of Soviet attempts to influence Egyptian policy during the period of Egypt's military dependence upon the Soviet Union, see Alvin Z Rubinstein, Red Star on the Nile: The Soviet-Egyptian Relationship since the June War, (Princeton Princeton University Press, 1977).

28 Data derived from Tables 3-3, 3-4, and 3-5 in Edward J. Laurance, "Soviet Arms Transfers in the 1980s Declining Influence in Sub-Saharan Africa," in Bruce E. Arlinghaus, ed , Arms for Africa. Military Assistance and Foreign Policy in the Developing World, (Lexington D.C. Heath and Company, 1983), pp 43-45

29. See Clarence A Robinson, Jr , "Egypt Plans Review of Military Needs," Aviation Week and Space Technology, November 16, 1981, p 50.

30 In actuality, of course, there is a continuum between these two forms of the fifth production stage

31 See Stephanie G Neuman, "International Stratification and Third World Military Industries," International Organization, Vol 38, No 1 (Winter 1984), p 172

32 It should be noted that the data presented here differs from the data provided in the introduction The data here are for 1980, while the data presented earlier are for the mid-1980s The earlier data have been utilized here because the manner in which the 1980 data were presented provides greater detail about the range of weapons produced and the extent of local input.

33 For details concerning the growth of the third world's arms production programs, see Andrew L Ross, Security and Self-Reliance. Military Dependence and Conventional Arms Production in the Third World, PhD dissertation, Cornell University, August 1984, pp. 122-164 of Chapter 4 "The Aggregate Data "

34 Anne Hessing Cahn, et al , Controlling Future Arms Trade, (New York McGraw-Hill Book Co , 1977), p 78.

35 Stephanie G. Neuman, "Arms Transfers, Indigenous Defence Production and Dependency The Case of Iran," in Hossein Amirsadeghi, ed., The Security of the Persian Gulf, (London Croom Helm Ltd , 1980), p 145

36 International Institute for Strategic Studies, Strategic Survey 1976, (London IISS, 1977), p 23

37 Michael Moodie, "Defense Industries in the Third World," in Stephanie G Neuman and Robert E Harkavy, eds , Arms Transfers in the Modern World, (New York Praeger, 1979), 301

38. Michael Moodie, "Sovereignty, Security, and Arms," The Washington Papers, Vol 7, No 67 (Beverly Hills and London Sage Publications, 1979), pp. 31-32

39 Michael Moodie, "Vulcan's New Forge Defense Production in Less Developed Countries, Arms Control Today, Vol 10, No 3 (March 1980), p. 2.

40 Peter Lock and Herbert Wulf, "The Economic Consequences of the Transfer of Military-Oriented Technology," in Mary Kaldor and Asbjorn Eide, eds., The World Military Order. The Impact of Military Technology on the Third World, (London The Macmillan Press Ltd., 1979), p 226 See also IFSH-Study Group on Armaments and Underdevelopment, Transnational Transfer of Arms Production Technology, (University of Hamburg Institut fur Friedensforschung und Sicherheitspolitik, 1980), pp 87-89

41 Herbert Wulf, "Developing Countries," in Milton Leitenberg and Nicole Ball, eds , The Structure of the Defence Industry. An International Survey, (London Croom Helm Ltd , 1983), p 341

42 See Andrew L Ross, "World Order and Third World Arms Production," in James Everett Katz, ed , The Implications of Third World Military Industrialization. Sowing the Serpents'

Teeth, (Lexington, MA D C Heath and Company, 1986), pp 278-280 I have unabashedly drawn on this earlier piece in preparing this section of the chapter

43 Quoted in Michael T Klare, American Arms Supermarket, (Austin University of Texas Press, 1984), p 167

44 See Charles F Dolan, George Modelski, and Cal Clark, eds , North-South Relations. Studies of Dependency Reversal, (New York Praeger Publishers, 1983); Dieter Ernst, ed , The New International Division of Labour, Technology and Underdevelopment. Consequences for the Third World, (Frankfort Campus Verlag Gmbtt, 1980); Heraldio Munoz, ed., From Dependency to Development. Strategies to Overcome Underdevelopment and Inequality, (Boulder Westview Press, 1981), and James H Street and Dilmus D James, eds., Technological Progress in Latin America. The Prospects for Overcoming Dependency, (Boulder Westview Press, 1979)

45. Steven L. Spiegel, Dominance and Diversity. The International Hierarchy, (Boston Little, Brown and Company, 1971), p 135

46. Derived from data in The Military Balance 1970-71, (London IISS, 1970), p. 74.

47. Derived from data in The Military Balance 1984-1985, (London IISS, 1984), p 117

48 Although the proportion of domestic content continues to increase, Embraer does still incorporate some foreign components in its aircraft

49 On the AMX program see Andrea Natvi, "AM-X A 'Dedicated Attack Aircraft' for the '90s," Military Technology, Vol. 9, No. 7 (1985), pp 14-24.

50. A few, however, such as the Piranna AAM, appear to be copies of foreign designs and are the product not of original design work but of reverse engineering. Some of these armor, missile, and naval systems, like Embraer's aircraft, still contain imported components

51 For details about the expansion of Brazil's military import substitution programs see Andrew L Ross, Security and Self-Reliance, op, cit, Chapter 5 , "Brazil From Dependent to Rival," pp.165-315 ; Alexandre de S. C Barros, "Brazil," in James Everett Katz, ed., Arms Production in Developing Countries. An Analysis of Decision Making, (Lexington, MA D C. Heath and Company, 1984), pp. 73-87, William Perry and Juan Carlos Weiss, "Brazil," in Katz, ed , The Implications of Third World Military Industrialization, op cit , pp 103-117, P Lock, "Brazil Arms for Export," in Brzoska and Ohlson, eds , op cit., pp 79-104, and Klaus Wolff-Casado Revuelta, "The Brazilian Defence Industry -- Partner or Competitor to the Established Western Defense Industries?" Military Technology, Vol 9, No 10, (November 1985), pp 92-119

52 These figures are in constant 1982 U.S dollars. Brazil's arms imports actually fell to a low of \$30 million in 1982 before increasing to \$38 million in 1983, and arms exports decreased from \$300 million in 1982 to \$110 million in 1983. From U S Arms Control and Disarmament Agency (ACDA), World Military Expenditures and Arms Transfers 1985, (Washington, D C ACDA, Publication 123, August 1985), p 97.

53 World Military Expenditures and Arms Transfers 1985, p. 86. On the development of the South African defense industry see Ewan W Anderson, "South Africa," in Katz, ed., Arms Production in Developing Countries, op cit., pp 321-338, and M Brzoska, "South Africa Evading the Embargo," in Brzoska and Ohlson, eds , op. cit., pp. 193-214.

54 On the development of the Israeli defense industry see W Seth Carus, "Israel Some Economic and Social Considerations," in Katz, ed., The Implications of Third World Military Industrialization, op cit , pp 135-150, Robert E Harkavy and Stephanie G Neuman, "Israel," in Katz, ed., Arms Production in Developing Countries, op cit , pp 193-223; Gerald Steinberg, "Israel," in Nicole Ball and Milton Leitenberg, eds , The Structure of the Defense Industry. An International Survey, (New York St Martin's Press, 1983), pp 278-309, G M Steinberg, "Israel High-Technology Roulette," in Brzoska and Ohlson, eds , op cit , pp. 163-192, Gerald M Steinberg, "Technology, Weapons, and Industrial Development, The Case of Israel," Technology in

Society, Vol 7, No 4 (1985), pp 387-398, Alex Mintz, "Military-Industrial Linkages in Israel," Armed Forces and Society, Vol 12, No 1 (Fall 1985), pp 9-27; and Alex Mintz, "The Military-Industrial Complex American Concepts and Israeli Realities," Journal of Conflict Resolution, Vol 29, No 4 (December 1985), pp 623-639

55 Derived from data in The Military Balance 1984-1985, p 99

56 Ibid, p 99 The Vijayanta MBT is an Indian-modified version of the Vickers Chieftain, a British-designed tank.

57 Ibid, pp 99-100

58 On the development of the Indian defense industry see Andrew L Ross, Security and Self-Reliance, op, cit , Chapter 6, "India Betwixt and Between," pp. 316-455, Thomas W Graham, "India," in Katz, ed , Arms Production in Developing Countries, op cit , pp 157-191; Raju G. C Thomas, "India The Politics of Weapons Procurement," in Katz, ed., The Implications of Third World Military Industrialization, op. cit., pp 151-163, and H Wulf, "India The Unfulfilled Quest for Self-Sufficiency," in Brzoska and Ohlson, eds , op cit , pp 125-146

59 Congressional Budget Office, Force Planning and Budgetary Implications of U.S. Withdrawal from Korea, (Washington, D C USGPO, May 1978), p 15.

60 Shim Jae Hoon, "South Korea Standing on its Arms," Far Eastern Economic Review, October 23, 1981, p 26 For accounts of South Korea's military import substitution programs see Andrew L Ross, Security and Self-Reliance, op cit., Chapter 7, "South Korea Dependent Self-Reliance," pp 456-537, Young-Sun Ha, "South Korea," in Katz, ed , Arms Production in Developing Countries, op. cit , pp 225-233; Chung-in Moon, "South Korea Between Security and Vulnerability," in Katz, ed , The Implications of Third World Military Industrialization, pp 241-266; Chung-in Moon, "South Korean Defense Industry," Journal of Defense and Diplomacy, Vol. 4, No 6 (June 1986), pp. 2-27; Chung-in Moon and Kwang-il Baek, "Loyalty, Voice, or Exit? The U S Third-Country Arms Sales Regulation and R O K Counter-vailing Strategies," Journal of Northeast Asian Studies, Vol 4, No. 1 (Spring 1985), pp. 20-45, and J E Nolan, "South Korea An Ambitious Client of the United States," in Brzoska and Ohlson, eds , pp 215-232.

61. South Korea's arms exports actually declined, however, to \$355 million in 1983. Figures are in constant 1982 U S dollars Data are from World Military Expenditures and Arms Transfers 1985, p 111

62 U.S Embassy, Seoul, Report on Korea 1976, p 10

63 U S Embassy, Seoul, Report on Korea 1977, p 8