Arms Trade in the Developing World, 1976-1986: Reflections on a Decade

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From the latter 1970s until perhaps as late as 1984, the trend in arms imports by developing nations was sharply up in almost all years, fueled by ambitious force improvement programs financed, in most cases, by rising oil prices and easy credit.[1] At the zenith of that period, in 1980, total arms contracts[2] made by developing or "Third World" countries[3] reached levels in excess of about $50 billion in current (or "then-year") U.S. dollars.

In recent years, however, arms sales to the Third World have fallen sharply, despite the occurrence of several major conflicts. Falling oil prices and crushing debt service costs are obviously important factors, but perhaps more significant is the completion of many Third World force improvement programs. The expensive and complex major weapons, whose many (and well-publicized) acquisitions so drove up the level of arms sales in the peak years, have begun to flow to their buyers and are creating significant absorption problems. And many major weapons systems previously ordered are still in the pipeline.

The last decade's arms-buying programs can be attributed, in part, to the personal ambitions of some Third World leaders and the effectiveness of arms salesmen, often aided by the well-placed bribe. Many of the weapons systems purchased were far too ambitious for the acquiring countries' weak infrastructures of operational and maintenance facilities and far too small pools of trained manpower. To varying degrees, Third World purchasers now are beginning to address these shortcomings despite tight budget constraints.

Some factors in the Third World arms trade have not changed over the past decade. Only about ten countries, in war or peace, have fairly consistently accounted for around 60 percent of total arms purchases by the 130-plus Third World nations.[4] Regional breakdowns of arms sales regularly show the Middle East and South Asia as by far the largest arms-buying areas of the developing world. Complete and reliable information remains hard to acquire, because arms sales are treated almost everywhere but in the United States as matters of commercial, if not national, secrecy. The sale or the delivery of high-cost major weapons systems is well-nigh unconcealable. But it is far more difficult to obtain reliable information even on the existence, let alone the terms and costs, of logistical, training, or maintenance agreements. These, though not as "showy," are as vital to military capability as major arms. (It should be noted that, since there probably are now fewer major weapons and more services and small items in the worldwide arms sales mix, it is likely that current arms sales to Third World countries are more understated. The present "depression" in the arms market, therefore, may not be quite as deep as it appears.)

Longer-term changes which have been developing over the last decade are likely to affect both sellers and buyers in the Third World arms bazaar for many years to come, perhaps as long as the next decade. Weapons exports have become economically more significant both to established and emerging sellers, particularly those below the topmost rank. Until the beginning of this decade, arms exports to the Third World were dominated by the "Big Six"--the United States, the

Soviet Union (USSR), France, the Federal Republic of Germany (FRG), the United Kingdom (UK), and Italy. The USSR and the U.S. had, between them, over half of the total market. The rest was mostly shared among France, the FRG, the UK, and Italy. Other sellers, even the smaller industrialized nations of Western and Eastern Europe and the more advanced of the newly industrializing countries, simply were not significant individual players.

THE SUPERPOWERS

The *Soviet Union* has consistently delivered far more major weapons systems to the Third World than any other supplier and clearly ranks first by any measure.[5] This is true even though American and other Western major arms tend to be more expensive, item for item, especially when the cost of high quality post-sales support is included. Soviet primacy in arms sales to the Third World was not fully reflected in past U.S. Government estimates of the monetary value of Soviet military assistance, as recent analyses based upon improved data indicate. The value of delivered Soviet spare parts and other supporting military goods and services (but not major weapons systems) had been generally underestimated, even seriously understated in the cases of Soviet arms clients engaged in national-level conflict or combatting internal insurgencies.

The *United States* maintains a strong second place behind the USSR, and the two superpowers remain in a league by themselves in the Third World arms market, albeit by smaller margins than at the beginning of the decade. Together they continue to account for over half of the dollar value of arms sold to Third World nations. This share seems unlikely to decline importantly in the future, whether the Third World market is bull or bear, because arms choices reflect both political affinities and the strategic and tactical philosophies of the purchasing militaries.

Soviet and American weapons are designed with fundamentally different concepts of waging war in mind. Although Soviet conventional weapons are becoming more sophisticated, complex, and expensive than they were a decade ago, the Soviet Union continues to favor a force structure featuring large quantities of arms of all types. They are designed and produced under an evolutionary philosophy for short, intense combat, and operated under a peacetime doctrine of keeping a large proportion of the newest weaponry "on the top line" to provide constant combat readiness. In contrast, American (and other Western) doctrines seek maximum technical sophistication and lethality to offset lack of quantity, and stress high levels of operator and support personnel training to keep them effective.

These fundamentally different approaches, as well as the engineering trade-offs that weapons designers must make to suit the tactical preferences of their customers, result in arms which are not doctrinally or tactically interchangeable. This factor probably explains in large part why, for example, post-Falklands/Malvinas Argentina, despite large and favorable food trade monetary surpluses with the USSR, did not turn to the Soviet Union to replace wartime equipment losses which it could not afford to make up from its traditional suppliers. It also helps to explain why Western-supplied nations such as Jordan and Kuwait, each short of money and wishing to demonstrate strong dissatisfaction with a principal supplier or to pressure their financial backers, have thus far made only token purchases of Soviet weaponry, of types which their major suppliers demurred at providing.

The high quality arms which each superpower constantly develops to suit its fundamental military philosophy, the economies of scale which come from manufacturing in large quantity, and the willingness of both to use arms sales as a political instrument, suggest that the two will remain the Third World's largest suppliers by significant margins for many years to come.

FRANCE

It is below the "superpower level" that the principal supplier changes in the last decade have occurred. France, despite its affinity with NATO and occasional participation in intra-European weapons development programs, designs and produces its own complete range of high-technology conventional arms. It is the only non-superpower to maintain this capability, though at a price. The high and increasing cost of developing the full arms spectrum has forced France, a nation whose armed forces are relatively small, to promote arms exports with great vigor, and Paris has achieved a clear third place in the Third World market (if its considerable year-to-year variation in sales is set in a broader perspective). For example, more than half of Dassault's family of Mirage jet fighters has been exported, at times to the detriment of French Air Force operational capability. Although its after-sale services have generally not been up to the level set by other Western arms purveyors and some of its offerings (notably heavy armor) have fared poorly in Third World markets, France's willingness to divorce arms sales from political considerations to the greatest extent possible has won for it the reputation of being a dependable supplier. French "dependability" is as important in the Third World market as the technical quality of its arms and has offset these shortcomings.

ERSTWHILE MAJOR SUPPLIERS

Other established suppliers to the developing world do not, for reasons of economy, develop and produce the entire range of conventional weapons at or near state-of-the-art levels, though many are technologically able to do so. The smaller members of the "Big Six", the UK, FRG and Italy, have seen their positions in the export market erode sharply over the last decade. This has occurred despite joint arms-production ventures among themselves or with France or the U.S. and despite the occasional major deals they still consummate, such as London's contract with Saudi Arabia for Anglo-German-Italian Tornado attack jets or the FRG's sale of diesel submarines to India.

The arms industries of these countries participate, more often and more intimately than those of the superpowers or France, in arms co-production partnerships with newly-industrializing countries. In these arrangements, they derive significant leverage from their still-considerable fundamental technical know-how in materials, subcomponent manufacture, and production techniques. Their willingness to transfer the relevant technology has often enabled them to clinch sales against competing products of higher overall quality. But in the process, they probably have hastened the maturing of future rival arms industries.

In part, their loss of market share is due to the activities of new major arms producers such as Brazil and, more recently, the Peoples Republic of China (PRC) which, for largely commercial reasons, have begun vigorously to sell weapons at very competitive prices in the medium-to-low technological range of weaponry.[6] Indeed, the lesser degree of sophistication of these systems, which are not as demanding of operators or maintenance personnel, may well be more appropriate to the level of training prevailing in many Third World militaries than are their higher-priced counterparts. The collective sales of other developing-nation arms producers also have undercut, to a smaller but still significant degree, the sales levels of the old established arms producers.

EMERGING MAJOR PRODUCERS

China and Brazil, despite important differences in the character of their arms offerings, have reached a class by themselves. They are the only major arms exporters in the developing world, and may well be the only ones with a chance to remain so.

China. At extraordinary low prices, the PRC offers improved clones of many Soviet-designed weapons of the latter 1950s and mid-1960s. It is gradually developing weapons of its

own design (with some outside assistance), including jet fighters, light armor, tactical missiles and destroyer-size surface warships. Although outdated, China's Soviet clones can still be effective; the Chinese HY-2 or Silkworm shore-based cruise missile, operated by Iranian Revolutionary Guardsmen, has become a factor in the Persian Gulf "tanker war," though it probably would fare less well against the countermeasures found aboard a modern (and alert) warship. Iraq also has a few cruise-missile-equipped B-6D jet bombers supplied by China.

The Iran-Iraq War proved to be a bonanza for the PRC, enabling it to sell in the first three years of the conflict more arms than it had exported in the preceding quarter-century. China has sold arms to both belligerents, particularly early in the war, and has supplanted North Korea as Iran's principal supplier. Inevitably, the eventual end of the Gulf War will cause the level of Chinese arms sales to fall, probably sharply. However, China began moving into the Third World arms trade well before 1980. Precisely because it produces older Soviet-pattern weaponry, the PRC was able to establish an arms relationship with Egypt, which had severed its ties with the USSR and was desperate for spare parts, overhauls, and replacement systems. China already had attained a foothold in the Islamic world in its even older arms relationship with Pakistan.

The fundamental reason why China appears to have a longer-term future as a major arms seller lies in the nature of warfare in much of the Third World. For all the attention paid to major weapons systems such as Chinese Silkworms in Iran and French Mirage F-1s in Iraq, the Gulf War quickly stalemated into an infantryman's and artilleryman's war, reminiscent of World War I. This situation has created a market for huge quantities of low-technology arms and combat-consumables. Recent worldwide levels of arms sales would have been several billions of dollars lower had it not been for this conflict. Clearly, neither belligerent really knew how to make full tactical or strategic use of the inventories of modern U.S., French, and Soviet major weapons systems they had built up before the war. Similarly, the Habre forces in Chad have given an excellent account of themselves, fighting with small arms, mortars, and jeeps fitted with recoilless rifles against Libyan units equipped with some of the latest Soviet export weaponry. Although Chinese equipment was not a factor in the Chadian conflict, the fact that the PRC has demonstrated that it produces, sells cheaply, and can rapidly and reliably deliver the full range of munitions required to sustain this level of conflict will not be lost on other nations in the developing world. A postwar Iranian military is likely to be dominated by senior officers whose background lies in the Revolutionary Guard, not by the technologically-oriented professional military the Shah was building. Postwar Iranian military leaders may well see large numbers of semi-trained personnel with low-technology weapons as the type of military the nation should have.

Meanwhile, China is developing an "interim generation" of arms, with as much outside expertise as it can acquire on its own terms. It can be expected to push them vigorously in the Third World to fund its own future weapons programs. As noted, Chinese major systems have been based fundamentally on mid-1960s Soviet arms but considerably modified by Chinese ingenuity during the years of the PRC's isolation and, since the late 1970s, by very considerable inflows of technical intelligence acquired in large-scale "window-shopping" in Western Europe and later in the U.S. China dangled before these arms-makers the prospect of substantial sales of finished items to modernize its huge but primitive military forces, and they responded with generous amounts of information, samples and field demonstrations. China in fact has purchased very little foreign military equipment, and probably never intended to do so. It has supplemented this acquired knowledge with a few licenses to build foreign arms--notably with Israel, whose weaponry is U.S.-influenced in its basic technology but increasingly improved and made independent of U.S. licenses by Israeli battle experience and intensive (though small-scale) weapons research and development. The PRC may see in its Israeli relationship a "back door" to acquire technology equivalent to what the U.S. would be unwilling to sell; for Israel's part, China represents a significant market to a country politically and economically isolated from the Third World's most lucrative arms market, the Middle East.

China has acquired some further arms design and production capability through joint ventures with established producers, supposedly for export. One such item is the Vickers-Norinco armored personnel carrier, a significant improvement on an old Soviet chassis. China has also acquired arms technology through reverse-engineering and probably will get still more. Although China received significant transfers of turnkey-arsenals from the Soviet Union before the rift of 1960, many current Chinese products such as the F-7 (MiG-21) jet fighter and the Y-8 (An-12) assault transport are the product of patient (and time-consuming) copying and modification. A more recent example is the W-8 helicopter, which appears to be almost a dead ringer for the French Super Frelon, of which the PRC bought fewer than a dozen many years ago.

China's increasing ability to support and significantly improve the large inventories of older Soviet arms which remain in Third World inventories, and the eventual appearance of the "third generation" of more nearly indigenous Chinese arms, argue for China to occupy a special niche as a supplier to the developing world. If it continues to sell such weapons at very low prices and to be a "dependable supplier" divorcing arms sales from political considerations, the PRC will remain on the scene as a major supplier. Aside from wars and its potential postwar Iranian market, China may not occupy an important place in the Middle East, where the taste for technology is already higher than Beijing is foreseeably able to supply. By making large numbers of small sales, the PRC could become a significant factor in the African, Latin American, and parts of the Asian arms markets.

Brazil. It is difficult to separate Brazil's real performance as an arms exporter from the farrago of publicity which surrounds the introduction of its new products and most of its major sales. Recent levels of arms exports have not been in the "major supplier" range, but Brazil's potential to survive and even increase sales in a depressed market is impressive. Brazil has long been building the kind of industrial infrastructure which can support an arms industry at the upper edge of the middle technological level. Although its major products still include imported components, Brazilian designers and manufacturers have shown considerable skill in making rugged and well-conceived weaponry. Brazilian-designed wheeled light armor was developed in an innovative but evolutionary way from Brazilian experience with its heavy truck industry and has long sold well in many parts of the Third World. Brazil has now moved from light armor into heavy; although the new Osaorio main battle tank has not yet been exported, it is a finalist in the field test phase of Saudi Arabia's current search for a new tank. Another new product, the Tucano turboprop trainer aircraft, has found favor with such a knowledgeable and demanding customer as the British Royal Air Force and has attracted serious attention from the U.S. Air Force (which is searching for alternatives after its Fairchild new trainer program was cancelled). Although the RAF purchase calls for Brazil to license the production of the aircraft to the UK (a notable reverse-flow of licensing) this mark of acceptance will be an important factor in insuring wider sales of the plane. Brazil, partnering with Italy, is now entering the jet combat aircraft field with the AMX lightweight fighter.

Brazilian arms sales policy is frankly commercial, and Brazil views restrictions on after-sale transfers as intrusions into the sovereignty of its customers. Politics appear to have little influence upon Brazil's arms exports; it has not sold arms to Iran (or recently to Libya) but this might be interpreted as a desire not to offend Iraq (an early and still important customer), Saudi Arabia, and other Middle East nations, or the U.S. As with China, this "dependability" as a supplier is a factor whose importance to Third World purchasers is difficult to overstate.

UNLIKELY MAJOR EXPORTERS

China and Brazil have managed (albeit at very different levels of technology) to reach the "big leagues" of arms sales. They founded their capabilities on licensed foreign arms designs, tooling, hands-on training, and joint ventures or partnerships with established producers. As their industries have matured, they have gone on to develop their own military systems. Other nations

are following the same course, but have restrained themselves from entering the arms export arena. *India* could become a significant supplier at about the same technological level as Brazil, but because of political constraints and the unmet needs of its own armed forces, has not--for the moment--attained any significant level of arms exports; nor is there any indication that it will do so in the foreseeable future. *Japan's* potential for high-technology military sales analogous to the levels it has attained in civilian exports is obvious. Except for building combat aircraft to U.S. designs and using American-supplied components (to a decreasing extent), the nation designs and makes its own land armaments and conventionally-powered naval ships. Its industrial capacity is large and advanced. There appears little likelihood, however, that in the near term Japan would alter its longstanding self-limiting military policies.

Israel and *South Africa* are occasionally spoken of as potential large-scale arms exporters. Their arms design and production capabilities have been strongly stimulated by embargoes, and both are trying hard to export their products. But the small scale of their defense industries, the priority that their own military services have over the arms output, and the political antipathy that each faces in many parts of the world probably will limit these two countries to minor standing as purveyors of finished military hardware.

WOULD-BE ARMS EXPORTERS

Many nations in the developing world are attempting to establish arms industries of at least the rudimentary kind, for reasons of national pride, self-confidence, and national technological advancement. To the extent that they try to offset their costs with export revenues, they face formidable competition, not only from the first and second tier "full service" suppliers noted in the preceding paragraphs, but also from smaller industrialized countries and from developing nations like themselves. A few, such as *Singapore*, *North* and *South Korea*, *Yugoslavia*, *Israel*, *Pakistan*, *Argentina*, and *Egypt*, have contributed to the one-fifth share of the Third World market captured in 1984 by developing world arms producers, but most of this market share is accounted for by Brazil and the PRC, which appear, because of their demonstrated performance and the scale of their arms production, to be in a different class.[7]

"NICHE MANUFACTURERS" AND STRETCH-OUT PROGRAMS

Smaller arms-makers in the industrialized world which cannot make the entire panoply of arms have nonetheless achieved excellence in special niches in the Third World market with much narrower ranges of products or services. They are of medium to high technological levels, but are cheaper to develop than broad lines. Competition to market items is not quite as fierce as it is either for the larger or the simpler weapons. To name but a few, *Israeli* tactical communications and reconnaissance systems, avionics and, increasingly, "smart" battlefield weapons are world-class and battle-proven. Their sales are not limited by license agreements with outside, particularly American, developers. *East Germany* is an important exporter of internal security training services. *Pakistani* soldiers and sailors serve as well trained mercenaries in many Middle Eastern armed forces. *Norway's* naval tactical missiles have attracted the attention of as discriminating a customer as the U.S. Navy, and *Dutch* communications, data systems, and radar are found aboard many warships in developing-world navies.

Leading-edge developers of major weapons have seen design requirements of their countries' armed forces become far more complex and demanding. This causes their research and development costs to surge, in the end driving up the unit prices of their weapons. Moreover, the new weapons, because of their efficiency, do not always replace older systems one-for-one, further raising unit costs. This process is working in Third World markets to the advantage of the "niche manufacturers" noted above. On their own or in combination with larger arms makers, they are increasingly involved in programs aimed to prolong the service life of many major weapons systems and to raise their level of effectiveness. Almost any major weapon, even some as many as

two decades old, can be substantially improved by replacement of its component subsystems. Tanks, for example, can be fitted with more powerful, economical, and reliable power trains; mobility and range can be increased with better tracks. Striking power can be enhanced with larger, stabilized, and automatic-loading guns, pointed by improved range-finders in conjunction with night vision equipment. Battlefield survival is increased by add-on armor. Similar important improvements can be made to warships and combat aircraft.

This upgrading need not be performed by the country that originally produced the equipment in question, although major producers commonly undertake life-extension programs for equipment still in their own inventories as well as for export. The USSR and its Warsaw Pact allies are upgrading the many T-54/55 tanks that remain in service, and the U.S. is improving the survivability of its venerable M-113 armored personnel carrier with more resistant armor. But an upgrading program can start almost anywhere in the industrialized world; all that appears to be required to spark at least feasibility studies is the existence of fairly large quantities of any given major weapon in the inventories of a number of Third World countries. Israel, the U.K., and the U.S. have all developed upgrading packages, of varying cost and complexity, for the T-54-55 tank and its Chinese clones, and can either undertake the work in their own arsenals or can assist the fleet operator to do the work in his own country, as Israel has done for China. Component subsystems required for these programs need not necessarily be developed by the nation whose general contractor is doing the integration; they can easily come from the "niche manufacturers" if the product is technically competent and priced right. This process seems likely to continue, and over time will generate an increasingly wide range of "hybrid weapons" based on older systems but tailored to the needs, pocketbook, and capabilities of the customer's armed forces and defense industries.

BUYER REACTIONS

Even the ten or so traditionally largest and richest Third World arms purchasers are experiencing financial stringencies and are postponing or stretching out future arms procurements. Most of the poorer nations simply cannot afford significant numbers of new high-technology major weapons. Some are meeting the problem by adopting a "high-low" force mix, in which a few top-line systems are fleshed out with larger numbers of less sophisticated and less expensive but still quite serviceable weapons. This is most evident in the case of fighter aircraft. Pakistan and Egypt, for instance, flesh out their U.S. F-16s and French Mirages with obsolescent, but new and inexpensive, Chinese warplanes. For those countries which can afford something better, major manufacturers offer lightweight fighter/attack aircraft such as the Italo-Brazilian AMX or the new British Hawk 200. Such warplanes could serve as the "low end" of a relatively well-equipped Third World air force, or the "high end" of one less well off. The U.S. F-20 was aimed at this market, as a replacement for Northrop's F-5, but did not gain acceptance. The fact that it was not adopted by the U.S. Air Force may have raised doubts about its future support (despite Northrop's reputation for good service). As a newcomer to the field, it also could not effectively compete in price with the F-16, where economies of scale were being realized. Other high-low strategies might include changing the proportion of tanks to infantry fighting vehicles, or altering the numerical relationship between destroyers or frigates and large patrol boats.

The poor countries probably will be the best customers for upgrading of their inventories or purchasing used but improved weapons from a wide range of suppliers. This process could also trigger eddy currents in the flow of weaponry in the Third World: for example, Country A might want new equipment for the "high end" of one of its military services, but cannot get favorable enough financial terms or barter sufficiently to do so. Country B, whose arsenal is lower down the technology scale than A's also wishes to improve its military establishment, but cannot afford new equipment. Country A could of course try to sell its used arms directly to Country B, garnering some revenue for its new weapons, but their value to both parties would be enhanced by involving the manufacturer or upgrader in Country C who would improve them, perhaps with

subsystems from still other nations, to suit Country B's needs. This process might be further complicated by the involvement of Country A's chosen supplier, who to clinch the sale might have to accept A's older weapons in trade but might not have the capacity to improve them for profitable resale and thus, would shunt them to the upgrader in Country C. The more frequently multi-party transactions of this kind occur, the more difficult it will become to track and to evaluate arms sales accurately in the Third World.

OUTLOOK

Whatever levels arms sale to the Third World may attain in future years, it appears certain that this market will be much more complex than it once was.

• Still more sellers will attempt to enter the arms market, allowing buyers greater latitude in playing potential suppliers off against each other. (Indeed, the old, more exclusive customer-supplier relationships have all but disappeared except for economic "basket-case" nations.) Although arms sales will always be fraught with political symbolism, this process could eventually reach a point where those major suppliers who view arms sales primarily as an instrument of political influence will come to question their effectiveness.

• A much wider range of arms, more accurately tailored to the capabilities and purses of the buyers, is already appearing and is likely to become still broader.

• Arms deals themselves will become more complex, routinely involving intricate financial arrangements such as offset or barter and the transfer of technology.

• Third World military expenditures may concentrate less upon major lethal military equipment and more upon force multipliers such as training, logistical systems, sensors, and other command, control, and intelligence systems. They may also pay increased attention to force sustainers such as reserve manpower pools and munitions, and to the development of military industries.

Notes:

1. The terms "arms" and "arms sales" (or imports) mean essentially any acquisition by a national government from another country of both lethal and non-lethal hardware, military training, and advisory services. Also included--and increasingly important--are military-industrial programs to produce weapons domestically, embracing any combination of designs and tooling, supervision and instruction, components and sub-components, and facilities construction. Sales to national police forces and to dissident political groups are not included.

2. Some analysts object to the use of "contract" or "agreement" figures, arguing rightly that contracts can be, and are, sometimes abrogated or significantly modified. This writer views contract levels as useful indicators of intention, forecasters of future delivery levels and, to some extent, an offset to the incompleteness of data which forever plagues the analyst.

3. The terms "developing" or "Third World" are used here to mean all nations except: members of NATO and the Warsaw Pact, other European countries not belonging to either alliance, Japan, Australia, and New Zealand. Other definitional groupings can significantly affect aggregate numbers.

4. Ranking of these bellwether purchasers will depend largely upon which year or group of years is chosen. The selection of ten major arms-buying nations is, to some extent, arbitrary, but the following ones will fairly consistently appear on almost any listing during the last decade (in alphabetical order): Algeria, Cuba, Egypt, India, Iran, Iraq, Israel, Libya, Saudi Arabia, and Syria.

Angola and Vietnam have also figured as major arms purchasers, but their arms purchases have been more directly related to conflict than those of the other countries noted; it is particularly difficult in Angola's case to distinguish those arms destined for the national military from those intended for the Cuban forces in country. In this writer's view, the fact that relatively few major purchasers drive the overall Third World arms market is more important than which specific ones they may be.

5. See, for example, the arms delivery tables published yearly in the Library of Congress' Congressional Research Service series *Trends in Conventional Arms Transfers to the Third World*, written by Richard F. Grimmett, based upon U.S. government data. Similar data are to be found in the U.S. Arms Control and Disarmament Agency's *World Military Expenditures and Arms Transfers* series. These publications group major weapons systems into 12 families., e.g., artillery (over 100mm), tanks and self-propelled guns, major and minor surface warships, supersonic and subsonic combat aircraft, etc. The Soviet Union has consistently led all other individual nations, sometimes by wide margins, in deliveries of heavy armor, artillery, supersonic combat aircraft, submarines and guided-missile patrol boats, the "poor man's battleship." The U.S. typically leads the USSR, though more more narrowly, in exporting subsonic combat aircraft and light armor.

6. A "major arms producer" may be considered one which has written more than $1 billion in contracts in at least one recent year.

7. See *World Military Expenditures and Arms Transfers, 1986* for the illuminating essay "Whither the Third World Arms Producers?" by Lt Colonel Joseph F. Clare, Jr., USA. [See also *The DISAM Journal*, Fall 1987, pp. 72-80, for a reprint of this article by Colonel Clare.]