

**Independence or Dependence?**  
**The Arms Industries**  
**in**  
**Israel, South Africa and Yugoslavia**  
**During the Cold War**

**A Ph.D. Dissertation Submitted to**  
**The University of London**  
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**by**

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## Abstract

This dissertation examines the development of armaments production in Israel, South Africa and Yugoslavia and the implications thereof regarding military import dependency, arms exports, and defence production cooperation among developing arms producers.

The dissertation concentrates on strategic and political issues of Third world arms production and does not deal with questions of arms industries and development.

The dissertation makes three broad arguments:

First, that truly indigenous arms production hardly exists in the three case study countries. I illustrate this by showing the heavy dependence of Israel, South Africa and Yugoslavia on foreign technology, licences, foreign components and foreign capital for all major -- and many minor -- weapons manufacturing projects undertaken since the 1960s.

Second, that despite billions of dollars invested in building up respective defence industry sectors, all three states (or successor states in the case of Yugoslavia) remained dependent on imports of most of the same major weapons systems at the end of the Cold War as they were 30 years earlier. Embargo of systems such as fighter aircraft, ships and tanks by the old arms supplier oligopoly was the key reason for the initiation of arms pro-

duction in all three countries. But the cancellation or failure of key arms manufacturing projects in all three countries, such as the Israeli Lavi fighter, means that far from achieving weapons supply independence, this dependency is set to continue into the next century

Third, that despite the above two points, Israel, South Africa, Yugoslavia and other Third World arms producers have played an expanding and important role the world arms trade and proliferation of military technology since the 1970s. This seeming paradox will be illustrated by contrasting Israel's growing dependency on the United States for advanced weapons, capital and technology from 1970 to 1990, with the Israeli role as the single most important UN arms sanctions buster to South Africa from 1977 to the early 1990s; as an arms supplier to Argentina during the 1982 Falklands / Malvinas War, to Iran during the Iran-Iraq War and to Guatemala after the 1977 U.S. arms cut-off.

The dissertation concludes that while some arms production is bound to continue in all three states (or successor states), major weapons manufacturing projects are a thing of the past and will be initiated -- if at all -- with the cooperation of arms industries from the very industrialised powers which Israel, South Africa and Yugoslavia sought total independence from through indigenous arms production during the Cold War.

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- L.C.M. Berlin, May 1992

**Part One -- Introduction**

## Introduction

This dissertation examines the development of armaments production in Israel, South Africa and Yugoslavia and the implications thereof regarding military import dependency, arms exports, and weapons production co-operation among developing arms producers.

As long as the threat and use of force remains an element of world affairs, the significance of defence industries to the study of international relations remains considerable, insofar as such industries contribute in allowing states to deter attack and use force.<sup>1</sup> The rapid growth of arms production in the developing countries in the past two decades makes these states increasingly important subjects in the field of strategic studies.

During the 1980s, Third World arms manufacturers produced between 5 and 10 percent of all arms sold to developing countries -- up from a tiny fraction of this figure in the 1960s.<sup>2</sup> Countries like Israel and Brazil are listed among the top ten or fifteen arms exporters in the world, with respective annual military sales worth over \$1 billion. As a result, the oligopoly of Northern states -- the former Soviet Union, the United States and Europe -- which dominated world weapons production and sales for much of this century, has been seriously eroded.

But Third world arms producers still represent new, and somewhat neglected actors in the proliferation of conventional and even nuclear weapons. The number of academic works on arms

production in the developing countries is growing, but still small in comparison with other areas of strategic studies. As Brzoska and Ohlson have noted:

In the public image of Western media, arms production in the Third World is given about the same coverage as stories about arms transfers were given 20 years ago: the reporting, which is irregular and spectacular, assumes that the reader is unfamiliar with the existence of such production.<sup>3</sup>

There are two broad areas of issues investigated by academic research on Third World arms production. The first is mainly concerned with strategic and political issues such as the diffusion of world power and the relationship between arms suppliers and recipients. A key area of focus is whether independence of military action can be achieved through domestic production of arms. The second area stresses the effects of arms production on economic development, with the literature roughly split into two camps of those who believe arms production benefits the economy and those who regard it as harmful to development.<sup>4</sup>

This dissertation concentrates on the first area of strategic and political issues and does not deal with questions of arms industries and development. I am of course aware that there is

some overlap of these areas, but development economics lies beyond the scope of this work.

#### Selection of the case study countries

The three states chosen as historical case studies for this dissertation may appear an unlikely grouping in that each was a strikingly unique entity within the world community during the Cold War:

Israel remained an unaccepted creation by most of the surrounding Arab and Islamic world and received massive infusions of capital, technology and arms from the United States, which on a per capita basis, dwarfed Washington's post Second World War Marshall Plan aid to Europe.

South Africa was, without question, the world's number one pariah state and faced an internationally coordinated arms and military technology embargo during the 1970s and 80s.

Former Yugoslavia, a founding member of the Nonaligned Movement, withdrew from the Soviet Union's zone of influence in 1948 and built up its arms industries to give the nonaligned concept teeth. Wedged between the frozen wasteland of the Cold War's East-West military blocs, Yugoslavia nevertheless attempted to retain links to both superpowers, which Belgrade tried to play

off against one-another to obtain arms and economic assistance.

#### Differences mask similarities

Nevertheless, despite the unique standing of each of these three countries in the international community, Israel, South Africa and Yugoslavia share a series of striking similarities.

-First, all three have either had limitations on their relationships with other countries forced upon them from the outside -- as with Israel and South Africa -- or else they have undertaken restrictions voluntarily, as with Yugoslavia in its role as a leader of the Nonaligned Movement. This makes all three countries members of the group of developing countries which took the initial decision to establish a domestic arms sector in response to strategic/political imperatives, as opposed to economic imperatives (as in the case of, say, Brazil).<sup>5</sup>

-Second, the governments of Israel, South Africa and Yugoslavia directed the main thrust of respective military-security policy at perceived external threats to the state from the 1950s to the late 1980s. But by the 1980s a more potent threat was found to exist within respective heavily guarded frontiers of each of the three states. In Israel and the Occupied Territories, the rapid-

ly growing Palestinian population launched the Intifada with stones and knives. In post-apartheid South Africa, the long-repressed black majority has launched a serious challenge for leadership of the country. In former Yugoslavia the ethnic and national groups -- the problems of which Tito claimed to have solved with the new socialist Yugoslav man of the 1950s -- have dismantled the old federation in a bloody civil war.

-Third, is the fact that all three countries have been subjected to arms embargoes. Israel in the years immediately following statehood in 1948, and during and after the Six Day War; South Africa from the time of the voluntary United Nations' arms embargo in 1963 and the mandatory arms embargo from 1977; and, Yugoslavia following its break with the Cominform in 1948. In addition, all three countries have been subject to repeated less comprehensive arms cutoffs, which are outlined in Chapters Two through Four.

-A fourth similarity is structural. There clearly exist minimum levels of economic, technical and infrastructural development necessary before a state can begin manufacturing advanced weapons systems. But of greater interest is the fact that structural problems of the three case study countries illustrate the limits of technology and finance regarding indigenous arms production.

This is particularly marked with regard to indigenous fighter aircraft development, which will be examined in detail below.

#### Some initial questions

In researching and writing this dissertation I posed a series of questions which the following chapters attempt to answer. These include:

- 1) Why did the governments of Israel, South Africa and Yugoslavia initiate large-scale military industries?
- 2) What is the structure of each case study country's military industries and what weapons are produced?
- 3) How successful have the three case study countries been in producing truly indigenous arms with reduced foreign input of components and technology?
- 4) How successful have the case studies' domestic arms industries been in reducing dependency on imports of major weapons systems, military components, technology and capital?

5) What is the level of military exports from Israel, South Africa and Yugoslavia? To what extent do these exports contribute to the proliferation of arms and military technology?

The argument

This dissertation makes a triad of arguments concerning the historical success and future implications of Third World arms production based on Cold War arms industry development in the three case study countries.

The first argument is that truly indigenous weapons production hardly exists in Israel, South Africa and Yugoslavia. I will show that the case study countries have been heavily dependent on varying combinations of foreign technology/licences, foreign components, and foreign capital for all major -- and many minor -- weapons manufacturing projects undertaken from the 1960s to the early 1990s.

This point is made with full acceptance of the argument that 'indigenisation' has lost much of its meaning since the 1960s. Only the United States and the Soviet Union have truly been successful in producing advanced weapons with near hundred percent domestic content: Even countries like Germany, Japan and Sweden manufacture aircraft with imported engines. The key point

is the yardstick used to measure foreign content and thus the success or failure of an arms project from the standpoint of indigenisation.<sup>6</sup> Given that past arms embargoes and the fear of future arms cutoffs were the prime reason for the establishment of all three countries' respective defence manufacturing sectors, I have chosen a relatively high level of indigenisation as a yardstick for assessing the success or failure of an arms manufacturing project. In the case of other Third World arms producers like Brazil, which developed its defence industry sector primarily for economic reasons, a high level of indigenisation would be far less important.

Second, in the foreseeable future, all three states (or successor states in the case of Yugoslavia) will remain dependent on foreign suppliers for major weapons systems, such as fighter aircraft, helicopters and naval vessels, despite ambitious endeavours to break import dependency precisely in these areas stemming from the 1970s and 80s. Financial and technological restraints mean that no new projects like Israel's ill-fated Lavi fighter will be initiated in the next years. Instead, of the go-it-alone bravado of the 1970s and 80s, Israel, South Africa and whatever remains of Yugoslavia, will accept continued long-term dependency on foreign sources for major weapons systems. This trend was illustrated in the late 1980s with Yugoslavia's purchase of Soviet MiG-29 fighters, Israel's continued reliance on the U.S. F-16 fighter (in lieu of the Lavi) and American-built

naval vessels and German submarines, and South Africa's failure to build -- let alone develop -- a single major weapon system during the Cold War.

Third, that despite the above two points, Third World arms suppliers have been playing an expanding and important role in the world arms trade and the proliferation of military industrial technology since the 1970s. This proposition may appear a contradiction but its validity will be illustrated through the contrast of growing Israeli dependency on the United States for advanced weapons, technology and capital (Chapters Two and Seven), with Israel's role as the key UN arms sanctions breaker regarding exports to South Africa from 1977 through the early 1990s and as an arms supplier to Argentina during the 1982 Falklands/Malvinas War, Iran during the Iran-Iraq War, and Guatemala after the 1977 American arms cut-off (Chapters Five and Six).

#### Thesis outline

The military-sociological background of Israel, South Africa and Yugoslavia in Chapter One, serves as an important introduction to this dissertation. Answering the 'Why?' regarding attempts to develop indigenous arms industries is only one part of this work, but examination of respective civil-military relation structures

serves to throw the case studies into greater relief and highlights similarities and differences. The development of domestic arms manufacturing capability (and security doctrines) parallels international and domestic political pressures -- or perceptions thereof -- by respective political, military and economic leaders. The incidence of military industrial complex, examined in Chapter One, combined with the introduction in Chapters Two, Three and Four on foreign relations, political history and ethnic/national compositions of the case study countries, help place the development of domestic arms industries in a broader context.

Chapters Two, Three and Four are case studies of defence industries in Israel, South Africa and Yugoslavia. Each chapter begins with a survey of the systemic and circumstantial factors which are common to all three case studies. This is followed by an examination of the weapons produced by each country's arms sector. These chapters show the armaments sector industries of Israel, South Africa and Yugoslavia remained highly dependent on imports of key components, technology, manufacturing licences and capital throughout the Cold War.

Chapter Five is devoted to the far-reaching military-industrial relationship which developed between Israel and South Africa beginning in the mid-1970s. This chapter shows that despite a high continued level of military import dependency, countries like Israel are able to play a key role in the world arms market: Chapter Five concludes that Israel served as South

Africa's single most important military supplier following the 1977 United Nations mandatory arms embargo.

Chapter Six, which is devoted to defence exports from the three case study countries, serves as a broader extension to Chapter Five. This chapter documents Israeli, South African and Yugoslav arms exports and examines the economic and diplomatic-security grounds for military exports.

Chapter Seven is a study of the continued heavy dependence of Israel, South Africa and Yugoslavia on advanced 'off the shelf' weapon systems, such as fighter aircraft, from the industrialised countries. In conjunction with the arguments raised in Chapters Two, Three and Four, this chapter conclusively completes the argument that indigenous weapons production in the case study countries has done little to reduce long-term dependency key foreign arms systems.

## Sources

As noted above, the body of academic work on arms production in the Third World is relatively small in comparison with that in other endeavours in the field of strategic studies. This dissertation draws on a number of academic studies. In particular

yearbooks and publications from the International Institute for Strategic Studies (IISS) and the Stockholm International Peace Research Institute (SIPRI) have proven especially useful sources in my research.

But much of the information on which this work is based has been drawn from newspaper reports, weapons handbooks, military trade journals. Non-academic sources can present problems regarding accuracy of information. Press reports have provided key elements of this dissertation, and I have tried rely only on internationally recognised publications. More problematic are weapons handbooks, which are often based purely on claims made by manufacturers, and military trade journals which tend to play the uncritical tunes composed by those who supply advertising revenue -- namely the arms industries. Unfortunately, it is impossible to desist from using these sources, given the paucity of information on the subject of Third World arms production.

Academics and journalists who worked in or with the case study countries also provided information both of direct relevance to this dissertation and of a more general nature. I did not conduct field work in the three countries because of restrictions due to the subject nature. The defence industry sector was not a subject open to public discussion in South Africa or Yugoslavia during the late 1980s and early 90s; aside from self-congratulatory state propaganda. The case of Israel is far less extreme, but as a journalist, I adhered to a warning in the

introduction to Seymour Hersh's book The Samson Option, Israel, America and the Bomb. Hersh writes:

I chose not to go to Israel while doing research for this book. For one thing, those Israelis who were willing to talk to me were far more accessible open when interviewed in Washington, New York, or some cases, Europe. Furthermore, Israel subjects all journalists, domestic and foreign, to censorship. Under Israeli rules, all material produced by journalists in Israel must be submitted to military censors, who have the right to make changes and deletions if they perceive a threat Israeli national security. I could not, for obvious reasons, submit to Israeli censorship.<sup>7</sup>

It must be stressed that due to the nature of the subject, information in this thesis cannot claim to be absolutely correct, and, as will be shown, many sources are contradictory.

## Conventions

The terms defence industry, defence sector, military industry and arms industry are used synonymously for the sake of variation. As Signe Landgren has noted, in reality there is no 'defence industry' as such; instead there are a number of different industries producing various military equipment such as aircraft, ships, vehicles, small arms, electronics, etc. Despite the fact that most of these industries also produce civilian goods, the entire industrial structure is nevertheless called 'a defence industry'.<sup>8</sup>

I use the rather dated term 'Third World' to refer to Israel, South Africa, and Yugoslavia in acceptance of Strategic Studies convention. While none of the case studies really fits into what one might call the 'Third World', the term is used to distinguish the post-1945 arms producers from the Soviet Union, the United States and Europe.<sup>9</sup>

'Jerusalem' is referred to as Israel's capital in the text. This is meant de facto and not de jure.

One billion = one-thousand million

\$ = U.S. dollars

IISS = International Institute for Strategic Studies

SIPRI = Stockholm International Peace Research Institute

IDF = Israeli Defence Forces

SADF = South African Defence Forces

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(8) Signe Landgren, Embargo Disimplemented, South Africa's Military Industry (Oxford: OUP for SIPRI, 1989), p. 244.

(9) See Carol Evans, 'Reappraising third-world arms production', Survival March-April 1986, Vol. 28, No. 2, p. 116, footnote 2; and, Signe Landgren, Embargo Disimplemented, p. 245-6.

## Chapter One

### Civil-Military Relations and the military-industrial complex in Israel, South Africa and Yugoslavia

The purpose of this introductory chapter is to throw the case study countries into greater relief and to illustrate the differing role played by the military and by civilian interests in security policy and defence industry decision-making.

In this chapter I will examine Cold War civil-military relations in Israel, South Africa and Yugoslavia in order to determine the role played by a convergence of military, political and economic interests (in what social scientists have termed the military-industrial complex) in the creation and expansion of arms industries in the three countries.

An examination of civil-military relations and in particular the incidence of military-industrial complex serves as a foundation for the following chapters, especially for the examination of the causation question in the development of indigenous arms industries in the case study countries. As Samuel Huntington has pointed out, civil-military relations comprise an important aspect in answering the 'Why?' in the development of indigenous arms industries. Huntington argues:

military policy can only be understood as the responses of the government to conflicting pressures from its foreign and domestic environments.

Military policy is not the result of deductions from a clear statement of national objective. It is the product of the competition of purposes within individuals and groups and among individuals and groups. It is the result of politics not logic....<sup>1</sup>

With these points in mind, I will attempt to outline some of the domestic political competitions and civilian social structures which were instrumental in the formation of military and arms production policy in Israel, South Africa and Yugoslavia during the Cold War period. The external influences on arms production will be primarily dealt with in the respective case studies (Chapters Two, Three and Four). I will examine the way in which the high profile of the military and security issues in the case study countries impact on defence production decisions and will attempt to distinguish between the differing influences of military, economic and political interests regarding security and arms production programmes in the case study countries.

My basic argument underpinning this chapter is that a varying convergence of military, political and economic interests --

largely shielded from normal political decision-making processes -- was able to influence or make decisions for the expansion of military industries in all three countries during the Cold War. This convergence of interests, which subverted the regular decision-making structures naturally differed greatly in Israel, South Africa and Yugoslavia, but all three cases broadly conform with elements from the theory of a military-industrial complex.

In the case of Israel, I will show that civilian leaders of the country's military industrial sector played a key role in pushing Israel's Cold War defence industrialisation policy. Members of respective Israeli cabinets who have adopted a more traditional 'hawkish' position on security issues were often those who lacked any military experience whatsoever.<sup>2</sup> A striking case of this phenomenon may be found in Israel's Lavi fighter project, discussed in Chapter Two. The Lavi found its main backers in the various Israeli governments from 1974-89 and in the Israeli defence sector: The Israeli Air Force was less enthusiastic, preferring instead the tested technology of U.S. F-16 and F-15 fighters.

South Africa contrasts strikingly with Israel in that the military establishment amassed considerable political power during the Cold War, which allowed it to effectively set the agenda for defence industry development through promulgation of the 'total strategy' policy to meet the largely imaginary front-

line state military forces bent on what was called 'total onslaught'.

In the case of former Yugoslavia it is difficult to disentangle the Communist Party, the government and the military during the Cold War years. One may argue the military leadership was shot through with Communist Party members or vice versa during this period. The key role played by the Yugoslav Communist armed forces in the country's liberation from Nazi occupation during the Second World War insured the army a special position of influence in the post-War Yugoslav political system. As was the case in South Africa, the military, along with military-oriented political leaders, amassed considerable power during the final two decades of the Cold War and appear to have played a decisive role in the defence industry policy decision-making, secluded from the normal national political decision-making process.

#### A problem of sources

It must be emphasised that only under conditions of the widest intellectual freedom is it possible to pursue military sociology.<sup>3</sup> While conditions vary radically between Israel, Yugoslavia and South Africa, none can be said to be fully open

societies on a Western model. It should therefore be stressed from the onset that relatively little research has been conducted on civil-military relations in the case study countries: The limited body of information is richer in the case of Israel than for South Africa, and almost no works exist on military industrial complex in Yugoslavia. Given this paucity of information, discussions with Israeli, South African and Yugoslav scholars and journalists on socio-political-military relations in their countries were especially helpful in writing this chapter.

The chapter will first survey the theoretical and historical background of the concepts of military-industrial complex. It will then examine each of the three case study countries regarding civil-military relations and arms industry development decisions.

The military-industrial complex: a theoretical and historical review

The study of elites has been a standard part of political and sociological discourse, but the concept of a military-industrial complex (MIC), tied to an elite collusion theory, only gained academic prominence in the 1950s.<sup>4</sup>

According to Alex Mintz, the military-industrial complex is

defined in American political science literature as "a coalition of powerful groups and bodies that share economic, institutional, or political interests in intensifying defense expenditure."<sup>5</sup>

There is general agreement among academics that C. Wright Mills' The Power Elite is a key starting point for any examination of the MIC phenomenon. A distillation of major sociological traditions, Mills' 'power elite' consist of the pinnacles of corporate, political and military bureaucracies. The 'power elite' have similar interests in maintaining themselves in power and similar public policy values. Mills is explicit that the 'power elite' is not a ruling class based on ownership of property: its rule is not the rule of an economic class.<sup>6</sup>

The 'power elite' model draws heavily on two non-Marxist schools in classical sociology. The first is the Machiavellian tradition of Vilfredo Pareto and Gaetano Mosca. This substitutes an elite/mass cleavage for class conflict. The ruling elites are viewed primarily as governmental/political leaders and not as landed/business elites. The second is that advanced by Max Weber. A central concern of Weber was the nature of authority in complex social organisations. Weber argued that power arose not only from capital ownership but also from occupancy of top positions in governmental bureaucracies. Both theories view the elite bureaucrat, and not the capitalist, as the power figure in our time.<sup>7</sup>

Mills observes that during the eighteenth century a remarka-

ble trend in the division of power at the top of modern society can be observed. "Civilians, coming into authority, were able to control men of military violence, whose power, being hedged in and neutralized, declined."<sup>8</sup> According to Mills, this trend, which reached its climax in the nineteenth century and lasted until World War I, was remarkable in that never before had it happened on such a scale or seemed so firmly grounded.

Mills goes on to argue, however, that "In the twentieth century, among the industrialised nations of the world, the great, brief, precarious fact of civilian dominance began to falter...(and) the old march of world history once more asserts itself."<sup>9</sup>

Of particular relevance to the case study countries of this dissertation, Mills argues that "in any serious disturbance of human affairs, real or imagined, societies do tend to revert to military rule. Even nowadays, we tend to overlook these more or less common facts of world history because we inherit certain values which, during the eighteenth and nineteenth century, have flourished under a regime of civilian authority."<sup>10</sup>

Here, Mills is pointing out the argument raised by Thucydides on the causes of the Peloponnesian War: The Spartans became martial through viewing their society threatened from within and without. "What made war inevitable was the growth of Athenian power and the fear which this caused in Sparta."<sup>11</sup>

Israel, South Africa and Yugoslavia have clearly viewed themselves as under threat from outside forces and by revolt from within since 1948; and this point cannot be overemphasised in an examination of the militarisation of their respective societies during the Cold War.

In assessing the nature and ascendancy of the 'military power elite' Mills concentrates on the example of the United States. He argues that the military comprise a group superbly trained in coordinating economic, political and military affairs and that the politisation of the high military occurs as the professional military develop a vested personal, institutional and ideological interests in the enlargement of all things military.

Party political leaders -- who in any case increasingly accept military definitions of political and economic reality -- view the military as a useful means to legitimate policies. The military is often able to lift policy above politics and "Politicians thus default upon their proper job of debating policy, hiding behind a supposed military expertise; and political administrators default upon their proper job of creating a real civilian career service."<sup>12</sup>

More important than straightforward political roles or advice is a more complex type of military influence: The military have come to be accepted by the political and economic elite and broad sectors of the public "as authorities on issues that go

well beyond what has historically been considered the proper domain of the military." <sup>13</sup> Mills argues that no area of decision-making has been more influenced by "the warlords and their military metaphysics" than that of foreign policy and international relations.<sup>14</sup>

Mills' MIC theory has provoked considerable academic debate, not so much about the existence of the MIC, but rather to what degree it is an autonomous entity and its direction of purpose. Academic positions vary from those who see the MIC as one of many institutional linkages in society, engendered primarily by external threats and those who see it as a self-generating structure and source of repression at home and abroad.<sup>15</sup>

Charles Wolf notes the many different views of the MIC, but criticises what he terms the 'primitive monolithic' view which regards the MIC as an outgrowth of national purpose, welding together elitist elements with a stake in militarism -- the armed forces, politicians, industrialists, government officials, labour, and some academics -- into a military-industrial complex. Wolf argues that in reality the MIC consists of many different 'turfs' which actually have conflicting interests, indicators, perceptions and managers. As an example, he cites the U.S. armed forces in which the different military services seek not only to raise the military share of the budget but to raise their share of that budget relative to the other services.<sup>16</sup>

Barry Buzan takes a more critical view of the MIC. Buzan argues that study of the MIC "generated a mostly polemical literature in the early 1970s" and that the term "still has a somewhat ill-defined common currency." Although Buzan says that the MIC's implication of a conspiracy to militarise the national interest was never convincingly proven, he accepts that the concept is useful in that it points to the domestic structural inputs into the arms industry.<sup>17</sup> Buzan makes the point that study of the MIC:

drew attention to the fact that the process of arms acquisition had a logic of its own. The logic did not always clearly serve the national interest, and it was both strong enough and independent enough to be an important part of the problem defined as arms racing.<sup>18</sup>

The following chapters will show that Cold War arms industry development decisions in Israel, South Africa and Yugoslavia often appeared to follow a logic of their own and that these decisions did not always serve the national interest: A point clearly linked to Huntington's view that military policy is not the result of deductions from a clear statement of national objective, but rather the result of a competition of political purposes.

Israel: military-industrial complex and intertwined civil-military relations

Much of the academic work on the phenomenon of the military-industrial complex has been done in the United States and examines the U.S. as a example of a modern MIC. Nevertheless, as Alex Mintz shows, the military industrial complex in Israel straddles a far more extensive industrial economy relative to national budget, population and GNP than the United States (see Appendix 13). Some 25 percent of Israeli labour is employed in the defence sector compared with just over 5 percent in the U.S.; Cold War per capita defence spending reached 28 per cent in Israel compared with 6.5 per cent for the U.S.; and, the Israeli proportion of defence exports in overall industrial exports is 25 per cent compared with a figure of 3-4 per cent for the U.S.<sup>19</sup>

Three points distinguish the Israeli military industrial sphere from that of the United States. First, the fact that private ownership of defence industries plays a lesser -- albeit growing role -- in guiding industrial production.

Second, the centrality of the security sphere in Israel which vastly exceeds that existing in any other Western country. Most

of the population is actively involved in the Israeli military and there is considerable military overflow into civilian spheres such as education, settlement, and social welfare.

Third, under the Israel political system, votes are cast for party lists rather than individuals. Thus, there is far less chance that politicians will represent a specific region and seek to protect and stimulate its defence industries.<sup>20</sup> On the other hand, there is far more government direction of economic affairs in Israel than in the United States.

Mintz stresses that while few can deny the existence of a military-industrial complex in Israel, the question is to what extent -- if any -- there exists a:

convergence of ideological, economic, and institutional interests among its components (which) leads to cooperative, coordinated, and uncontrolled activity that transcends the national interests of Israel.<sup>21</sup>

Mintz concludes that the MIC in Israel should be viewed as a "very powerful interest group, enjoying significant autonomy in its activities...and lacking in significant control and supervision."<sup>22</sup>

This view is shared by Peri and Neubach who find that the basic characteristics of a MIC are present in Israel. These include:

- 1) A convergence of interests of the military-industrial establishment with the political bureaucratic establishment;
- 2) The evolution of a sector in Israel, headed by a cohesive elite with similar social characteristics, whose decisions and actions have a significant effect on the country's economy, foreign/defence policy and on its social and value systems.
- 3) A closed system of decision-making, shielded from public supervision, which undergoes less scrutiny than any other area in Israeli society.<sup>23</sup>

The convergence of military-industrial and the political-bureaucratic establishments and the closed system of decision-making can be illustrated through a number of examples.

The managing director of Israeli Aircraft Industry (IAI) from 1954-77, Al Schwimmer, was a close personal friend of Shimon Peres, who during the 1950s was director general of the Israeli Defence Ministry and served on Prime Minister David Ben-Gurion's

personal staff. Schwimmer's close personal relations with high ranking defence ministry and other bureaucratic personnel allowed him to launch military projects for which the economic and business justification was "highly questionable".<sup>24</sup>

Peri and Neubach cite the Arava transport aircraft and the Westwind executive jet projects as examples of such decisions. They argue that the decision to develop the Arava transport was a 'make-work' project designed to alleviate the work shortage at IAI aeronautics division in the mid-1960s. "The Arava project never paid for itself: the (Israeli) air force refused to buy the aircraft, and to date sales have not even covered current costs."<sup>25</sup> Needless to say, IAI has ceased manufacturing the Arava.

The Westwind jet project was undertaken without a comprehensive market study and the authors state: "We may safely say that politics had more to do with the decision-making process in these cases than did economic or business considerations."<sup>26</sup>

Peri and Neubach conclude that the combination of IAI's desire to grow and the defence establishment's determination to expand, led to decisions which were never scrutinised by bodies outside the military-industrial establishment.<sup>27</sup>

It is interesting to note that it was not the Israeli Air Force but rather the political leadership of the military and the defence industries which fought for projects like the Arava transport in the 1960s. This pattern was repeated in the 1970s

with the decision to build the Lavi fighter aircraft (a detailed examination of the Lavi fighter is included in Chapter Two). The Lavi project was initiated on completion of Israel's Kfir fighter project in the mid-1970s at the behest of the defence industries and the political and military leadership of the country. A number of views prevailed in the Israeli Air Force as the project evolved from its original conception an inexpensive workhorse to state-of-the-art fighter, but in general it appears the Air Force preference was for importing U.S. manufactured aircraft.

The Lavi was built up in public as an example of Israeli proficiency with the most advanced defence technologies and as an answer to potential future arms embargoes. The cancellation of the Lavi project, in the face of soaring projected costs, was a shattering emotional reverse for the Israeli public which had come to believe the 'can do' bravado of the country's arms makers. According to opinion polls in May 1987, shortly before cancellation, some 80 per cent of all Israelis supported the Lavi.

Nevertheless, the Lavi decision-making process was criticised by the Israeli State Comptroller (ombudsman) as having been "made with information that was without basis, inadequate, tendentious and lacking proper cost estimates."<sup>28</sup> Among other failures was the fact that decision-makers were not informed until 1985 -- five years after the full project was launched --

that the Lavi would cost \$2-2.5 billion more than purchasing the U.S. F-16 fighter, or double the total original cost estimate.<sup>29</sup>

The Lavi decision-making process has subsequently come under harsh criticism in Israel and Peri and Neubach find that pressures from economic interests and the security lobby were conspicuously present throughout the step-by-step decision to build the Lavi and that pains were taken "to push decisions through in the absence of any rigorous examination."<sup>30</sup>

Ze'ev Schiff, one of Israel's leading defence commentators, described the Israeli defence industries' disregard for the limits of power as that of an economic 'Frankenstein' that had "turned against its creator" and become "a defence power in and of itself, with its own interests that are sometimes liable to conflict with those of the Israel Defence Force or of the defence establishment, and even those of Israel itself."<sup>31</sup>

Israel's top-secret nuclear weapons programme (examined in Chapters Two and Seven) also appears to have developed through decisions made largely within what could be termed the country's military-industrial complex and away from the normal political, let alone public, scrutiny. As Frank Barnaby has written:

So far, crucial nuclear-weapon decisions in Israel have been made by a very small number of political leaders without even a full cabinet discussion. In the absence of any

public debate, the authorities can do more or less as they please. As a consequence, Israel's nuclear weapons developments are possibly out of political control. (emphasis added) <sup>32</sup>

Barnaby goes on to argue that although the initial decision to produce nuclear weapons was probably taken on security grounds, "there are reasons for believing that recent nuclear-weapon developments in Israel are the result of the technological momentum of the nuclear programme rather than of deliberate political decisions".<sup>33</sup>

He concludes that the size and quality of Israel's nuclear weapons force has less to do with strategic necessity and more to do with "technological momentum".

Why, then, has Israel opted for a relatively large and sophisticated nuclear force? The most likely explanation seems to be that the technological momentum of the nuclear-weapon programme has taken over and become unstoppable. Israel has had to form a team of nuclear scientists and technologists to operate its nuclear reactors and its reprocessing plant, and to design, develop and produce nuclear weapons.

These professionals will want to design and produce increasingly sophisticated nuclear weapons just to convince themselves that they can do so and for the sheer satisfaction of it.<sup>34</sup>

#### A military-political-industrial elite

A further symptom of Israel's MIC is the existence of a cohesive military-political-industrial elite with similar social characteristics, whose decisions and actions have a significant effect on the country's economy, foreign/defence policy and on its social and value systems. According to Neubach and Peri a common social basis for the ranking echelons of these three establishments in Israel "exists in striking form."<sup>35</sup>

During the period from 1948-77 the Labour Party ruled Israel and long-term relationships developed between defence sector managers and the government/bureaucracy. The case of Al Schwimmer, cited above, is one such example. A further example can be seen in that of Zvi Dar, managing director of Israel Military Industries (IMI) from 1948-67, who was close to both David Ben-Gurion and to the Mapai wing of the Labour Party.

Dar's personal connections with the political establishment enabled him not only to maintain the special standing of IMI within the defense establishment and to survive the transition from David Ben-Gurion to Levi Eshkol as defense minister, but also facilitated his access to the centers of political decision-making and enabled him to develop highly effective lobbying channels to the senior levels of the defense establishment.<sup>36</sup>

From the mid-1960s a second pattern began to emerge in the Israeli MIC's social network. Under the early retirement programme, established in the 1950s (in which officers retire before reaching the age of 50), members of the officer corps came to be expected to find a second career after leaving active military service.

Neubach and Peri have found this contributed to increasing numbers of former officers entering key positions in the Israeli defence industries while other officers, who initially entered civilian industries, later shifted to the defence sector. Former officers found jobs in various branches of defence manufacturing,

as arms exporters, as representatives for foreign arms manufacturers, or as employees of the Israeli Defence Ministry.

An example of such an Israeli military/defence sector career pattern can be seen in Mordechai Hod, a former commander of the Israeli Air Force who subsequently came to represent the US defence contractor Northrop in Israel. In 1981-82 he recommended Israel purchase the Northrop F-18 aircraft and that Israel cancel the Lavi fighter project and instead jointly develop a fighter with Northrop.<sup>37</sup>

Retired Israeli officers retain the professional self-image of a 'citizen in uniform', and a broad feature of Israeli society is that military status tends to be transformed into civilian status. This appears to be due to the fact that the military has enjoyed a central role in Israeli society from the pre-state period through to the present: "The contribution of the status-generating equality of military performance to social integration in Israel...facilitates the convergence of the military and civilian subsystems."<sup>38</sup>

As a result, an Israeli upper social class has been created, which, among other shared characteristics, holds similar views on Israeli security problems which were developed either during underground military activity in the pre-statehood period or while serving in the Israel Defence Forces. With regard to development of domestic arms industries during the Cold War, upper class securocrats appear to have held a common view: "One

outgrowth of their worldview was their adoption of a positive approach to the fostering of the military industry."<sup>39</sup>

#### Arms exports and the MIC

Israeli arms export patterns provide evidence indicating the presence of a military-industrial complex. Peri and Neubach cite three aspects of Israeli arms export policy to illustrate this view:

- 1) Although arms exports are said to be based on need to make Israel economically independent, Israeli arms exports are dependent on American approval (due to key American components). Thus, far from promoting independence, Israel's arms sales actually subject the country to additional restrictions from Washington. The politico-economic question is whether the export of civilian industrial goods would not bring Israel as much foreign currency as weapons exports, but without the increasing dependence on the United States (see Chapter Six for further examination of this problem).

- 2) As an international political commodity, levels of arms

export are subject to rapid fluctuations. Conventional wisdom is that arms exports should never exceed 25 per cent of a country's total exports -- a level which Israel could well approach. Political changes have caused sudden huge declines in orders for Israeli weapons, such as with the fall of the Shah of Iran in 1979 and a series of politically motivated arms order cancellations in 1983 whereby Israel reportedly lost \$300 million in export sales. The impact of such lost exports is felt throughout the entire Israeli economy.

3) The fact that the Israeli Foreign Ministry's limited influence is completely out of scale with that of the arms export lobby. This has been summed up in the oft-repeated Israeli dictum: "foreign policy should serve defence policy." The authors argue that Israeli foreign policy is potentially being damaged by less import interests merely because of the strength of one lobby and the weakness of another. As an example they cite the military aid that Israel provided to the former Nicaraguan dictator Anastasio Somoza. This led the subsequent Sandinista government to adopt an anti-Israeli posture and it harmed relations with Costa Rica -- Israel's closest friend in Latin America. A further example is the damage done to Israel's relations with the UK during the Falklands War by continued arms sales to Argentina.<sup>40</sup>

Decisions regarding the expansion -- though not the initial creation -- of Israel's arms industry have clearly been influenced by forces which can be attributed to the broadly defined phenomenon of the military-industrial complex. Neubach and Peri conclude that the emergence of Israel's arms industry and arms exports came not as a result of strategic decisions but rather as the result of influences generated from the country's military industrial complex. It was "an incremental, creeping, virtually self-fertilizing process."<sup>41</sup> Mintz concludes that the Israeli MIC is "a very powerful interest group comprising bodies responsible for Israel's security, pressing for vast-scale defense production."<sup>42</sup> He concludes that this group enjoys significant autonomy in its activities and lacks insufficient external control and supervision.<sup>43</sup>

#### Civil-military relations in South Africa

During the 1970s and 80s the role of the military in South African society grew considerably. Involvement in the Angolan civil war and in Namibia during the 1970s and South Africa's growing international isolation following the 1977 United Nations manda-

tory arms embargo contributed to the bringing the military to the forefront of society.<sup>44</sup>

With the election of P.W. Botha as prime minister (and subsequently president) in 1978, South Africa gained a head of state who had served for the previous 12 years as minister of defence. Botha, who one South African academic described as a military man "albeit in a non-career capacity,"<sup>45</sup> strengthened the office of prime minister and subsequently that of president. He expanded the roll of the National Security Management system under which a network of military, police and intelligence officers effectively ruled the black townships and centralised national decision-making by radically increasing the powers of the country's State Security Council.

The election of F.W. de Klerk as South Africa's president in September 1989 resulted in the apparent diminution of the powers accumulated by the military (and police) during initial post-Cold War period. In early 1990 de Klerk had dismantled both the State Security Council and the National Security Management System in a move which the Financial Times said was to "neutralise the right-wing threat from the security forces."<sup>46</sup>

De Klerk reportedly told a meeting of 500 senior police officers in January 1990, that the police force would no longer be used to fight the government's political battles and that he wanted to keep them out of the political arena.

South African military involvement in the country's future

political system remains a topic for future researchers. In this section I will survey the development of political involvement of the South African military and the incidence of military-industrial complex through the end of 1990.

#### Praetorians in Pretoria?

One of the few works to treat the subject of civil-military relations in South Africa is Philip Frankel's Pretoria's Praetorians. Frankel argues that while South Africa has never been under direct military rule, "the country's military leaders have played a direct or ancillary role in shaping the South African society we know today"<sup>47</sup> and that the South African Defence Force (SADF) was not simply an instrument for policy implementation but rather an active participant in policy-making in the military, economic, homelands and foreign policy sectors.<sup>48</sup>

The South African military's claims of having held a non-political status in South Africa "are essentially specious", Frankel argues. Such claims are based on the legal notion that the military in South Africa is a non-political agent of state power. These views stem from British law and the Defence Act of 1912 (with subsequent amendments) which forbade officers from joining a political party, and from an SADF regulation which

forbids members of the services from participating in any political party meeting or demonstration in uniform. Such a 'liberal' format for conduct of civil-military relations must be recognised as being "over-heroic and idealistic in its understanding of what military institutions actually do -- as opposed to what they should do -- in society...(and) is sociologically naive."<sup>49</sup>

South Africa shifted in an authoritarian direction during the Cold War in that national security was redefined to encompass many issues beyond the purely strategic. The liberal conception of civil-military relations foundered on the acute race and class distinctions in Cold War apartheid South Africa: The SADF was tied to the defence of the special interests of the whites which generates "a fusion of roles and functions in relation to which the polite theoretical distinctions between civil and military have little practical meaning."<sup>50</sup>

Military involvement in South African politics has a lengthy history stretching back to the old Kommando system developed from the 1600s. Under the Kommando system, all soldier-members were technically equal and entitled to offer advice in councils of war. Thus each Burgher-soldier was theoretically a general who obeyed orders voluntarily and often acted in accord with his own initiative in battle.<sup>51</sup> The Afrikaner Kommando system was, in spirit, a nation in arms involved in a sort of people's war in defence of community and homeland.

But there is particular, possibly anti-liberal legacy of the Kommando system:

Under such psychological conditions the dividing line between political and military authority could never be as sharply articulated as that demanded by the 'liberal' model of civil-military society.<sup>52</sup>

The Kommando system, which emphasises the free flow of influences across the civil-military boundary, obfuscates the military-civil boundary. The Liberal model, on the other hand, stresses soldiering as a "discrete, permanent and professional activity of autonomous status."<sup>53</sup>

Both traditions have markedly different views on the military's role in social development. The Liberal model reserves the task of building the community for the civil sector under the protective umbrella of a military which is concerned exclusively with the strategic task of protecting the state. Under the Kommando system the nation in arms and the soldier are responsible for "the dissemination of soldier ideologies, for building the economy and protecting its cultural and moral interests apart from its purely strategic foundations."<sup>54</sup>

The whole importance of the old Kommando pattern is that many of these traditions were echoed in South Africa's Cold War

military-political power network. Imported British traditions were simply modified to fit the South African whites' interests: Westminster model government without universal franchise and civil-military relations with a diluted 'Liberal' element as a concessions to indigenous Afrikaner Kommando traditions. Indeed, the contemporary militarisation of South Africa must be considered in light of the National Party's coming to power in 1948. The subsequent period -- until the de Klerk reforms of the 1990s -- witnessed the codification of the apartheid doctrine. The resulting centralised power structures, which denied popular aspirations, helped support military influence.<sup>55</sup>

In the four decades following 1948, the majority of the South African elite came to accept increasingly crude official propaganda which depicted South Africa as a garrison state possessing no option other than the use of force to protect the vital interests of the white minority. However, it would be wrong to view the SADF as straining for direct political power. The officer corps moved cautiously in the political ring for fear of having its actions labeled as illegitimate.<sup>56</sup>

The enhanced role for the military was triggered by a series of events in the 1970s which gravely shook Afrikaner confidence: The 1974 Portuguese revolution and the liquidation of the Portuguese role in Angola and Mozambique and the subsequent arrival of Cuban forces in Angola; the cancellation by Britain's Labour government of the Simonstown naval agreement in 1974; and, the

1977 mandatory United Nations arms embargo on South Africa.

These external developments contributed to the growing militarisation of South African society. As perceived threats to status quo appeared to grow, the opinions of military elites came to be more readily accepted -- a situation which corresponds with the Huntington proposition, noted at the beginning of this chapter, that perceived national security threats induce a fusion of military and political decision-making with soldiers becoming the dominant element in the making of security policy. But as will be shown below, the SADF turned the Clausewitzian idea of the military serving the political aims of the government on its head in the South Africa of the 1970s and 80s.

'Total Onslaught' met with 'Total Strategy'

The growth of military influence over policy-making in Pretoria was marked and furthered by the adoption of two dramatic-sounding concepts to the repertoire of South African strategic thinking: 'total onslaught' and 'total strategy'.

The concept of 'total onslaught' -- prevalent in Pretoria from 1975 onwards -- was largely a response to the Portuguese collapse in Angola and Mozambique and the 1976 Soweto riots. 'Total onslaught' postulated a coordinated assault on South

Africa by Marxists directed from Moscow, the Afro-Asian 'bloc' and an anti-South African fifth column. The policy conceived to combat this 'total onslaught' was, logically, called 'total strategy'.

'Total strategy' was formally introduced in the Defence White Paper of 1977. The Paper broadly stated:

National security demands coordination of political action, military/paramilitary action, economic action, psychological action, scientific and technical action, religious-cultural action, manpower services, intelligence services, security services, national supplies, resources and production services, transport and distribution services, community services and telecommunications services.<sup>57</sup>

In short, practically all elements of South African society were to be drawn under the influence of a military-directed Cold War security doctrine by the late 1970s. Frankel concludes that total strategy "mystifies and obscures reality" and writes off internal problems in South Africa as external manipulation. What emerges, he says, is:

a climate perfectly commensurate with the way the government and its military allies legitimate virtually

any claims to civilian power....Total strategy legitimizes this development, it engenders the psychological and institutional atmosphere conducive to the growth of garrison state...<sup>58</sup>

With the accession of the militarily well-connected P.W. Botha first as prime minister then as president, the multi-dimensional approach to security envisaged by total strategy became government policy.<sup>59</sup> While it cannot be demonstrated that the executive-military alliance was a calculated plan forged during Botha's long tenure as defence minister "there is little doubt that the Defence Force was an important chip in the bargaining surrounding the eventual emergence of Botha as prime minister."<sup>60</sup>

Total strategy led to military involvement in a wide variety of state activities including teaching and healthcare (particularly in Namibia), tax inspection and natural disaster rescue operations.<sup>61</sup> At the political level, total strategy prescribed the constitutional reforms put into effect in 1984 which extended political rights to members of the coloured and Indian communities -- but not to blacks. With regard to the armed forces, the efficient use of manpower was given priority and aid was given for the development of black homeland armies, although the empha-

sis in their training was on coping with internal unrest.<sup>62</sup>

During the 1980s, increasingly less emphasis was given to the external threat to white South Africa. The continued civil war in Angola, the virtual decomposition of Mozambique, along with the dependency or weakness of Pretoria's other neighbors made the enunciation of an external threat even more incredible than it was in the late 1970s. With the growing unrest in the townships the threat to white rule was obviously much closer to home.

Nevertheless, the most fundamental elements of total strategy and total onslaught endured within the realm of mainstream Cold War strategic thinking in Pretoria and also in what can perhaps be termed the South African national psyche. Of key importance was the apparently increased acceptance of the relevance of nearly all elements of South African society to security policy. Basically, by the late 1970s social policy, economics and all politics had come to be relevant security policy concerns.<sup>63</sup>

Writing in the early 1980s Frankel said that future military intervention in South Africa would not necessarily imply a coup. He argued instead that the country could fall victim to a 'creeping coup' -- "a growing but gradual and low key penetration of the military into key public decision-making bodies . . . social institutions and collective psychologies of the whole body politic."<sup>64</sup>

In the post-Cold War period the De Klerk reforms seem to have

succeeded in reducing the military's role. Total strategy was formally downgraded in the 1982 Defence White Paper and referred to as 'revolutionary onslaught' or merely 'the onslaught' in the 1986 Defence White Paper. Nevertheless, a separate military and police agenda may have been the main legacy of 'total strategy' and the uncovering of illegal death squads run by the police in the spring of 1990 provided evidence for supporters of the 'creeping coup' hypothesis.<sup>65</sup>

#### The rise of the State Security Council

During the 1970s and early 80s South Africa's State Security Council (SSC) evolved from relative unimportance to become the most important decision-making body in the country. South Africa's military was influential in transforming the State Security Council and its related committees from a loose advisory branch to a highly centralised body which resided "at the apogee of public decision-making."<sup>66</sup>

The SSC was made a cabinet committee in 1972 -- the only cabinet committee created by law in South Africa. Its standing members included the prime minister, the ministers of defence, foreign affairs, justice, and law and order (police), the senior cabinet minister (if not included in the above portfolios), the

secretary for security intelligence, the head of the South African Defence Forces, the secretary for foreign affairs, the secretary for justice and the commissioner of police. The SSC was the only cabinet committee to be chaired by the head of government.<sup>67</sup>

The law creating the State Security Council gave it the responsibility of advising the government on the formulation and implementation "of national policy and strategy in relation to the security of the Republic."<sup>68</sup> As Deon Geldenhuys and Hennie Kotze point out, this is an assignment which can be interpreted to cover virtually every area of government at home and abroad.<sup>69</sup>

Three above-mentioned factors during the 1970s led to the SSC being given a far greater role in decision-making in South Africa. First, the South African military's involvement in the failed intervention during the Angolan civil war, which, according to minister of defence Gen. Magnus Malan "focused attention on the urgent necessity for the State Security Council to play a much fuller role in the national security of the Republic than hitherto."<sup>70</sup>

Second, the growing concern over security for South Africa during the 1970s which spawned a concepts like 'total onslaught' required a body to manage the response of 'total strategy'. The SSC was the organisation chosen to head the national security management system.<sup>71</sup>

Third, was the centralisation of political power following the election of P.W. Botha as prime minister in 1978. Among

Botha's earliest priorities was the overhaul of official machinery for making and implementing government decisions -- a key aspect of total strategy. Beginning in 1980, Botha initiated a three-phase government 'rationalisation' programme which began by increasing the power of the prime minister; replaced the 20 cabinet committees which had hitherto existed with five; consolidated the existing 39 government departments into 22;<sup>72</sup> and, ultimately created himself a more powerful presidency to replace the position of prime minister.

A key point to note is the weakness of the South African parliament and foreign ministry in decision-making. The weakness of South Africa's parliament stems in part from the fact that the country has no deep-rooted praetorian culture and the very idea of a coup d'etat was foreign to South African culture. With regard to South Africa's Department of Foreign Affairs and Information, Frankel said that during the 1970s and 80s the institution:

continues to implement policy and fill out the details of policy decisions (but) the principles of foreign policy are today largely determined in the context of the State Security Council in which the minister of foreign affairs is directly exposed to 'external' military influence.<sup>73</sup>

Thus, South Africa's destabilisation policy of the 1980s can accurately be described as "a direct and natural result of military penetration into the foreign policy area."<sup>74</sup>

Armscor and SSC: A military-industrial complex in South Africa?

Symptoms of the military-industrial complex, as identified by C. Wright Mills, are evident in Cold War South Africa.

The growing international isolation of Pretoria over the past three decades and the pressure to build up indigenous military industries led to a tight group of political, military and economic leaders setting the pace and direction for the local economy.

there is no perfect alignment in relations between the South African military and businessmen....

Nonetheless, it is an undeniable and clearly visible fact that the tentative organisation of the South African economy on a permanent war footing has today stimulated a greater degree of political mingling between the economic, military (and government) elites than at any point in South African history.<sup>75</sup>.

One effect of the international arms embargo was that South African political and military leaders gave priority to domestic sources of arms supply and all sectors of private industry were increasingly geared to supplying the SADF with military goods. Although the South African state arms producer, Armscor, was successful in developing indigenous arms production, it also succeeded "in locking together the military, government and economic into a tight tripartite network" which supported Cold War government policy.<sup>76</sup>

Indeed, Frankel credits Armscor, with a central policy-making role in the very planning of armaments production in South Africa:

Armscor is at the node of communication between the military, private enterprise and government regarding the conception, planning and implementation of armaments policy.<sup>77</sup>

Armscor's board of directors is comprised of South African government bureaucrats, business and scientific elites as well as a representative of the director general of finance and the chief of the SADF. Some 5,600 businesses in South Africa are linked to Armscor as subsidiaries, contractors or sub-contractors.

The basic fact of the matter is that virtually all of South Africa's leading corporations (and many subsidiaries of well-known international firms) form part of the estimated network of roughly fifty main companies who are primary contributors to Armscor production of hard or soft military equipment, who assist the corporation in marketing its manufactures, or who provide the specialized personnel or managerial skills to the Corporation.<sup>78</sup>

The existence of Armscor and the former State Security Council accurately fit with Mintz's definition of a military industrial complex cited at the beginning of this chapter: "a coalition of powerful groups and bodies that share economic, institutional, or political interests in intensifying defense expenditure."<sup>79</sup>

Armscor and the SSC clearly formed a coalition of powerful groups with shared economic, institutional or political interests in raising defence expenditures during the final two decades of the Cold War.

Cold War civil-military relations in Yugoslavia: The army as a seventh federal republic?

Unlike other formerly state socialist <sup>80</sup> East European countries, the Communist Party in Yugoslavia grew out of the army and the partisan resistance against Nazi German occupation of the country.<sup>81</sup> This provided the basis for the special role that the Army enjoyed in Yugoslav politics and is a key difference between Yugoslavia and the two other case study countries of this dissertation.

As Adam Roberts has pointed out:

The army was so involved in the resistance and revolution that it could scarcely regard its role as being confined to the defence of the frontiers and ignore the question of defence of the political system.<sup>82</sup>

The Yugoslav Peoples Army viewed itself as the guarantor of Yugoslav unity and -- despite the fact that nearly 70 per cent of its officers were Serbs -- was probably the only true pan-Yugoslav institution which functioned with some degree of success

amidst the patchwork of the 6 republics and 2 autonomous regions which comprised the former Yugoslav state.

### The political role of the military

It is considerably more difficult to disentangle the political from the military in the case of Yugoslavia than in Israel and South Africa. It may be argued that the Yugoslav officer corps was shot through with Communist party members, or, vice-versa: By the late 1970s some 98 percent of all commanding officers were party members <sup>83</sup>.

A further measure of the military's role in politics can be seen in the proportion of Central Committee members who were military officers. The proportion of officers increased from 3 per cent (in 1948) to some 14 percent (in 1978) of the 165-member Central Committee.<sup>84</sup>

Paradoxically, during the first two decades after the Second World War, the Yugoslav Army appears to have become a more conventional military establishment. It was an "exclusivist, professional, supranational 'Yugoslav' institution that was almost hermetically sealed off from the rest of Yugoslav society."<sup>85</sup>

Although the army remained the key national force for socialisation of the values of the Yugoslav Communist system and carefully cultivated its heritage as the founding instrument of

the system, until the 1960s it remained outside the mainstream of party-political life.<sup>86</sup>

But in the mid-1960s, Yugoslav Communist Party reformers came to fear that the isolation of the army could create a potential military threat to the broad political and economic reforms being introduced to Yugoslavia at the time. The reformers sought to dilute the exclusiveness of the military and following 1966 this was termed an 'opening to society':

Military matters, once a public taboo, began to be discussed in the media....The Federal Assembly began to debate, not just rubber stamp, the defense budget.<sup>87</sup>

Communist Party structures in the Yugoslav Army were reorganised in an effort to limit authority of the command echelons of the military which had dominated Party branches in the military since the abolition of political commissars in 1953. Under pressure from the republics, the Army implemented a policy of proportional representation in its officer corps which had traditionally been dominated by Serbs and Montenegrins. But despite any dilution of the military's powers during the late 1960s, it remained the country's strongest and most reliable all-Yugoslav political

institution.<sup>88</sup>

This was dramatically illustrated during the period of Croation unrest in the early 1970s. During the Croat crisis of 1971 the Army not only played a key military role, but also helped direct the Party's decision to take a hard line on the nationalist movement in the Croatian republic. The military and the powerful Veterans' Union (comprised of both officers who had served in the war of liberation and pensioned post-war officers) repeatedly made high-level approaches to Tito to express dissatisfaction over the events in Croatia. Adam Roberts concludes that military and veterans were "in the name of ideological orthodoxy...to some extent challenging the notion of the primacy of the Party."<sup>89</sup>

During the 1970s Tito repeatedly emphasised that the Yugoslav Army had a domestic political purpose. In 1971 he said: "our army is also called upon to defend the achievements of our revolution within the country should that become necessary." And in 1974 he went further, saying: "It is no longer sufficient for our army to be familiar with military affairs. It must also be familiar with political affairs and developments. It must participate in (them)."<sup>90</sup> Thus the army did not simply inject itself into Yugoslav politics, but rather was called upon to play an active role.

Army involvement in political affairs slowly increased during the 1970s with the emergence of a small group of political

generals for the first time since the late 1940s. Most of these soldier-politicians occupied security-related posts such as public prosecutor and head of civil aviation.<sup>91</sup>

The army's political position was codified at the Tenth Party Congress in 1974. In apparent recognition of the military's enhanced role the army was formally allocated the military 15 seats on the Central Committee (party organisations from the republics received 20 seats). This pushed the total military representation on the Central Committee to 17 seats or 10 percent of membership.

Johnson contends that in the early 1970s the army re-established itself as a servant of the Party, ready to protect the Communist system from domestic as well as external challenges. He concludes that the army became a sort of ninth component in the federal system, after the six republics and two autonomous regions.<sup>92</sup>

During the last two decades of the Cold War the Yugoslav Peoples Army became far more outspoken on the country's problems and steadily gained influence during the country's slow slide into ethnic strife and civil war, prior to break-up.

In January 1986 the deputy defence minister, General Milan Daljevic, publicly criticised the ruling Communist Party, saying the Party had to remain more faithful to its ideology and to maintaining the political unity of the country. He said the

Party should develop the Leninist principle of democratic centralism and that it should do this on a federalist level. There was no room in the Party for new federalist ideas or factions, he said, adding that nationalists and 'foreign ideologies' must be dealt with severely. His recommendation for resolving the Yugoslav crisis was: "More work, more order, and more unity."<sup>93</sup> Daljevic's sternest warnings were for potential domestic opposition forces, in particular liberal writers and intellectuals in Belgrade. "We support broadening the freedom for artistic achievement," Daljevic said, "but we are not for the freedom of propagation for unacceptable, counter-revolutionary ideas."<sup>94</sup>

In June 1986 Yugoslavia's defence minister, Admiral Branko Mamula, took the highly unusual step of publicly denying charges that the military aspired to seize power in Yugoslavia. The statement was a response to growing protest from youth groups and peace movements in the republic of Slovenia against the military. Mamula warned the peace movements against acting on behalf of what he called "the interests of foreign and internal forces that wish to threaten Yugoslav security and independence."<sup>95</sup>

Mamula gave an even less delphic warning in the autumn of 1987. In a televised speech he said that the Party, which was responsible for the preservation and further development of the society, had failed precisely in carrying out these tasks. "Friends of the country had warned that Yugoslavia was slipping out of the control of the (Party) leadership," he said. The

crisis had reached a point, he said, in which the "integrity of Yugoslavia and the preservation of the existing social system is in danger."<sup>96</sup>

This was regarded by observers as a clear warning of restlessness in the military. It should, however, be pointed out that this military threat appears to have been fully legal under the Yugoslav constitution: Under Article 240 of the constitution, the army is empowered not only to defend the independence, sovereignty, and territorial integrity of Yugoslavia, but also the "constitutionally established order of society."

The further erosion of the Party and central government's power during 1989 created a power vacuum which was partly filled by the growing aspirations of reform-minded republics like Slovenia and partly by the military, anxious to prevent any decentralisation of power in the country. With a weakening of old political forces, the Army came to view itself as the last guarantee for the integrity of the Yugoslav state. A report in the Frankfurter Allgemeine Zeitung in 1989 said:

The Army sees ever more room for its activities and is attempting to put forward its own political programme. The Programme is based on Serbian Party leadership. It rejects a majority-rule party system and will at most allow a pluralist system without

political parties.<sup>97</sup>

In October 1989, the Yugoslav Chief of Staff Mirkovic, a Serb, warned that the Army did not need professors to explain the constitution and that the officer corps recognised only the Yugoslav federal constitution. The Yugoslav Army strongly opposed changes in the Slovenian constitution which place armed forces under the control of the republic.<sup>98</sup>

In conclusion, during Yugoslavia's final two decades, the army steadily expanded its influence over society and policy-making. But the precise ways in which the military (and economic) interests influenced or made arms production decisions is less well documented.

A military-industrial complex in Yugoslavia?

Little work has been done on the civilian-military decision-making process leading up to Yugoslavia's decision to expand its defence industries. Yugoslavia's shunning of the Cold War blocs through its leadership of the Nonaligned movement logically led to the political decision not to rely on either military bloc for weapons and demanded domestic development of arms production capabilities<sup>99</sup>

Yugoslav military and industrial interests played a key role in securing approval of the Novi Avion fighter project in the 1980s. The ability of these interests to obtain approval for the estimated \$2 billion project, despite Yugoslavia's deepening economic crisis during the period, is evidence of the potency of the country's military-industrial lobby.

Apportioning precise military, political or economic influence over these decisions is as difficult as disentangling Yugoslavia's intertwined military and civilian influences. While decisions were made by the party leadership, determining the level of military or economic interests' influence over these decisions is problematic given currently available information.

Nevertheless, the expansion of Yugoslav military influence over national during the 1970s and 80s, as described above, appears to have included authority over domestic arms production decisions which remained highly centralised through the break-up of the Yugoslav federation.

## Conclusion

This chapter on civil-military relations and the military industrial complex has been intended as an introduction to arms pro-

duction in the three case study countries examined in this dissertation.

The preceding survey of civil-military relations and military industrial complex illustrate the varying political, economic and military inputs into the making of security and arms production policies in Israel, South Africa and Yugoslavia, but also illustrates the role played by MIC forces in sustaining and expanding the defence production sectors in the case study countries following the initial defence industries start-up. The initial decision to manufacture arms will be examined in greater detail in Chapters Two, Three and Four.

Israel exhibits characteristics indicating the presence of a military-industrial complex and the country's long-term security concerns have propelled the military to the forefront of society. In Israel, civilian military-industrial interests appear to have played an important role in fostering the expansion of the country's domestic arms industries. The defence sector build-up was a key policy priority for Israeli political leaders such as David Ben-Gurion and Shimon Peres. Managers of nascent defence industries, such as Israel Aircraft Industries, sought rapid expansion through projects such as the Arava transport -- a loss-making project embarked upon with no targeted market -- and the Lavi fighter which was subsequently canceled due to financial grounds. Military leaders appear to have been more cautious about the country's rapid defence industrial build-up, the Israeli Air

Force's ambivalence about the Lavi being a case in point.

The South African military acquired considerable influence in the setting of the country's security agenda during the 1970s and 80s. The state arms producer, Armscor, brought together military, government and economic interests into a tight network during the Cold War which supported government policy and a military industrial complex composed of these interests clearly gained power during this period. The South African MIC helped create an atmosphere conducive to arms industry expansion through creation of a largely imaginary threat from frontline African states under the guise of what was termed 'total onslaught'.

The Yugoslav military played a key role in the creation of post-1945 Yugoslavia and has repeatedly affirmed its dedication to the defend both state socialism and to protect the country from breakup. Little work has been done on the arms industry decision-making process in Yugoslavia. The initiative to for the creation and expansion of the defence industrial sector appears to have come from the party/government leadership as a key aspect of the Nonalignment policy. But the military's ever-expanding role in national policy-making during the 1970s and 80s appears to have further blurred distinctions between military and party/political decision-making with regard to arms production decisions. The huge influence of the military and aircraft manufacturing lobby in the 1980s is evidenced by the granting of

approval for the \$2 billion Novi Avion fighter aircraft project, despite the Yugoslav economic crisis.

Although elements of the military-industrial complex described above appear to have played an important role in the expansion of the defence industries in Israel, South Africa and Yugoslavia, a key point of similarity among all three countries is that the initial decision to develop arms industries came as a response to the Cold War.

From 1955 to 1989 Israel was confronted with massive Soviet arms exports to the Arab world which served as part of Moscow's Cold War bid to gain influence in its Middle Eastern backyard. The fear that Jerusalem might be subject to further arms embargoes while the Arab frontline states received arms from their military patron in Moscow was a key reason that the initial rapid military industrial build-up in Israel achieved support.

During South Africa's period of growing international ostracisation, Pretoria's elite were determined to prove that the Afrikaner state could make a valuable contribution to the West in the Cold War conflict with the Soviet bloc. The build-up of NATO compatible forces -- of questionable utility for African conditions -- and development of an independent South African military capable of launching attacks on perceived Soviet client states in southern Africa was one means of proving this worth to the West. Much of South Africa's defence sector development during the 1970s and 80s can be explained in that its purpose was to serve

this Cold War goal.

Yugoslavia, trapped in the frozen Cold War wasteland between both blocs, made a conscious decision to opt out of the Cold War and developed defence industries and military strategies to achieve this end. During the height of the Cold War in the 1950s and 1960s, Nonalignment stipulated not only that Yugoslavia be militarily self-sufficient but also that Belgrade should supply arms to like-minded Third World states.

The following three chapters examine the similar initial reasons for the arms industry start-up in the case study countries and the differing respective defence manufacturing sectors they developed during the final three decades of the Cold War.

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**Part Two -- Case Studies**

## Chapter Two

### Israeli armaments production: a case study

#### Introduction

Israel is clearly the most successful arms producer and arms exporter of the three countries examined in this dissertation. Indeed, Israel is one of the Third World's leading arms producers, along with countries such as Brazil.<sup>1</sup> As will be shown below, Israel is one of the few Third World producers with a truly broad based defence manufacturing sector. Israel's volume of arms and technology exports are variously ranked placing Israel between being the eighth and the fifteenth largest arms exporting country in the world.<sup>2</sup>

It is important to point out that Israel alone could never have financed such a large defence industry sector. During the 1980s and 90s, the United States provided Israel with almost \$4 billion in annual military and economic aid. In addition, American Jews made \$1 billion worth of tax deductible donations to Israel each year. The Israeli government raised another \$500 million a year through the sale of Israel bonds and American commercial banks loaned Israel some \$1 billion annually. All this adds up to over \$6 billion a year.<sup>3</sup>

But while Israel is an arms producer with a unique status, it nevertheless shares the host of circumstantial and systemic

similarities with South Africa and Yugoslavia, which were outlined in the introduction. Before turning to the more substantive themes of this chapter it will be useful to review these four case study similarities as they apply to Israel.

1) Limitations on relations with other countries: Israel remains an unaccepted creation by most of its neighbors and indeed nearly the entire Arab world. Israel has been at war with all neighbor states since 1948 and through the late 1970s could claim to be entirely surrounded by hostile countries posing a threat to its security. Although the Egyptian-Israeli peace treaty of 1979 removed the largest and most important of Israel's potential adversaries, relations between the two countries are far from warm.

The increased influence of the Arab bloc following the 1973 Arab-Israeli War proved disastrous for Israel's carefully nurtured relations with the Third World. Twenty-nine out of the 32 African states with which Israel had diplomatic ties severed all relations during or after the War.<sup>4</sup> This mirrored the 1967 Arab-Israeli War during and after which all Warsaw Pact countries, except Romania, broke diplomatic relations with Israel.<sup>5</sup>

A more fundamental limitation regarding Israel's relations with other states has been the fact that until Israel's formal designation by the United States as 'major non-NATO ally' in 1987, Israel lacked a reliable long-term supplier of advanced

military materiel. The military relationship with Czechoslovakia faded between 1948 and 1951. The Franco-Israeli military connection lasted from 1955-1967/69 before ending abruptly and in acrimony. West Germany secretly supplied Israel with a variety of major systems from 1957-65.<sup>6</sup> The U.S.-Israeli military relationship began in earnest under President Johnson but remained subject to policy shifts in Washington and was largely unregulated by any bilateral agreement until the Reagan administration approved a series of military and technology transfer agreements which culminated in the 'near NATO status' and the U.S.-Israel Free Trade Agreement.

Thus, until the mid-1980s Israel lacked a truly reliable military relationship with a major power. Although the Israeli arms industry has been developed and sustained for a number of reasons which will be discussed below, it is this lack of a reliable foreign arms supplier and, indeed, the unwillingness of the Israeli leadership to become overly reliant on any foreign power which has served as a cornerstone in the decision to develop and expand the Israeli defence industrial sector.

2) External threat more widely perceived than internal threat, yet internal threat probably of more fundamental danger to the state: Israeli security thinking has tended to be concentrate on

external threats. Soldiers of the Israeli Defence Forces (IDF) are "trained to cope with the combined force of the Arab armies".<sup>7</sup> Israeli forces have fought six major wars since Israel was created: the 1948-49 War, the 1956 War, Six Day War of 1967, the War of Attrition from 1969-70, the 1973 War, and the 1982 invasion of Lebanon. Given this history a preoccupation regarding external threats is not difficult to understand.

Concentration on external threats may have been appropriate for the period from 1948-67, however, the occupation of Arab territories during the 1967 War and the incorporation of 700,000 (today over one million) Palestinians under Israeli rule, in addition to the 400,000 Arabs who already lived in pre-1967 Israel, created the potential for an entirely different sort of conflict. For 22 years following the 1967 occupation of Arab territories the Israeli military and police were able to maintain control over the occasionally restive Arab populations without resorting to any particularly sophisticated tactics.

Tactics employed by the Palestinian intifada, which began in December 1987, took the Israeli military by surprise. An article in the official Israeli Defence Forces Journal entitled 'Logistics in the Stone Age', begins: "In the past forty years, the IDF has learned how to fight several Arab armies concurrently. What it never had to deal with was rioting on the part of thousands of residents of Judea, Samaria, and Gaza". Illustrating the depth of the IDF's unpreparedness for such a conflict the

article goes on to quote an Israeli colonel in the Logistics Branch who admits that "...the acquisition of means for dispersing crowds was under consideration for some time," and that with the outbreak of disturbances at the end of 1987 procurement priorities were immediately changed.<sup>8</sup> Clearly, the internal threat of a Palestinian uprising had been given low priority on the list of possible combat scenarios for the 1980s.

Today, Israel's external threats have been radically altered through diplomacy, circumstance or technology. The peace treaty between Israel and Egypt has held for more than a decade. Jordan can safely be discounted as a combatant against Israel in any future war, in part because of the long-running, secret dialogue which has gone on between Amman and Jerusalem and in part because King Hussein has given up Jordan's claims on the West Bank. Palestine Liberation Organisation forces have been expelled from Lebanon and the Lebanese state cannot be taken to be a threat to anything but itself. Iraq's military capacity was smashed by the Allied forces in the 1991 Gulf War. Of the front-line states this leaves Syria, long a leader of the rejectionist Arab states. Syria remains a danger to Israel less in terms of its army, air force, navy, or its population of some 11.3 million, but more through its possession of SS-21 surface-to-surface missiles which have the capability of reaching all targets in

Israel north of Tel Aviv.

The Gulf War showed that the greatest external danger to Israel is in the form of missiles. Missile threats also emanate from Iraq and Saudi Arabia. Prior to the Gulf War Iraq was involved with Egypt and Argentina in the Condor 2 or Badr-2000 medium range surface-to-surface missile project. The missile, which was reported to have a range of 500 miles, was being developed with the assistance of several West European aerospace concerns. Iraq was also engaged in a programme to build nuclear warheads to the arm the missile.<sup>9</sup> Whether UN sanctions and international sanctions will be able to hinder the long-term completion of these projects remains open to some doubt. The Saudi government recently bought Chinese DF-3 missiles which have a range of some 2,200 kilometres.

Other than missiles, which could be armed with nuclear, chemical or biological warheads, there appear to be few serious external threats to Israel in the short-term. The spread of rocket technology, then, is probably the one major external danger for Israel in the 1990s. Although it should be noted this threat is countered by Israel's own nuclear-armed missiles.

The second key danger to Israel is quite simply the Palestinians in the Occupied Territories. The Palestinians in the West Bank and Gaza Strip pose at least four acute problems for the Jewish state which Israeli military and political leaders appear unable to resolve.

First, and most basic, are the demographic projections which show that by the year 2010 an Israel, encompassing the Occupied Territories could have a population with an Arab majority, given the higher Palestinian birth-rate and declining Jewish immigration to Israel. (Prior to the failed coup against Gorbachev, Soviet Jewish emigration to Israel had sharply declined in part due to unemployment and housing shortages in Israel.<sup>10</sup>)

Second, is the radicalisation of the Palestinians involved in the intifada. Israel proved itself adept at hermetically sealing the country's borders against attacks launched by Arab groups operating from outside of Israel or the Occupied Territories. Yet this considerable achievement may well count for naught if the Palestinian population in the territories is sufficiently radicalised by the policing operations of the Israeli military and settlers or comes under a more radical leadership. The human cost of such a development is incalculable and the economic cost of an intensified intifada or, more seriously, a campaign of economic sabotage would seriously hinder government attempts to restore Israel's economic fortunes. Indeed, the Palestinian uprising in its present form has already credited with having played a significant role in stopping the Israeli economic recovery and with widening the Israeli government budget deficit in the late 1980s. <sup>11</sup>

A third, and less easily quantifiable problem of the intifa-

da is the role it plays in demoralising the Israeli military. The problem of demoralisation in the IDF first manifested itself at serious levels during the 1982 war in Lebanon. The Israeli Defence Forces have been more accustomed to conventional force engagements, high-technology equipment, and the consensus that every war was a war about the survival of Israel. However, the shooting and beating of unarmed Palestinian stone-throwers during the course of the intifada marks a more advanced chapter in the 'dirty war' that Israel began in Lebanon. Israel has valued above all the will of its soldiers to fight from the time of David Ben-Gurion who stated:

Seven hundred thousand vanquished 30 million,  
and this occurred because under the given  
conditions the 700,000 Jews possessed greater  
will power than the 30 million Arabs...and  
therefore they won. <sup>12</sup>

Through to the current IDF Chief of Staff, Lt. Gen. Dan Shomron, who has emphasised:

The greatest danger facing our nation is the  
erosion in the consensus regarding what we call  
a war of survival...Armies generally collapse not

because they are weak, but because they have lost  
the will to fight...<sup>13</sup>

Thus, despite press reports that the intifada is running out of steam, the continuation of violent protest in the Occupied Territories must be a deeply worrying prospect. Indeed, the danger to morale of the Israeli military in the type of conflict which has developed in the Occupied Territories, is, if anything, greater in the intifada than it was in the war in Lebanon: at least in the latter conflict the IDF was involved in a conventional land, air and sea war. A further danger is that soldiers not trained in crowd control tactics appear prone to over-reaction when confronted with a civilian uprising. The intifada's balance thus far is that on the one hand, hundreds of investigations have been launched against soldiers for violent behaviour in suppressing the uprising, while on the other hand, a small movement has begun among reservists who refuse to serve in the Occupied Territories.<sup>14</sup>

The fourth danger brought by the intifada is that it has led to Israel's first major reversal since 1948 in the propaganda war designed to maintain Western financial, military and political support for the Jewish state. As the IISS's Strategic Survey points out: "The Palestinians successfully restricted their struggle to means that the world would applaud and that the IDF

would be hard put to counter by conventional means..."<sup>15</sup> This produced a reserve of world sympathy for the Palestinians, particularly in the United States where the Reagan administration officially opened a dialogue with PLO in December 1988 -- some 13 years after Secretary of State Henry Kissinger pledged the U.S. would not speak with the PLO until it recognised Israel's right to exist. This capturing of the moral high ground by the Palestinians places Israel in an entirely new and difficult context of Western opinion.

Israel has long enjoyed a unique and forgiving relationship with a West burdened by memories of the Holocaust. In the wake of the intifada, however, Jerusalem increasingly was seen through the Pariah perspective more common among some Third World countries which approved a UN resolution in 1975 equating Zionism with racism. The danger of worsening relations with the West is that this is occurring precisely at the time that Israel, as this chapter will argue, has become more heavily dependent on the United States for its entire military programme in terms of advanced weapons imports, military technology, and financial aid.

### 3) Victim of arms embargoes and arms control restrictions:

Israel (and the pre-state Zionist movement) has been a repeated victim of arms embargoes, arms control restrictions, and technology transfer restriction since well before the establishment of the Jewish state in 1948. The earliest embargo was the historic

British prohibition on arms exports to Palestine. In 1929, during anti-Jewish riots Jews were not allowed to receive weapons, while Arabs in Palestine were able to obtain weapons from a number of regional sources.<sup>16</sup> Arms exports from the USA to Zionists in Palestine rose considerably during the 1945-49 period. However, all these exports were illegal under the American Neutrality Act, the Export Controls Act and presidential proclamations 2549 (1942) and 2776 (1948). Zionists operating in the United States were 'vigorously prosecuted' by law enforcement agencies who "...were especially tough on the export of arms..."

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The first arms embargo against the state of Israel was the United Nations embargo passed by the Security Council as part of the cease-fire resolution of 29 May 1948 which stipulated that no 'war materiel' should be exported to the warring sides. The embargo's objective was to prevent either the Arabs or the Israelis from using the cease-fire period to alter the balance of power, however, it proved largely ineffective.<sup>18</sup>

The second major arms embargo involved the slow cut-off of Soviet arms from Czechoslovakia from 1948 through the early 1950s. The Communist government installed in February 1948 in Prague sent World War II fighter aircraft and an average of two transport plane loads of arms to Israel a day during 1948 and beyond. Although official Israeli histories have tried to con-

ceal the fact that Czechoslovakian arms deliveries continued after 1948, declassified archives of the Israeli foreign ministry show that in 1950 alone, one quarter of Israel's arms imports still came from Czechoslovakia.<sup>19</sup> But during the Korean War, Israel's East Bloc arms imports were finally terminated by Moscow.

The third major arms embargo was included in the Tripartite Declaration of 25 May 1950, in which the United States, France and the United Kingdom undertook to regulate arms exports to the Middle East, which they still monopolised. As Aaron Klieman has pointed out, this policy clearly worked against Israel, given the UK's special military relationship with Egypt, Jordan and Iraq and with U.S. military blandishments directed at drawing Iraq into the anti-Soviet 'northern tier' security system.<sup>20</sup> For all practical purposes it can be said that the Tripartite Declaration was finally recognised as a dead letter following Egypt's 1955 arms deal with Czechoslovakia (i.e., the USSR) which conclusively broke the old Western oligopoly of arms venders to the region. A second UN arms embargo for the region, adopted in November 1956 by the General Assembly, proved as ineffective as the 1948 Security Council embargo.

Between 1955 and 1967 France came to be Israel's major arms supplier. The nature of French-Israeli relations, however, changed fundamentally in 1962 with the Evian accords which ended the Algerian War. Prior to resolving the Algerian conflict

France had supplied arms to Israel partly because Paris saw Israel as an ally against the Arab Mediterranean states. (Although Egyptian aid to the Algerian liberation movement has subsequently been shown to have been minimal.<sup>21</sup>) Following 1962, French interests evolved toward improving relations with the Arab world. The partial arms embargo announced by France on 2 June 1967 -- the eve of the Six Day War -- was theoretically aimed at all combatants in the conflict. In practice, however, it was an attempt to restrain Israel from using French arms against the Arabs. This embargo covered only so-called offensive weapons, namely 50 Mirage 5s. Other French arms were not affected by the embargo including 25 Fouga-Magister aircraft, seven Super Frelon helicopters and seven out of 12 missile patrol boats on order as well as ammunition and spare parts. Israel, however, ignored the French demand that the weapons not be used for offensive purposes and in December 1968 launched a raid on Beirut airport. On 3 January 1969 Paris announced a full arms embargo against Israel.<sup>22</sup> In addition to the French embargo, the Israeli leadership received a follow-up shock when the British government refused to sell Israel the Chieftain tank.

In the aftermath of the Six Day War the United States came to be Israel's single most important foreign arms supplier and has remained so through the present. However, Washington has repeatedly withheld particular weapons systems and military

industry technology or postponed deliveries to indicate displeas-  
ure over Israeli actions. The following are some examples of  
such temporary embargoes:

-Upon the outbreak of the 1967 War the Johnson administration  
announced that it would stop all arms exports to the Middle East.  
For Israel this meant the postponement of delivery of Skyhawk  
fighters which the U.S. had agreed to sell in 1966. The regional  
embargo lasted until 24 October 1967.

-During the 1969-70 War of Attrition, the Nixon administration  
withheld approval for the sale of F-4 and F-5 aircraft in order  
to pressure Israel politically.

-During the 1973 War, the U.S. airlift of weapons was linked to  
Israeli willingness to accept a cease-fire.

-The Ford administration initiated a 'reassessment' of U.S.  
Middle East policy from March through September 1975 and refused  
to enter into negotiations on new arms deals during this period.

-The Carter administration simply included Israel in its broader  
efforts to limit arms sales to the region and reduced Israel's  
priority in the list of states receiving U.S. military supplies.

-The Reagan administration delayed arms deliveries on at least four occasions: after the Israeli destruction of Iraq's nuclear reactor in June 1981; in response to the Israeli bombing of the PLO headquarters in Beirut in July 1981; in response to the Israeli annexation of the Golan Heights in December 1981; and, during the Israeli invasion of Lebanon in 1982.<sup>23</sup>

-The Bush administration upheld the U.S. Department of Defence's refusal to grant export licences for supercomputers to Israel. In April 1989 Technion-Israel of Technology in Haifa canceled an order for a Control Data supercomputer after waiting six months while the company sought in vain to obtain U.S. government approval for export of the system. In light of Technion's experience, Tel Aviv University also dropped plans to buy a similar computer from the United States. The Weizmann Institute of Science in Rehovot has been waiting since the end of 1988 for its US suppliers to receive approval for the export of two vector processors which would upgrade existing systems to the level of a supercomputer.<sup>24</sup> In the second half of 1990, the Bush administration reportedly delayed delivery of F-15 aircraft, helicopters and ammunition to Israel.<sup>25</sup>

Despite the above examples, Washington has met most of Israel's

requests for arms and substantial military aid. The major area where the U.S. has placed a more serious permanent 'embargo' on Israel has been on American financing of Israeli military industrial projects like the Lavi fighter. In the case of the Lavi, which will be examined in more detail below, U.S. opposition effectively forced cancellation of the project. This leads to the fourth point of case study similarity:

4) Structural requirements and the limits of technology and finance

The structural requirements for the production of advanced weapons systems are multiple and complex. This theme will be discussed in more detail in the following section on the Israeli armaments industries. Of greater interest here are the limitations on growth imposed on indigenous Third World arms industries by technology and finance.

In Israel the initial impetus to establish an arms sector stemmed largely from external strategic / political imperatives, namely the unreliability of foreign arms suppliers and the repeated multilateral attempts to foist an arms embargo over all combatants in the Arab-Israeli conflict. While other related economic, technical and institutional factors supported the development of Israeli arms industries, it may be asserted that during the period from 1948-1973 Israeli concern over foreign military suppliers in light of repeated arms embargoes was the

dominant justification for the development of the arms sector.

From 1973, while the perceived threat of arms embargoes did not wane, these other economic, technological and institutional influences increasingly began to serve as forces supporting expansion of the arms industry. The 1973 oil crisis had a serious impact on Israel's economy and its ability to sustain a high level of defence expenditures and arms imports.

The oil price shocks affected Israel in two ways. On the one hand, the additional economic burden of more expensive imported fuel worsened Israel's already severe balance of payments deficit. On the other hand, Israel had to compete in the Middle East arms race against the OPEC Arab states who benefited greatly from the higher oil prices and were able to purchase vast quantities of sophisticated weapons systems.<sup>26</sup>

To resolve these economic and military imbalances, the Israeli government began a policy aimed at further indigenisation of the state's arms industries and sought to raise the level of arms exports. In theory, increasing local production of arms would allow for import substitution which would lead to an improved balance of payments situation. (But as will be shown below and in

Chapter Seven the military import substitution has been unsuccessful in the Israeli situation.) Economic considerations came to play an increasingly important role in the Israeli defence sector. The decision to build the Merkava tank and even the early decision for a more modest Lavi fighter project were undertaken after cursory studies by the Israeli finance and defence ministries calculated that design and production would cost less than importing foreign systems.<sup>27</sup>

A related rationale for increased indigenisation of the Israeli arms industry was the desire to provide an industrial infrastructure for Israel which would produce technological spinn-offs. The argument raised was that modern military industries would stimulate the growth of other technology oriented enterprises through the acquisition and dissemination of modern technology and provide training for future scientists and engineers.<sup>28</sup> More recently, however, Israeli military economists have criticised the military R&D spending as bringing far less profit than civilian R&D spending. In an article published in the Israeli Economist, Avriel Halperin, a military economist at the Hebrew University, calculated that every dollar invested military R&D brought in \$2-3 in exports whereas every dollar invested in civilian R&D brought in \$15.<sup>29</sup> This conforms with the view of reverse spinn-offs which holds that broad advanced technological spinn-offs from a healthy civilian goods industry are a necessary prerequisite to building advanced, indigenous

arms.<sup>30</sup>

In Israel, after nearly two decades of hectic growth for the defence sector the cancellation of the much hailed Lavi fighter project in 1987 was a major symptom of domestic arms production limits. The cancellation came as a shock to the nation and sharply divided the military establishment into pro- and anti-Lavi camps. As will be illustrated below, the decision to build the Lavi was made in disjointed fashion, with arguments in favour of the project being accepted with little criticism and the onus of proof being placed on those opposing the project. Ultimately, however, three key Israeli limitations coalesced together to sink the Lavi.

First, and foremost, was finance. The project was non-starter without U.S. capital, and despite protests from American defence aerospace concerns, Washington spent more than \$1.5 billion on the Lavi. However, the rising projected costs of the project combined with the domestic criticism over American money going to fund a fighter which would later compete with US aircraft in the exports market led the Reagan administration to 'convince' Israel to cancel the project over financial grounds.

The second Israeli limitation was technology. The idea of producing a truly indigenous fighter rapidly ran into barriers. Ultimately, the 'indigenous' Lavi was to have an American engine, American wings, an American tail assembly and substantial Ameri-

can avionics. This effectively neutralised two of the important reasons for having an indigenous fighter project in the first place: independence and exports. With such key components under American control, unhindered production of the aircraft could not be assured should the United States place embargoes on the above assemblies and components. In addition, the American components would give Washington the right to veto all export sales of the fighter -- a right which was used to block sales of the Israeli Kfir fighter.

The third problem -- the calculus of national security -- is less easy to quantify but relates directly to the finance and technology problems above. Most simply put, one could have asked of the Lavi: 'What if it doesn't work?'<sup>31</sup> The development of new fighter aircraft is a risky business not just in the Third World but also in the West as witnessed by the recent difficulties which have beset Sweden's JAS-39 Gripen -- the prototype for this \$6.5 billion fighter project crashed -- and continued French doubts over building the Rafale fighter without other European partners. If the Lavi would have run into development difficulties it remains highly questionable as to whether Israel's technological and financial base would have provided the means to cope. Furthermore, for a country which since the Six Day War has come to depend on air-superiority for its defence, any weaknesses in Lavi performance, or delivery delays, would have carried a particular danger for Israel.

With the cancellation of the Lavi structural realities finally forced Israeli leaders to abandon the long-cherished goal of military self-sufficiency at the end of the 1980s. Ze'ev Bonen, former head of RAFAEL, Israel's military research and development authority, publicly stated that Israel's military sector had reached the point where it could no longer set self-sufficiency as a goal and that attempts to produce all types of systems were bound to hit an economic impasse. Bonen's solution is for Israel to adopt a policy of seeking joint ventures with the West: "The natural solution to the economic problem may be found in the integration of Israel in the defence community of the West."<sup>32</sup>

#### Israel's arms industries

The Zionist leadership in Palestine began supporting development of indigenous arms industries well before the creation of the state of Israel. Primitive grenades were manufactured on an ad hoc basis as early as 1917 by the Jewish underground which fought against the Ottoman Turks prior to the victory of British and Arab forces in the First World War.

Following the anti-Jewish Arab riots of 1929, in which several hundred Jewish settlers were killed, the Haganah (the Jewish underground militia) embarked on a programme to manufacture basic small arms as a means to evade the British prohibition on the import of arms into Palestine. By 1933 the first regular factory of the Ta'as, the forerunner of Israel Military Industries, had been established. The main initial manufacture was a grenade which could be fired from the barrel of a rifle.

In 1945 some 800 crates of surplus war plant machinery were purchased from the United States and clandestinely shipped to Israel disguised as 'textile machinery'. According to an article in the official Israeli Defence Forces Journal, following the assembly of this weapons plant machinery "sophisticated mass-production machinery (was) available...and with increased financial backing from the Haganah production soared".<sup>33</sup> A visiting U.S. military attaché who inspected Jewish arms manufacturing facilities in Tel Aviv and the Galilee in 1948 reported that British officers thought the Sten guns and the mortars made by the Jews in Palestine were superior to those made in the United Kingdom.<sup>34</sup> At the time of Israel's independence in 1948 some 1,000 workers were employed in Israel's arms and related chemicals industries.

Despite the Israeli military victories of 1948-49, the subsequent armistice failed to generate genuine peace. Most Israeli policy-makers came to regard a 'second round' with the

Arabs as virtually inevitable. A strong military was deemed essential for Israel, given the country's geo-strategic position, demographic situation and infrastructure. The underlying premise developed at this time -- and still adhered to -- was that Israel must not base its security policy on the supposition that outside forces would save the country in a worst-case scenario. The logical extension of this policy was the ability to supply the country's military with indigenously produced arms. <sup>35</sup>

The experience with arms embargoes, beginning in the 1920s through the 1948-49 war, made David Ben-Gurion, Israel's first prime minister and defence minister, anxious to reduce reliance on arms imports. Thus, in its earliest stages, the development of the Israeli military sector was driven by the determination to reduce dependence on foreign arms sources. In 1949 it was decided to convert the scattered arms factories from the Haganah into a more unified arms industry. The 1950 Tripartite Declaration served as a further factor to speed development of more advanced arms manufacturing capabilities and in 1951 the development an Israeli aircraft company commenced.

The development of Israeli military production, 1950-1990

The post-1950 development of Israel's defence sectors can be

broken into four distinct periods: 1950-56, 1956-67, 1967-87, and, 1987-present.

1) The initial period from 1950-56 was a time of expansion in basic assembly work and upgrading and retrofit of existing systems. Most important, however, key foundations for future growth of the arms sector were laid, including the establishment of the Bedeck Aviation Company in 1953 (the forerunner of Israel Aircraft Industries). By 1956 Bedeck was upgrading aircraft of the Israeli Air Force and servicing and repairing jet engines which had previously been sent to France for such work. During this period, Israel Military Industries developed its capabilities in the production of bombs, artillery, shells, and light ammunition with the assistance of French and Belgian arms manufacturers. Considerable progress was made in fitting modern cannons on aging tanks and adapting aircraft and motorised vehicles for desert warfare. The Uzi sub-machine gun, designed in 1952, entered production in 1954. <sup>36</sup>

2) The second period, from 1956-67, marked the shift from basic assembly work to licensed production. Bedeck Aviation manufactured the first French Fouga Magister jet trainers under license in 1960. Israel began producing guns under license from the Belgian concern FN Herstal; aircraft engines under license from Turboméca of France; and mortars under licence from Tampella of

Finland. In addition, further foundations for the Israeli arms industry were laid in the form of the conversion of the old Science Corps, founded during the Israeli War of Independence, to the Israeli Combat Means Authority (known by its Hebrew acronym, RAFAEL) and the establishment of the nuclear research centres at Dimona and Nahal Sorek.<sup>37</sup>

3) The 20 years, from 1967-87, marked a period of hectic growth for the defence sector in Israel. In particular the years 1969-72 were a time of heavy investment in the Israeli military sector with defence expenditures increasing from 11.8 per cent to 17.4 per cent.<sup>38</sup> The French arms embargo which followed the 1967 Six Day War and the subsequent refusal of the United Kingdom to sell Israel the Chieftain tank led Israeli policy-makers to undertake a fundamental re-evaluation of weapons procurement policy. The fact that Israel had been denied key weapons systems during this crucial period encouraged the trend toward increasing indigenous design and production of arms. The Nesher and Kfir fighters -- both of which were derived from the French Mirage -- were unveiled in 1969 and 1973 respectively.

Following completion of the Kfir fighter project, a debate over indigenous arms production, which had gone on for some years among Israeli leaders, came to a head over the question of whether to build a successor fighter aircraft to the Kfir. The group

opposed to any post-Kfir project, led by former prime minister, defence minister and chief of staff Yitzak Rabin, argued that Israel could not support the burden of both designing and producing major weapons systems. The Rabin group called for the purchase of stripped down weapons platforms for tanks and aircraft, and the add-on of locally designed and manufactured electronics and other components. However, it was the proponents of full indigenous design and production, led by Shimon Peres and Moshe Arens who finally prevailed, in part because Israel could, at this time, not even count on importing the relevant platforms.<sup>39</sup>

During the late 1970s and early 80s, the decision was made to proceed with the Lavi fighter and to build the Merkava tank. The Gabriel ship-to-ship missile project came to fruition in the early 1970s and was used in the 1973 War. Among other important projects from this period are the pilotless drones developed by two different Israeli concerns which were used extensively in the 1982 war; the Reshef fast patrol boat which was based on the West German designs for the Saar fast patrol boat and the Aliya class missile boat with a helicopter landing pad. The above is merely an overview of the major defence sector projects of this period. These and others will be discussed in considerably more detail below.

4) The year 1987 represents the high-water mark for the Israeli production of major weapons systems. This is the year in which

the Lavi fighter prototype made its first successful test flight only to be subsequently canceled when it became clear that the United States would not cover the costs for a project which Israel alone never could have funded. It is still too early to infer that the old Peres/Arens doctrine of autonomous production and design has been replaced by the Rabin policy of high-technology component production. Nevertheless, since the cancellation of the Lavi, there has been marked attention given to the costs of acquiring new advanced weapons systems. Three examples will suffice here. First, Israel's new generation of corvettes, the Sa'ar 5, will be built in the United States. The reasons for this are partly the tied nature of U.S. military assistance for the project and partly the fact that Israel Shipyards -- one of the country's most important shipbuilders -- recently went bankrupt. Second, Israel's new Dolphin class submarines will be built in Germany instead of in Israel as previously planned.<sup>40</sup> Third, is the fact that although the Lavi project has been canceled, the aircraft's avionics are still under production. All three Lavi prototypes will be built to serve as avionics testbeds for later production of avionics and electronic warfare systems. Furthermore, as will be discussed below, Israel Aircraft Industries, has re-organised divisions to emphasise upgrading, subcontracting, engineering services and unmanned aircraft<sup>41</sup>

and de-emphasized actual aircraft manufacture.

### Structure of Israel's military industries

Steinberg estimates that Israel spends over \$1 billion annually on domestic arms production. The annual Israeli military budget is some \$5 billion out of a total operating budget of some \$15 billion. (It should be noted, however, that an additional third of the total budget is required for debt service of previous military debt.) The military sector in Israel employs some 60,000 people or 20 per cent of the industrial work-force.<sup>42</sup>

Defence production in Israel is overwhelmingly state-owned. The four major concerns in the Israeli defence sector are partially or totally owned by the state. Three of these, Israel Aircraft Industries (IAI), Israeli Ordnance Corporation, and RAFAEL were founded at the behest of the government. Israel Military Industries (IMI) was brought under control of the ministry of defence following the Israeli War of Independence. A further holder of major defence concerns in Israel is the Hista-drut, the national labour union.

A second category of defence firms are those which are jointly owned by Israeli and foreign concerns. Such joint ventures have been important as the foreign shareholders provide much-needed capital and technology for the Israeli defence sec-

tor, as well as providing international links useful for export sales. Examples here include General Telephone and Electric and Control Data Corporation, of the United States, which have major holdings in Tadiran Electronics and Elbit Computers respectively, and Motorola which has formed an Israeli subsidiary.

The third category of defence firms are the smaller and more specialised contractors and subcontractors. Unlike the statist mold of the major firms in the Israeli defence sector these firms tend to be private.<sup>43</sup> As Steinberg has observed:

In this sense, the Israeli military industry can be said to be moving from the French model (highly concentrated among a relatively small number of large and vertically integrated firms or industrial groups) to the US model of a small number of major contractors complemented by a large number of highly specialized sub-contractors.<sup>44</sup>

Military research and development in Israel is directed and controlled by the Ministry of Defence's Directorate of Armament Research and Production Administration -- known by its acronym MAFAT. MAFAT has a broad range of functions, which, according to the Israeli Ministry for Science and Development include:

- 1) Assessing the technological situation in the world and its relevance to defense R&D in Israel;
- 2) Preparation of study papers for Headquarters dealing with defense R&D policies in Israel;
- 3) Preparation of budgets, choosing research personnel needed for the implementation of work programs, and allocation of research subjects among different R&D institutes;
- 4) Annual preparation of long-term programmes for R&D;
- 5) Overseeing the implementation of R&D projects and conducting a follow-up of operations;
- 6) Preparation of the necessary technological infrastructure and facilities for implementing defense R&D programs;
- 7) Preparation of means to ensure the availability of academic, engineering and professional manpower for the needed R&D programs.<sup>45</sup>

MAFAT is broken into specialised professional/technical departments and the research areas in Israel which come under its responsibility include electronics and computer science, aeronautics, optronics, technology of infantry and armaments, materials and processes science, aerodynamic and hydrodynamic science, military chemistry, human engineering and military medicine.<sup>46</sup>

#### Weapons Production in Israel's Defence Sector

Despite the fact that Israel continues to import most of its major weapons systems, local arms industries produce systems ranging from small arms to rockets. The following section will examine Israeli arms production on a sector-by-sector and company-by-company basis.

#### Aircraft

The forerunner of Israel Aircraft Industries was Bedeck Aviation, established in 1953 (the name was changed to the present IAI in

1967). IAI is government owned and controlled by the ministry of defence. Among the aircraft which have been produced by IAI are the French Fouga Magister trainer (built under license); the Arava STOL (short take off and landing) transport; the Nesher, a version of the Mirage 3; and the Kfir, an upgraded version of the Mirage 3 and 5. In addition IAI produces the Westwind and Astra executive jets which are also available in military configurations.

The Kfir project has been Israel's most important domestically mass-produced fighter aircraft to date. Work commenced on the Kfir project in 1969, following the total French arms embargo on Israel. IAI initiated a study to investigate the possibility of fitting the J-79 engine, used in the American F-4E, into a Mirage to boost performance. After lengthy experimentation, a Mirage powered by a J-79 engine made its first test flight in September 1970. In 1969 IAI illegally acquired manufacturing plans for the Mirage 3, the Mirage 5, and for the Atar 9C engine, a slightly more advanced engine than the 9B used in the Mirage 3 which France had delivered to Israel prior to the embargo. Given the continued difficulties in adapting the J-79 to the Mirage 3, it was decided to commence manufacture of the Atar C-powered Mirage which was named Nesher and the first Nesher unit in the Israeli Air Force was formed in 1972.

The Nesher, however, was a temporary solution to Israel's need for advanced fighter aircraft. Through the use of the

Mirage 5 plans, the American J-79 engine and a series of other technical modifications, the Kfir C1 entered production in 1974 with the first two aircraft delivered to the air force in 1975. A series of improvements have led to the Kfir-C2 and the Kfir TC2, a two-seat version of the aircraft. Despite the extensive reverse engineering that has produced the Kfir, the aircraft cannot be classified as an indigenous Israeli aircraft. Aside from the use of the French Mirage plans, the use of key American components in the Kfir -- the J-79 engine and other American avionics -- make export of the aircraft subject to approval from Washington.<sup>47</sup> The General Electric J-79 engine is manufactured under U.S. licence in Israel and 40 percent of its parts are imported from the United States.<sup>48</sup>

Although in popular opinion the Kfir is held to be a great Israeli success story, its efficacy is questioned by some:

The domestic military products developed by the Israeli defense industry have enjoyed a high reputation, which is not necessarily deserved. For example, since the J-79 was more powerful than the original French engine in the Mirage, this should have resulted in a "hotter" fighter. Tellingly, this was not happened. U.S. Navy pilots who later flew

the Kfir reported that they found it "sluggish" compared to the Mirage, and although it could make one very fast turn, useful in combat, it then "lost energy" and had to dive out of the fight. It seems that Israel Aircraft Industries had managed to botch the simple task of mating an existing airframe design to an existing engine, an interesting reflection on the capabilities of Israel's best-funded industry.<sup>49</sup>

Nevertheless, the Kfir continues to be upgraded. Israeli authorities announced the latest version of the Kfir -- designated Tiger -- in April 1991. The Tiger reportedly incorporates the Mirage airframe with avionics and weapons designed for the canceled Lavi fighter.<sup>50</sup>

An important area of Israeli aerospace production is in the area of unmanned drones. IAI manufactures the Scout remotely piloted vehicle (RPV) which is able to carry a variety of payloads such as telephoto lens television cameras. RPVs were extensively used in the 1982 war in Lebanon for target identification and missile site reconnaissance. IAI is in the process of organising a joint venture with the Israeli Tadiran concern which produces a similar RPV called Mastiff.<sup>51</sup> A remotely piloted helicopter built by IAI was unveiled in 1990. The helicopter will be used by the navy aboard the Sa'ar 4 and 5 missile boats

for observation and reconnaissance.<sup>52</sup> As with most Israeli high-tech military projects, development and procurement of remotely piloted drones is extensively supported by U.S. military financial aid. In 1990 Washington approved \$12 million in aid for Israel's reconnaissance drones project in addition to the regular annual \$3 billion appropriation for Jerusalem.<sup>53</sup>

IAI manufactures two civilian aircraft which have optional military reconnaissance configurations: the Westwind and the Astra. The Westwind has its origins in the Jet Commander designed by Rockwell Standard in the United States which was first flown in 1963. Production rights were transferred to IAI in 1968 and the aircraft has since appeared in a number of versions including a Sea Scan maritime patrol variant which can be fitted with the Gabriel 3 anti-ship missile. The Astra, which first flew in 1982, is actually the latest variant of the Westwind. Among the changes are more use of composite materials, new avionics and wings which are mounted lower on the fuselage. The Astra is available in a special version adapted for the training of fighter pilots.<sup>54</sup> Therefore, as with the military aircraft programme, IAI's civil airliners are tested imports from the West from which a family of progressively upgraded planes is produced.

This, then, was the extent of IAI's aircraft manufacturing programme through to 1987.

In the wake of the September 1987 cancellation of the Lavi

fighter project, and the subsequent forced reduction in its workforce from 22,500 to 16,000 employees,<sup>55</sup> IAI is slowly adjusting to the fact that it will in all likelihood not produce a new fighter aircraft within this century other than further upgrades of the Kfir fighter.<sup>56</sup> This is reflected in the complete reorganisation of IAI's aircraft manufacturing and engineering organisational structure into five new divisions which significantly omit any fighter aircraft plant. The five new divisions include an Unmanned Aircraft Plant; a Military Aircraft Upgrading Plant; a Manufacturing Subcontracting Plant; an Engineering Services Plant; and, a Civil Aircraft Plant.<sup>57</sup> After a lengthy history involving work on the manufacture of complete military aircraft from the Fouga Magister in 1960 to the test-flights of the Lavi prototypes in 1987, this new corporate structure marks a radical new direction for IAI which appears to take more into account the financial and technological limitations discussed above.

An indication of Israel having lost out in its bid to produce top echelon weapons systems, relative to international standards, can be seen in the sharp drop of IAI's percentage of the demanding domestic market. According to IAI president Moshe Keret: "Ten years ago half of our business was for the local market. Then our local business decreased to one-third of our total. Today, only about 20 percent of our orders are for the local market."<sup>58</sup>

There remains a further potential major change on the horizon for Israel's leading aviation concern. Recent reports indicate that parts of the state-owned Israel Aircraft Industries may be privatised under the government's big privatisation programme.<sup>59</sup> Should this occur, it could mean even more radical changes in the IAI product line as more vestiges of the statist import substitution methods are discarded in favour of economic and technical viability.

Despite these recent changes there remains considerable continuity and expansion in many of IAI's areas of specialisation. The trend toward supplying packages to upgrade military aircraft appears to be expanding. IAI offers such packages for the French Mirage, the U.S. McDonnell Douglas A-4, F-4, F-5 and F-15, and the General Dynamics F-16.<sup>60</sup> In 1987, IAI delivered the last of 90 upgraded Fouga Magister trainers to the Israeli Air Force. The new Fouga Magister, designated Amit, reportedly retains only the basic airframe with complete rewiring and upgraded avionics. Two retrofit packages are currently available through IAI for the US F-4E Phantom: the Super Phantom and the Phantom 2000. Of these the Super Phantom is the more ambitious in that it re-engineers the F-4E to be fitted with the Pratt and Whitney 1120 engines which were developed to power the Lavi. The Israeli Air Force, however, scrapped plans to upgrade the country's entire stock of Phantoms with the Super Phantom pack-

age. Citing cost, the Air Force opted for the cheaper Phantom 2000 programme which includes avionics, radar, weapons and cockpit upgrades plus complete rewiring. The first Phantom 2000s were delivered to the Israeli Air Force in 1989.<sup>61</sup> Herewith is a further example of the recent Israeli policy of eschewing more expensive and prestigious projects in the military sector.

A related sector of endeavour is the production of high-technology components for military aircraft. As stated above, the cancellation of the Lavi has not meant cancellation of the avionics and on-board electronic warfare systems under development for the Lavi. Indeed, the Financial Times has reported that "the ghost of the Lavi lives on in the drive to export technology".<sup>62</sup> IAI's president Moshe Keret has noted that one of the concerns fastest growing markets is for technology transfers to Asian countries. "They have money. What they are looking for is technology transfers."<sup>63</sup> This is a military sector of rapidly growing importance to the Israeli arms exports drive and will be examined in greater detail in the exports section of this chapter and in Chapter Five on Israeli-South African military relations.

Israel Aircraft Industries has a number of subsidiaries which are involved in the development and manufacture of aerospace technology and components. These include Elta Electronics which designs, develops and manufactures military electronic systems and equipment including radar, EW and Sigint systems.<sup>64</sup>; RAMTA Structures and Systems which develops and manufactures

booms for aircraft and missile launchers, anti-aircraft turrets, composite material aerospace components, and airborne gun pods.<sup>65</sup>; and, Mata Helicopters of Jerusalem which overhauls and upgrades helicopters and installs weapons and other specialised systems. Mata provides approved service for Bell, Hughes, and FAA helicopters and has an agreement with Sikorsky which allows it to draw on the US concern's blade repair technology. Israel also produces components for the F-16 fighter under licence from General Dynamics and the 1120 turbojet engine under licence from Pratt and Whitney. <sup>66</sup>

#### Rocket, Missile and Satellite development

It may be argued that in the harsher post-Lavi world, the single area where Israel is currently developing advanced military systems vis-a-vis the industrialised countries is in missile and rocket technology. "Israel has the most advanced ballistic missile force outside of the five major nuclear powers," notes Aaron Karp in a SIPRI study.<sup>67</sup>

Nevertheless, the pattern of development is similar to other Israeli advanced military systems: Acquisition of foreign technology followed by progressive upgrading with much of the re-

search and development funding coming from the United States. As Karp points out: "Experience shows that all Third World ballistic missiles rely on key foreign technologies".<sup>68</sup>

RAFAEL, the Israeli Armament Development Authority, plays the leading role in rocket and missile development and production. RAFAEL is divided into four main divisions: guidance control, aeromechanics, electronics, and engineering support. In both guided and unguided weaponry it specialises in detectors, propulsion, telemetry, and warheads.<sup>69</sup> Israel Military Industries (IMI) also plays an important role in and missile production through its rocket division which produces missiles and components

The earliest research in missile technologies began in Israel in the late 1940s. During the late 1950s Israeli scientists participated as observers in French rocket tests in the Sahara. The first Israeli systems, however, were not successful and were never deployed. These included the Luz surface-to-surface missile with a range of some 25 kilometres and the Shafrir 1. The Shavit 2 and 3 rockets were tested respectively in July and October 1961.<sup>70</sup> Following intelligence reports in July 1962 that Egypt was developing a rival missile designated Zaphar a programme to develop longer-range missiles was initiated.<sup>71</sup>

The sinking of the Israeli destroyer Eilat in 1967 by an Egyptian (Soviet-made) Styx ship-to-ship missile prompted the acceleration of the Israeli programme to develop a similar mis-

sile with the assistance of several French defence concerns <sup>72</sup>  
The result was the Gabriel 1 ship-to-ship missile with a range of 22 kilometres. An upgraded Gabriel 2 has a range of 40 km and the Gabriel 3 which has more sophisticated targeting abilities is also available in an air-launched version. Despite these developments it appears that the Gabriel did not meet the standards set by the Israeli Defence Forces: According to Neubach and Peri the Israeli Navy opted to equip its ships with the U.S. manufactured Harpoon missile which had twice the range of the Gabriel. (The Israeli navy is presently armed with both the Harpoon and the Gabriel missile.) This, they report, brought further development of the Gabriel missile to a close.<sup>73</sup>

The Shafrir air-to-air missile, manufactured in Israel since 1969, has been the subject of some controversy with Raytheon, the American manufacturer of the U.S. Sidewinder air-to-air missile's infrared guidance system. Raytheon claims that the Shafrir's guidance system is based on the system it developed for the Sidewinder.<sup>74</sup> A more advanced model of the Shafrir has been produced in Israel with funding from U.S. Foreign Military Sales (FMS) credits.<sup>75</sup>

The Israeli Python 3, according to military trade journals, is "a simplified version of the famous U.S. AIM-9L Sidewinder."<sup>76</sup> It was reportedly used with success in the 1982 Lebanon War.

The Barak 1 is a point defence missile system originally

designed for naval use but a ground-launched version is being developed which will be capable of hitting tactical missiles at close range.<sup>77</sup> The Barak naval system, which entered production in 1986, was designed with a special emphasis on destroying incoming sea-skimmer missiles.<sup>78</sup>

Israel's latest missile project is the Popeye air-to-ground missile which is being developed by Rafael. The Popeye has received an initial development grant of \$8 million from the United States and a further \$24.7 million was approved by the U.S. Congress for Israeli development and acquisition of the system in addition to Washington's annual \$3 billion appropriation for Israel.<sup>79</sup>

Israel's Jericho 1 rocket was largely developed by Avions Marcel Dassault of France beginning in 1963. Dassault was building the MD 620 and 660 ballistic missiles at this time and the Jericho 1 was a derivative from these systems. The Jericho 1 has a range of 450 kilometres. It has reportedly been manufactured in Israel since the 1967 French arms embargo.<sup>80</sup>

Following the 1973 War, Israel requested Pershing 1A missiles from the U.S. which had greater mobility, range and accuracy than the Jericho 1. The United States refused and instead supplied 160 short-range Lance missiles. Israel subsequently began development of a new long-range missile.<sup>81</sup> In 1987 Israel test-fired the first upgraded Jericho 2 missile to a range of 820 kilometres. The maximum range of Jericho 2 is reportedly 1,450

kilometres. A second test of the Jericho 2 was made in 1988.<sup>82</sup> The Jericho II is said to be a solid-fuel rocket and some reports claim it was developed with illegally obtained fuel compounds, inertial guidance system components and rocket shells from the United States.<sup>83</sup>

The Jericho II programme appears to have figured prominently in the Israeli relationship with pre-revolutionary Iran. Under the code name of Operation Flower, Israel and Iran agreed to collaborate on the development of an improved model of the Jericho. The nature of the co-operation was similar to that which exists between Jerusalem and Pretoria: Israel supplied the technology and Iran supplied the capital in the form of oil. However, the Iranian revolution cut short the agreement and only the initial Iranian payment for Operation Flower of \$260 million (of a planned \$1 billion) worth of oil was transferred to Israel in 1978.<sup>84</sup>

Israel's most recent development in the field of rocketry and military reconnaissance was the September 1988 launch of the Ofeq (Horizon) 1 satellite. An upgraded version of the Jericho 2, designated the Shavit, was used to launch the 75 kilogram Ofeq-1 satellite into low-earth orbit. This made Israel the seventh world space power, but more importantly it demonstrated the advanced nature of Israeli nuclear delivery systems.<sup>85</sup> A study carried out by Lawrence Livermore Laboratories, based on an

analysis of the launching of the Ofeq 1, posits that with a similar delivery system Israel should be able to launch a 1,100 kg. warhead over a 4,500 km range and a 500 kg. warhead over a 7,500 km. range.<sup>86</sup> Given these delivery systems, it is interesting to note that during the Gulf War, Israeli Chief of Staff, Gen. Dan Shomron, changed the standard official Israeli formula "Israel will not be the first to introduce nuclear weapons" to "Israel will not be the first to use nuclear weapons."<sup>87</sup>

Following the successful launch of the Ofeq-1 experimental satellite, Israel launched a more advanced Ofeq-2 reconnaissance satellite into low earth orbit in March 1991. Future planned launches include an additional reconnaissance as well as a communications satellite. The communications satellite, designated Amos, which will be in a geosynchronous orbit over east Africa, will be launched by a European Ariane rocket in 1993. It will be near an Arab Satellite Communications Organisation Arabsat communications satellite, thus enabling Israel to pick up signals between Arabsat and its ground stations. The Ofeq satellite reportedly required vital, classified U.S. technological data which was obtained by Jonathan Jay Pollard, an Israeli spy, who worked for American Naval Intelligence in Washington until his arrest in 1985.<sup>88</sup>

The Arrow defensive missile, Israel's most recently announced missile project is, characteristically, 80 per cent funded by the United States and will be jointly developed with

American defence concerns. In June 1988 the U.S. and Israel signed an agreement under which Israel will develop the Arrow rocket designed to shoot down ballistic missiles in flight. The project will be funded by the U.S. Strategic Defense Initiative Organisation which is providing \$125 million and organising a 30-month joint technology demonstration to evaluate the Arrow. (It should also be noted that by the end of 1988 Israel had emerged as the largest single foreign recipient of Strategic Defense Initiative Contracts totaling \$165 million.<sup>89</sup>) In addition the Israeli government has requested \$200-400 million in funding for a radar system for the Arrow missile from Germany.<sup>90</sup> The Arrow project's mix of foreign technology and foreign funding is consistent with the long line of indigenously built Israeli military systems dating back to the Fouga Magister aircraft in 1960. The first two test of the Arrow in 1990 and 1991 were reportedly failures and the test rockets were shot down by Israeli naval vessels in the Mediterranean.<sup>91</sup>

#### Armoured vehicles and general equipment

Israel Military Industries (IMI) is both the leading producer and research and development body in the field of general arms and armour. With 38 factories and operational units employing some

14,000 workers, including 1,200 scientists and engineers, IMI has a yearly turnover of \$500-600 million. Among IMI's areas of production are light weapons, ammunition, artillery, aircraft armament, smart munitions, anti-tank missiles, composite materials, laser communication equipment and chemicals.<sup>92</sup> IMI has participated in several joint ventures with the U.S. BMY concern, a manufacturer of armoured vehicles. Projects have included a heavy assault bridge for use with the M1 tank and the Counter-obstacle vehicle, designed to clear minefields.<sup>93</sup>

The Merkava main battle tank project is the single most important Israeli development in this category. In 1966 Israel and the United Kingdom agreed to jointly design and co-produce the Chieftain tank. Under the agreement, Israel would have purchased hundreds of obsolete Centurian tanks -- the British needed additional funding for the project -- and would have been allowed to participate in the final development of the Chieftain. The most attractive aspect of the deal was that the Chieftain would also be produced in Israel.<sup>94</sup> Israeli engineers took part in the design of the Chieftain and lessons from Israeli combat experience were incorporated into the two development models which were actually tested in Israel. But in 1969 the British government unilaterally canceled the agreement while maintaining commitments to supply Arab clients with front-line tanks.<sup>95</sup>

In response to the British move a lobby for an indigenous Israeli tank project grew under the leadership of Major-General

Israel Tal. The research and development for the Merkava project began after considerable study following the 1973 War.

A number of reportedly unique features have been incorporated into the Merkava including a low silhouette and engine location in the front, with special armour for enhanced crew protection. An important unanswered question is the degree to which the tank's designers used knowledge gained from developing the Chieftain to produce the Merkava. Despite its unique design, the Merkava, like the Kfir, cannot really be considered a pure indigenous system as it is powered by a U.S. Teledyne Continental engine, uses a U.S. General Motors Allison transmission (although the Merkava 2 uses an Israeli transmission) and contains other foreign components such as an American Cadillac Gage stabilisation system and Belgian MAG machine guns.<sup>96</sup> Like most other major Israeli arms projects the Merkava was dependent on foreign capital: the U.S. government paid \$100 million for the tank's development and production.<sup>97</sup> In May 1989 a Mark 3 version of the Merkava was unveiled. Like its predecessors, it still relies on an American Teledyne engine<sup>98</sup> and its 105mm gun is a version of the British L7, components of which are produced under licence in Israel. The Israeli Defence Ministry announced in 1991 that development of upgraded Merkava "for the twenty-first century" was under way.<sup>99</sup>

Israel manufactures a range of tank components including a 120mm smooth bore tank gun which uses special chrome plating technology illegally acquired from the United States in 1981. Israel also manufactures components for the U.S. M48 and M60 tanks under licence from Chrysler.<sup>100</sup> RAFAEL has developed and produced an active tank armour, designated Blazer, which can be retrofitted on tanks which lack the heavy passive armour of the Merkava. Such active armour, which consists of individual units which can be configured to fit most tanks,<sup>101</sup> explodes outwards when hit by incoming anti-tank rounds but is not activated by small arms fire.

A further example of a major Israeli armoured system which requires key U.S. components is the Shoet Mark-2 armoured personnel carrier which is equipped with a U.S. engine and transmission.<sup>102</sup>

A wide variety of other military hardware and basic small arms are manufactured in Israel. Included are the Uzi sub-machine gun (derived from the Czech ZK-476), the Galil assault rifle (derived from the Soviet AK-47),<sup>103</sup> artillery rockets, anti-tank weapons, mortars, grenades, mines, and a variety of large and small calibre ammunition (see Appendix 8). Some examples of the most recently developed equipment include the Negev light machine gun built by IMI which weighs less than 7 kilos; the pyramid tv-guided bomb, developed by RAFAEL for use against ships, SAM sites and buildings;<sup>104</sup> and, with the intifada in

mind, a new gravel launcher system "designed to clear barriers and disperse demonstrations" is available mounted on a vehicle with "a stand for three Galil assault rifles, a shovel that clears road barriers (and) tyres made of material not easily punctured".<sup>105</sup>

#### Naval vessels

Naval shipbuilding in Israel began after the 1969 total French arms embargo. Two concerns in Israel have been involved in the manufacture of naval vessels, the RAMTA division of Israeli Aircraft Industries and Israel Shipyards Ltd. of Haifa. The latter company, however, went bankrupt in the late 1980s after years of financial difficulties and is presently only carrying out minor repair and overhaul work. In 1973 the first Reshef fast patrol boats -- derived from the French Cherbourg class, which was based on a West German design by Luerksen -- were delivered to the Israeli navy.<sup>106</sup> Although produced in Israel, the Reshef, like the Kfir fighter and the Merkava tank, requires a foreign-manufactured engine, the German Maybach diesel and reportedly uses electronic warfare equipment supplied by Italy's Elettronica.<sup>107</sup> The Reshef thus fits the pattern of indigenous Israeli production of advanced systems whereby key components

must be imported. Israel Shipyards also built the larger Aliya class missile boat of which two were delivered to the Israeli navy.

Israel Aircraft Industries' RAMTA manufactures the Dabur patrol boat and a larger version thereof, designated the Dvora. The Dabur is based on a U.S. design and was originally manufactured in the United States for use as a river patrol boat in the Viet Nam War. <sup>108</sup>

Interestingly, the Israeli Navy has had its, more minor, version of a Lavi cancellation due to financial constraints. The navy had planned to acquire a fleet of hydrofoils and in a joint venture with the U.S. concern Grumman built two attack craft based on the Flagstaff design. However, the project ended up costing much more than expected and planned construction of eight additional hydrofoils has been suspended.<sup>109</sup>

With the bankruptcy of Israel Shipyards Ltd., and the limited capacities of RAMTA's desert shipyards, it would appear that Israel is pulling out of major naval shipbuilding projects at least through the turn of century; a development which mirrors the state of affairs at Israel Aircraft Industries. The two major acquisitions of the Israeli Navy in the 1990s will be built abroad: The largely American designed Sa'ar 5 missile boat <sup>110</sup> will be built in the United States, albeit using some Israeli components, and the navy's replacement Dolphin submarines will be built in Germany.

**Military industry suppliers: electronics, sub-assemblies and components**

Military electronics concerns and suppliers of components and sub-assemblies comprise the fastest growing, most diverse and advanced manufacturers of the Israeli defence sector. Not surprisingly, they comprise the sector of Israel's defence industries most thoroughly penetrated by foreign companies and capital. However, given the secrecy that surrounds Israel's military and military applicable industries it is often impossible to determine the precise shareholding by foreign concerns. The following pages survey some of the most important companies in this sector.

The largest holder of Israeli military and electronics component suppliers is the financially troubled Koor Industries, owned by the Histadrut (Israel's labour federation). With some 34,000 employees Koor has holdings in over 100 small and middle sized concerns in Israel which manufacture such things as telecommunications systems, data link systems, military and airborne power systems, chemicals and metals. Koor had losses of \$293 million in 1989 and over \$100 million in 1987 and 1988. These

losses were partly due to sharp reductions in local Israeli defence orders and greater competition for export sales.<sup>111</sup>

Tadiran Israeli Electronics Industries, was 50 per cent owned by GTE Sylvania of the U.S. and 50 per cent by Koor through 1983 when GTE reduced its holding to 22 per cent. Tadiran employed 12,000 workers at its peak and is active in both the civilian and military sectors. But in recent years the company has lost hundreds of millions of dollars and has been forced to dismiss large numbers of employees as part of a restructuring programme. Tadiran produces among other things tactical communications equipment, intelligence gathering and electronic warfare equipment, night-sensing devices, tank range-finders, field telephones, computerised command and control systems for air, sea and ground forces, and weapons systems simulators. Exports comprise some 45 per cent of Tadiran's business and of these some 80 per cent are in the security or military field. Thus, the company has been badly hit by the world down-turn in military procurement<sup>112</sup> and Koor is reportedly considering selling off its share in the company.<sup>113</sup>

Koor has a 75 percent holding in Soltam, a manufacturer of mortars, artillery cannons, ammunition and sights. The remaining 25 per cent is reportedly held by Tampella of Finland.<sup>114</sup> The Iranian revolution led to a major decline in Soltam's annual exports (which total \$50-60 million)<sup>115</sup> and the company remains in financial difficulties. Soltam's labour force was reduced

from 2,400 in 1985 to 590 in 1990.<sup>116</sup>

The second major Israeli conglomerate involved in the defence sector is Clal Industries Ltd. Employing 11,000, Clal had a major share in the now bankrupt Israel Shipyards. Its subsidiary, Urdan Industries Ltd., operates Israel's largest foundry and was established to support the Merkava tank project. Urdan manufactures parts for the Merkava's hull, turret, suspension system, and a mine-clearing roller.<sup>117</sup>

Elta Electronics Industries is a wholly owned subsidiary of Israel Aircraft Industries. Elta manufactures early warning systems, radar, signals intelligence, and communications intelligence.<sup>118</sup>

Elbit Computers Ltd. was founded in the 1960s and has specialised in radio and communications equipment for the Israel Defence Forces as well as coding systems, simulators, airborne displays, weapon delivery systems, fire control systems, navigation, positioning systems, and most recently, chemical agents sensors. Elbit is 50 per cent owned by Control Data of the United States and 50 per cent by Elron, an Israeli concern which was established with U.S. capital.<sup>119</sup> Elbit's relationship with Control Data appears to have been especially close. From 1974-1980, Robert Chinn, senior vice-president of Control Data, served as chairman of the board of Elbit. This corporate relationship appears to have facilitated the transfer of technology from

Control Data to Elbit. <sup>120</sup> The relationship may have contributed to Elbit's development of the highly successful fire-control system for the Merkava tank; a project which the military trade journal Defence Update cryptically reports "was undertaken with a low profile, almost by clandestine means..."<sup>121</sup> Control Data also owns 67 per cent of Eltek Ltd. and 100 per cent of Eljim, a computer concern. <sup>122</sup>

Motorola Israel Ltd. is a 100 per cent subsidiary of Motorola USA, specialising in command, control and communications equipment.

Ormat Turbines Ltd., a manufacturer of turbogenerators, is a subsidiary of Turbomeca of France, however, the percentage of Ormat shares held by Turbomeca is not known.<sup>123</sup> Ormat is involved in research and development and production of turbines, generators, turbo-generators and engine generators.<sup>124</sup>

The troubled Bet Shemesh Engines Ltd., manufacturer of jet engines and aviation spares, was founded in the late 1960s as a partnership between the Israeli government and I. Shidlovsky, the owner of a French firm involved in the manufacture of jet engines.<sup>125</sup> Bet Shemesh went on to become Israel's centre for planning, development, manufacture, overhauling and repairing turbojet engines.<sup>126</sup> Following severe management problems, Bet Shemesh's ownership was transferred from the Israeli government to Israel Aircraft Industries which continued in partnership with Shidlovsky's French concern. In 1980 IAI's shares reverted back

to the government which also bought the Shidlovsky shareholding.<sup>127</sup> In 1984 Pratt and Whitney, a subsidiary of the U.S. United Technologies Inc., bought some 44 per cent Bet Shemesh's shares from the Israeli government. In 1986 the nearly bankrupt Bet Shemesh became the subject of debate between the Israeli government, which had a 56 per cent holding in the company, and Pratt and Whitney. Pratt and Whitney, which had invested some \$10 million in Bet Shemesh threatened to pull out of the company unless the Israeli government agreed to sell its holding to a private concern.<sup>128</sup>

Elisra Electronic Systems Ltd., formerly AEL Israel, is an important supplier of early warning equipment for air and naval forces, chaff dispensers, high power jammers, Elint and Comint systems and communications equipment.<sup>129</sup> Formerly 37 per cent owned by the U.S. Electronics Labs, 37 per cent by Siemens of Germany and 26 per cent by Tadiran, the U.S. AEL Industries now owns 58 per cent of Elisra.<sup>130</sup> The company manufactured goods for Germany's Siemens but this relationship was ended in the 1980s. In 1985 Elisra was reported to be seeking a foreign firm from which to acquire technical assistance in digital switchboards.<sup>131</sup>

Electro-Optics Industries Ltd. (El-Op), is a leading Israeli manufacturer of computer technology and electronic warfare devices including cameras, laser range finders, gun sights, avionic

instrumentation and night vision devices. It is owned 50 per cent by Tadiran and 50 per cent by the Federmann Group, an Israeli conglomerate. El-Op recently established a joint venture with the U.S. Varo concern to produce and market military electro-optical equipment. The joint venture is called Varo Electro-Optics and cements a relationship between Varo and El-Op which began some 20 years ago when Varo sold El-Op image intensification technology. During the 1980s, El-Op was involved in the theft of plans from its then partner, Recon-Optical in the United States. Recon is the world's leading manufacturer of aerial camera reconnaissance systems for the military. Israel officials at the plant were caught trying to take away ten boxes of detailed drawings and thousands of pages of notes in Hebrew on trade secrets of Recon's cameras. 132

Orlite Engineering Ltd. manufactures composite components for the aerospace industry including nose radomes, air intakes, and fairings. It is owned by an unidentified U.S. company and Israel's Bank Hapoalim.<sup>133</sup>

Turbochrome Ltd. manufactures engine turbines and is owned by the U.S. concern Chromalloy America.<sup>134</sup>

Iscar Blades Ltd. is a manufacturer of gas turbine compressors and precision forged parts such airfoils and turbine blades. Iscar is owned by the TRW concern of the United States, which holds and undisclosed percentage of the firm's share capital and by Israeli Discount Bank Investments.<sup>135</sup>

Astronautics CA, Ltd. manufactures avionics, cockpit displays, digital air data computers, fire control systems for tanks, . It is 100 per cent owned by the U.S. concern Astronautics Co. of America.<sup>136</sup>

Kemp Israel, is a subsidiary of Kemp Industries of the U.S. and develops hydraulic and mechanical systems and components for armoured vehicles.<sup>137</sup>

Nimda Ltd., a manufacturer of vehicle power trains and retrofit packages for tanks, trucks and armoured personnel carriers is partially owned by GM-Detroit Diesel Allison. The precise percentage of shares held by Allison has not been publicly disclosed.<sup>138</sup>

Beta Engineering and Development, a manufacturer of mine detectors and vibration-detection surveillance devices is 35 per cent owned by Gerber Scientific Inc. of the United States.<sup>139</sup>

Intel Israel Ltd., a manufacturer of microcomputers for missiles and airplanes, is a 100 per cent subsidiary of the U.S. Intel Corporation.

The list of small Israeli high technology firms in the defence sector which are either foreign owned or have foreign shareholders is a lengthy one and more details are provided in Appendix 10. While there are many Israeli concerns in this sector which do not have foreign shareholders these appear to play a less important role in Israeli military production.<sup>140</sup>

Given the degree of foreign penetration in the defence electronics and components sector -- linked to the limited roll of the traditional state-owned arms producers in Israel -- the true level of independence of the Israeli defence sector would appear to remain open to question. This issue will be further investigated in Chapter Seven on Israel's continued dependency on off-the-shelf arms imports.

Two points, regarding the growing foreign involvement in the Israeli military sector should be re-emphasised in concluding this section. The first is technological. As Harkavy and Neuman point out, despite the impressive performance of Israeli military research and development of the past decades, we must not ignore the parallel increasing sophistication of state-of-the art military technology produced by the major industrial powers. "As technological invention moves ahead at a dizzying pace, smaller nations such as Israel must also deal with the irony of their growing dependence in spite of their greater military production capabilities".<sup>141</sup> This partially explains the high level of foreign penetration in the areas of computer technology and electronic warfare devices which Aaron Klieman refers to as Israel's "leading growth area within the military industries complex..."<sup>142</sup>

The second point is financial. Israel has attempted to build a broad local defence sector based on an economy that is both far smaller and far weaker than not only those of other

industrialised arms producers, but also those other Third World arms producers like South Africa, Brazil, and Taiwan. Even for projects less ambitious than the Lavi, the imported or indigenous technological means may be available but the financing simply is not.

An Israeli defence sector case study: The Lavi fighter programme from genesis to termination

"The Lavi may fly but if it does, the rest of the army will be grounded."

(Israeli general commenting on the high cost of Israel's subsequently canceled Lavi fighter project.)<sup>143</sup>

The fighter project which ultimately spawned the Lavi was conceived at the behest of Israel Aircraft Industries (IAI) and not the Israeli Air Force. With the completion of the Kfir fighter project in 1974, IAI required a follow-on project so as to provide work for the large team of engineers which otherwise would have been unemployed. According to Neubach and Peri, IAI's 'professional political lobby' was able to convince then Defence Minister Shimon Peres that a new fighter project was vital and

Peres duly allocated funds for initial studies of the project. Negotiations were conducted to produce the aircraft with a foreign partner, but were not successful. The Israeli Air Force remained 'cool' on the project, but in 1978, under pressure from IAI, Defence Minister Weizman approved the employment of 200 IAI engineers to study alternative designs for the aircraft. Even at this stage the project was not formally listed in the Israeli defence budget nor did it have approval of the Cabinet or the relevant Knesset committees. <sup>144</sup>

The proposed twin-engine fighter project was presented to U.S. Secretary of Defence Harold Brown by Israeli Defence Minister Ezer Weizman in September 1978. Development costs were estimated by IAI to be \$700 million; a figure which the U.S. delegation countered was one-third the cost of developing such and aircraft in the United States. The Americans subsequently raised a series of objections to the plan, based mainly on Israeli cost estimates. Since U.S. financial support was vital to the project, Weizman ordered that the project be scaled down to a single engine fighter with a smaller engine -- a decision which the defence minister took on his own initiative without approval from the Cabinet. In February 1980 the Israeli Cabinet approved this less ambitious project without any comprehensive cost-benefit study. <sup>145</sup> The IAI management, although disappointed that the project had been scaled back, was pleased that a concrete decision had at last been taken at the Cabinet level. As one

official said: "We knew that once we were inside we could alter the design again."<sup>146</sup>

The Israeli Air Force had been one of the critics of the scaled back Lavi project and in 1981 the commander of the air force, Maj.-Gen. David Ivri told Prime Minister Menachem Begin that if the Lavi was to be of any use to the air force in the 1990s it would have to be a larger aircraft with a more powerful engine. Begin accepted Ivri's argument on that basis that "The air force commander is the expert, and if he says a larger plane is needed we have to abide by his decision."<sup>147</sup> Begin's decision added billions of dollars to the projected cost of the Lavi and changed the entire nature of the project. Instead of being the low cost, low technology, ground support aircraft to replace Israel's Kfirs and A-4 fighters, it evolved to become an advanced technology, ground attack/ multi-purpose fighter which would compete with state-of-the-art fighters like the U.S. F-16.<sup>148</sup> This reversion to the more advanced Lavi project marked the victory of the approach advocated by Shimon Peres and Moshe Arens in their long-standing intra-governmental dispute with Yitzhak Rabin. Peres and Arens were committed to Israel's developing the means to manufacture advanced weapon platforms in Israel. Rabin, on the other hand, argued that Israel could not afford to design and produce major weapons. <sup>149</sup>

The Lavi fighter aircraft, developed during the 1980s, was

heavily influenced by the Israel Air Force's experience in the 1973 Arab-Israeli War. During the course of the War Israel lost 102 aircraft, or 20 per cent of its entire air force, almost exclusively to surface-to-air missiles. These aircraft were for the most part lost while providing close ground support for the Israeli army. (While a longstanding Israeli military doctrine has been the maintenance of air superiority, this doctrine must translate into effective ground support for Israel's army which is small in comparison to those of potential confrontation states.) The Lavi was therefore the first Western fighter developed in recent years which was not an air superiority fighter but rather a ground attack fighter with high penetration and high survival factors.<sup>150</sup>

Yet it was partly this very specialisation of the Lavi which added to the controversy surrounding the aircraft. As the Lavi became increasingly geared to meet the precise needs of the Israeli Air Force, the already limited chances for exporting the aircraft were even further reduced. In order to produce the Lavi at anything near a competitive price, the production run called for a minimum order of 240-300 aircraft by the Israeli Air Force. But senior Israeli defence officials quoted in the Financial Times privately doubted whether Israel needed or could afford to fly so many Lavi fighters and instead argued that as Israel's strategy would remain based on air-superiority Israel would remain reliant on air-superiority fighters. <sup>151</sup>

The Lavi thus came to be held between the pincers of projected unit costs and the defence budget cuts facing the Israeli military: On the one hand plans to produce a limited number of Lavis, more in line with Israeli Air Force requirements, were scrapped after IAI reported that a decision to produce only 75 aircraft would mean that the cost per plane would be an astronomical \$107 million.<sup>152</sup> While on the other hand, the case for continuing the high levels of expenditure on the project, let alone the thought that the Israeli Air Force could afford to fly 300 Lavis, was devastated by then Defence Minister, Yitzak Rabin's argument (made on the eve of the project's cancellation in August 1987) that the 45 per cent of Air Force's Kfirs were grounded due to lack of funds and that the budget cuts had led to the discharge of 20 per cent of the service's fighter pilots. Rabin stressed that Israel could not continue to allocate such of high proportion of defence spending to the Lavi project without further affecting the size of existing forces.<sup>153</sup>

The specialised nature of the Lavi as a ground attack aircraft added to the project's controversy given the rapid changes in the nature of air combat in a battlefield environment. The trade journal Flight International questioned the effectiveness of the aircraft in an article entitled 'Lavi - lion or albatross?' Regarding the planned Lavi the article said:

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The 40km zone back from the front line is becoming increasingly hostile for fixed-wing fighters. The accuracy and sophistication of modern surface-to-air missiles and radar-controlled anti-aircraft guns means that survivability is becoming ever more difficult to achieve. Indeed, it can be argued that in this forward area the rapidly developing capability of remotely piloted vehicles and advanced helicopters might be better deployed.<sup>154</sup>

The Lavi ground attack aircraft, conceived in the early 1980s as an answer to the lessons of the 1973 War was therefore already being overtaken by the rapid evolution of missile and radar technology and the subsequent revisions of military doctrine well before the first prototype made its maiden flight on 31 December 1986.

Indigenous production of the Lavi was meant, among other things, to reduce Israeli dependence on foreign sources for advanced fighter aircraft. But as the project evolved to be more technically demanding and expensive, Israel became far more dependent on the United States -- both financially and technologically -- than it ever was during the Kfir project. Simply put, Israel not only lacked the capital to finance the Lavi but also the necessary technical infrastructure. Hence, nearly all of the

\$1.5 billion spent on the project up to its cancellation came from the United States <sup>155</sup> and more than 50 per cent of the Lavi was actually to be built in the United States including the PW1120 engine by Pratt & Whitney, the wings and vertical tails by Grumman, and the flight control hardware and software by Lear Siegler.<sup>156</sup>

By 1987 the host of financial, technological and strategic problems surrounding the Lavi led to coalition of forces opposing the project both in Israel and the United States. The Israeli Army and Navy both opposed the Lavi partly on the ground that the high development and manufacturing costs of the aircraft would force their respective services to make do with a smaller proportion of the defence budget. The air force appears to have always had mixed feelings over the project. Despite the fact that the head of the air force advised Begin to opt for production of an upgraded aircraft, there were many in the air force who would have preferred to remain faithful to the tested F-16 fighter. Ultimately the air force formally advised against continuation of the Lavi project.<sup>157</sup>

A series of influential financial administrators came to be highly critical of the Lavi project. The governor of the Bank of Israel, Michael Bruno, publicly stated that "On the basis of economic analysis, there is no justification whatsoever for continuing the project."<sup>158</sup> The Israeli State Comptroller

(ombudsman), Ya'acov Maltz, issued a highly critical 40 page supplement on the Lavi project in his annual report (issued in June 1987). In the report Maltz criticised the decision-making process which allowed the project to grow from being a simple successor to the Kfir into a multi-billion dollar undertaking. Maltz argued that the Finance Ministry, the Ministerial Defence Committee and parts of the defence establishment were not given adequate information at points when crucial decisions were made on the project and that alternatives such as the U.S. F-16 were never seriously explored. The report also emphasised that the Lavi's much-praised avionics would not be available until after 1992 and that any development difficulties in this area would mean that Israel would be left with outdated aircraft or too few aircraft and might even be forced to buy American fighters to cover the a delayed of the Lavi. At a press conference following release of the report Maltz concluded:

A great many of the significant and essential decisions (about the Lavi) were made with information that was without basis, inadequate, tendentious and lacking proper cost estimates.<sup>159</sup>

The United States government which had been critical of the Lavi under both the Carter and Reagan administrations also raised

fundamental objections to the project in late 1986 and 1987. A report published on 21 December 1986 by Dov Zakheim, Under Secretary of State of Defense for Planning and Resources at the Pentagon, entitled 'The Lavi Aircraft: An Assessment of Alternative Programs' argued strongly against continuation of the Lavi project and outlined a series of alternative options.<sup>160</sup> Publication of the report failed to bring about any change in the project and in August 1987 the U.S. government, despite earlier claims that a decision on the Lavi was a purely internal Israeli affair, openly called on Israel to terminate the project "in the best interest of both Israel and the US."<sup>161</sup>

Despite the broad body of opinion ranged against the Lavi fighter, the Israeli public remained broadly supportive of the project. In an opinion poll conducted in May 1987 some 80 per cent of those questioned supported the project, with 15 per cent opposed and 5 per cent not responding.<sup>162</sup> By August of that year the level supporting the project had dropped to 43.5 per cent in the polls.<sup>163</sup> According to the New York Times, however, this figure was still high enough to instill caution in leading politicians of the fragile Likud-Labour coalition:

...Mr. Peres and Mr. Shamir recognize that the Israeli public has come to be sentimentally, if somewhat irrationally, attached to the plane,

and neither man wants to be blamed for dashing the public's dreams....The Lavi is to Israel what the Mercury space program was to America - a national project that justifies itself more in terms of pride and innovation than in pure economics.<sup>164</sup>

Financially and technologically the Lavi was dependent on Washington and the opposition of the United States to the project left Israel with no alternative but to cancel the manufacture of the aircraft. On 31 August 1987 the coalition government voted by the narrowest of margins -- 12 to 11 -- to cancel the project. Shimon Peres, a member of the old guard of Lavi supporters, ultimately voted against the Lavi, while Moshe Arens resigned both his seat in the cabinet and inner cabinet to protest the Lavi's demise. The United States rewarded Israel for the cancellation with a \$300 million grant to compensate workers no longer needed for the fighter project and to cover retooling costs for other high technology defence projects.<sup>165</sup>

The Lavi: A stunning success through cancellation?

In retrospect it may well be fair to characterise the Lavi

project as a success. Israel received 90 per cent of the total \$1.75 billion research and development costs and 50 per cent of the project's technology and components from the United States government at the same time that the American aerospace concern Northrop struggled to pay \$1.2 billion development costs of its F-20 Tigershark fighter programme.<sup>166</sup> Both projects were ultimately canceled but while Northrop was merely left to write off the F-20's losses, the Israeli defence sector, at minimal cost to Jerusalem, gained valuable technology packages, R & D experience and the ability to produce and export a host of important new aerospace technology packages and components. And as Aaron Klie-man has argued, such data packages and know-how are the 'highly promising' fourth wave of Israeli arms exports following the earlier export programmes of second-hand equipment, military training and major systems.<sup>167</sup> The evidence is not yet in, but the Lavi's technology may well sell far better than the Kfir fighter. The U.S. government had little trouble blocking the sale of the Kfir, however, the blocking exports of technology packages and data transfer will prove difficult at the very least.

## Conclusion

Israel was subjected to a series of arms embargoes beginning in 1948 with the creation of the Jewish state. Domestic weapons production began in the 1950s, but the French embargo imposed during and after the 1967 Arab-Israeli War appears to have been the reason for the rapid expansion of arms production in the 1970s and 80s.

But this radically expanded domestic arms production programme failed to produce major indigenous Israeli weapons systems without reliance on key foreign components by the close of the Cold War. The Lavi fighter is a prime example of Israel's failure to break away from the industrialised arms producers even in the Cold War's twilight. Despite the fact that Israel is far more scientifically advanced than possibly any other Third World arms producer, some 50 percent of the Lavi would have been manufactured in the United States or under U.S. licence.

Despite billions of dollars spent on developing an indigenous arms manufacturing sector over the past 30 years, in the 1990s Israel will rely on U.S. fighter aircraft, and helicopters, American-built naval vessels, and German-built submarines. Despite the success of the Merkava tank project only a small proportion of Israel's tank forces are comprised of Merkavas.

Israel's particular relevance to this dissertation is its role as a caveat for other Third World arms producers. Despite a

series of key Israeli advantages over other developing arms producers including some \$6 billion annually in American grants and cheap loans; access to U.S. military technology unparalleled in modern history; and a highly educated and motivated population, by the end of the Cold War Israel clearly failed to create a weapons manufacturing sector which was independent of the major industrialised countries.

The irony of Israeli arms production in the post-Lavi period is that the defence sector is coming to emphasise the production of high technology components with military applications -- an area of domestic military production singularly dependent on foreign actors. Thus despite the shift away from major weapons systems, the continuing demands for indigenous arms industries to preserve Israeli independence continue to fall to the dictates of limited finance, lack of technology, and the comparative advantage of the industrialised countries.

Sophisticated weapons systems can be developed in Israel, but the domestic manufacture of such systems demands the import of even greater amounts of advanced technology and components and hence greater foreign dependency. Dependency will also be financial. New financial arrangements with the United States will be required and these will further increase dependence on Washington.<sup>168</sup>

Regarding the heavy Israeli dependency on the U.S., Yehoshua

Liebowitz of the Hebrew University and editor-in-chief of the Encyclopedia Hebraica has said:

For two thousand years the Jewish people survived without any help from the goyim. Now the Jewish people are held captive in the velvet fist of the Americans.<sup>169</sup>

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## Chapter Three

### South African armaments production: a case study

#### Introduction

According to the white minority government, South Africa's defence industries thrived under the United Nations arms embargoes during the Cold War. New weapons systems, which it was claimed were indigenously developed, were regularly unveiled in state ceremonies during the 1980s.

The reality of South African arms production, however, was quite different. By the end of the 1980s the South African arms industry had still failed to reach the level where actual indigenous research and development was carried out. "What had been achieved was rather a capacity to retrofit, redesign or upgrade weapon systems based on one or several different foreign arms."<sup>1</sup> What has been achieved is "a degree of self-sufficiency, which varies greatly from one weapon category to the other, depending on the complexity of the technology involved."<sup>2</sup> But it must be stressed that little would have been achieved without foreign technology.<sup>3</sup>

South Africa is unique among the three case study countries in this dissertation partly because of the mandatory UN arms embargoes it has faced and also because the state which was being defended by the domestic arms industries was one in which four-

fifths of the population remain effectively cut off from political influence and economic activity.

Nevertheless, South Africa shares a series of circumstantial and systemic similarities with the case studies examined in this dissertation. Before turning to the more substantive themes of this chapter it will be useful to review these four case study similarities as they apply to South Africa.

1) Limitations on relations with other countries:

South Africa was perhaps the number one pariah state in the world due to the racial system of Apartheid, which was institutionalised from 1948. A series of United Nations resolutions restrict trade and other links with South Africa and many countries have their own legislation regulating links with Pretoria. Few countries wished to be seen associating with Pretoria and numerous multinational corporations have withdrawn from the country after initiation of an international campaign calling for divestment from South Africa.

This wholesale international rejection was a bitter disappointment for the white South African ruling class which, since the early 1950s, had strenuously attempted to force acceptance of South Africa as a member of the West.

South Africa's rejection by the Western powers marked a failure of two key security policy goals of the Malan and Strij-

dom governments: 1) That South Africa should join some sort of formal Western defence alliance; and, 2) That the Western powers should commit themselves to the defence of South Africa.<sup>4</sup>

South Africa agitated for inclusion as at least an auxiliary to NATO during the early 1950s. Pretoria wanted NATO's area of operations to be extended further south than the French African dependencies north of the Tropic of Cancer, but NATO members remained unconvinced of the efficacy of such a move. The best Pretoria was able to get was the 1955 Sea Routes (Simonstown) Agreement. Under the terms of this accord the British naval base at Simonstown was given to the South African navy with the stipulation that the British Navy and the navies of its allies would have access to its facilities. Britain and South Africa also agreed to contribute forces for the defence of southern Africa against external aggression. Pretoria had hopes for the expansion of military co-operation under the agreement, but Britain remained unwilling to truly commit itself to the defence of the region. Despite joint British-South African naval exercises, London's reservations meant that Simonstown was never cemented as a true military alliance.<sup>5</sup>

The early 1960s were a period of shifting threat perceptions in South Africa as world opinion increasingly focused on apartheid. Black protest against the Pass Laws led to the Sharpeville massacre in March 1960 in which 67 people were killed and many more were wounded when police opened fire on a demonstra-

tion. The government immediately banned the African National Congress (ANC) and the Pan-African Congress (PAC) and arrested the leaders of both groups. In 1961, South Africa was denied continued membership in British Commonwealth.

Despite setbacks in international stature, South Africa continued to try to develop its military forces on Western lines so as to have something to offer to ease entry to military alliances or agreements. Indeed, Pretoria's goal of being accepted by the West and its aspiration to join the institutional framework of Western security organisations explains a surprising proportion of conventional defence build-up during the 1960s and 70s. South African elites tried to project the image of a country that was white, capitalist, and above all Western. Hence in developing the air force and navy, South Africa merely bought weapons systems from Western suppliers and organised the respective branches of these forces in a similar style to NATO structures. The rationale being that this would make South Africa a more valuable addition to NATO. Only the country's army was allowed to develop as a truly African military organisation.

Yet as Robert Jaster has pointed out, the idea of South Africa endeavouring to come under the protective umbrella of a rejectionist West coexisted uneasily with the theme -- oft repeated by South African leaders -- that the West was 'abandoning' South Africa and that the country would have to fight

isolated and alone against hostile forces.<sup>6</sup>

Pretoria, therefore, tried to take into account both the potential interests of the West and the actual security concerns of the South African military and police as decisions were made to improve the South African Defence Forces (SADF) during the 1960s. On the one hand, millions of dollars were spent enlarging and modernising naval communications, docking and repair facilities with an eye to the West.<sup>7</sup> But on the other hand, the number of new soldiers trained annually rose from 2,000 in 1960 to 26,400 in 1970<sup>8</sup> with the army increasingly instructing its men in counter-insurgency warfare so that by 1973 all its forces received such training.

But despite Western European aid in establishing South Africa's Silvermine radar network which monitors sea traffic from India to the South Atlantic -- 25,000 ships pass the Cape of Good Hope annually -- Western threat perceptions regarding the Cape route waned after the 1950s and 60s.<sup>9</sup>

In 1967, after the June Arab-Israeli War caused the closure of the Suez Canal, world attention focussed on the shipping route around the Cape of Good Hope, particularly for the transport of Middle Eastern oil to the West. This buoyed Pretoria's hopes of greater Western involvement in the region and possible expansion of the limited ties with Britain. But ultimately the West chose not to involve itself further in the region. The Americans were going through the trauma of Vietnam and were not interested in

increased foreign commitments. The British had just elected a Labour government and were also reducing overseas commitments. In any case, the Cape no longer dominated naval thinking as it once had, partly because there was no Soviet naval presence in the area.<sup>10</sup>

Rebuffed by NATO, South Africa proposed setting up a similar organisation for the Southern Hemisphere: SATO, the South Atlantic Treaty Organisation. Prospective members were to include Australia, Argentina, Brazil, Uruguay, and Chile. SATO was discussed as late as 1984 but again Pretoria met with no serious response.<sup>11</sup>

Further South African estrangement from the West was evident with cancellation of the Simonstown Agreement by the British Labour government in November 1974. The British decision to break with Pretoria was aided by the controversy over joint British-South African naval exercises which had taken place in October of that year. South African leaders and British Conservatives bitterly opposed cancellation, but as one observer pointed out, if the Soviet threat was as great as claimed, then not even joint British-South African naval forces would prevent the ultimate domination of the Indian Ocean by the Red navy. Only a NATO force could have performed such a task, but the NATO allies saw no such threat and had no interest in creating such a force.<sup>12</sup>

The 1977 mandatory United Nations arms embargo on exports to South Africa meant the end of South Africa's imports of major weapons systems from France and left Pretoria without a supplier of weapons such as fighter aircraft, helicopters and naval vessels.

From the early 1960s through to the mandatory embargo South Africa saw its overt military links with major world powers atrophy and finally vanish. Pretoria developed its indigenous arms industries for a variety of reasons, but the growing strength of the arms and military technology embargoes aimed against South Africa were the key reason for the development of the country's arms industries.

2) External threats more widely perceived than internal threats yet internal threat probably of more fundamental danger to the state:

South African security policy has long emphasised external issues and underplayed the domestic threat to the white minority-ruled state. The earliest concrete South African worries over external threats appear to have been generated in the wake of the 1956 Suez War. The retreat of Britain and France illustrated the limits the old imperial powers had available to protect their perceived interests -- a clear hint of the decolonisation to

come. Suez also foreshadowed Rhodesia's Unilateral Declaration of Independence and showed the European power most linked to the region lacked the strength and the will to involve itself militarily in southern African affairs.

The South African Defence Ministry's initial concern was internal security and this was echoed in the legislation introduced to parliament by South Africa's minister of defence, Fouché. Yet at the same time the Defence Ministry was already approaching South African security in greatly expanded terms. In addition to preserving internal security, Fouché set forth three other objectives for the SADF in 1961:

- Within its limits, to be able to cope with any invasion from outside;
- To have something to offer when South Africa wanted to enter agreements or military alliances with other countries;
- To act as a deterrent, "so that no insignificant little state can believe it can invade South Africa".<sup>13</sup>.

Precisely where an invasion force, indicated in the first point, would come from is completely unclear, as is the identity

of the 'little state' in point three. In 1961, decolonisation had not yet begun in southern Africa (Zambia, the first country in the region to achieve independence, did so in 1964.) Therefore, barring a joint Afro-Asian invasion force -- a highly unrealistic proposition -- or a force sent by one of the super-powers, which South Africa would have been unable to resist anyway, there seems to have been little substance to the Defence Ministry's scenarios for a landward invasion of the country at this time.

Subsequent decolonisation in the region fueled Pretoria's concern over external threats. The country's buffer zone of colonial or white-ruled states finally evaporated during the late 1960s and 70s. The three British High Commission Territories of Basutoland (Lesotho), Bechuanaland (Botswana) and Swaziland achieved independence in 1966, 1966 and 1968 respectively. Pretoria had expected to absorb these territories into a 'Greater South Africa' but eventually accepted that they could probably be controlled economically -- a policy which would be perfected in the late 1970s and early 80s through the destabilization campaign. Rhodesia made its Unilateral Declaration of Independence (UDI) in 1965, but during the 1970s the guerrilla war waged by black forces from ZANU and ZAPU eventually wore down the white regime. Salisbury required increasing amounts of aid from South Africa and ultimately Pretoria sanctioned the Lancaster House Agreement of 1979 which led to the creation of Zimbabwe. Angola

and Mozambique began their troubled independence in 1975. Only South African-ruled Namibia remained as a 'buffer' and Pretoria was subjected to increasing Western pressure during the 1970s to concede control over this League of Nations mandate.

The tumultuous dissolution of the Portuguese Empire in the mid-1970s led Pretoria to further magnify what were perceived as external threats to South Africa. The main goals of security policy during this period can be summarised as follows: 1) South African control over any decolonisation in Namibia; 2) The bringing of neighboring states under South African economic influence; 3) Dissuading the frontline states from assisting any of the Namibian or South African liberation movements; and 4) Forcing Cuba and the USSR out of the region.

The 1974 Portuguese revolution and the subsequent liquidation of the Portuguese role in Angola and Mozambique profoundly shook South African strategic thinking. The initial fear in Pretoria was that Angola and Mozambique would provide bases for infiltrating guerrillas into Namibia or South Africa itself. As disorder spread throughout Angola during the spring and summer of 1975 -- with rival groups seeking to gain control of territory before the agreed 11 November Angolan independence day -- South African officials became increasingly concerned about the constellation of post-independence Angola. South African forces occupied parts of southern Angola in August and by October, as

Cuban reinforcements for the MPLA arrived, an SADF-led force of South African, FNLA and UNITA troops advanced 400 miles in the western part of the country, defeating Cuban and MPLA forces. Another SADF-UNITA column advanced 500 miles north toward Luanda. But by mid-autumn, increasing numbers of Cuban troops and Soviet weapons turned the tide of war against South Africa.

Of crucial importance was the fact that international political and materiel support for Pretoria was not forthcoming. The Organisation of African Unity (OAU) condemned South Africa, and even conservative member states like Zaire which had sent forces into Angola to fight the MPLA in July, called for a ceasefire and the withdrawal of all foreign troops. Regarding armaments, the United States Senate approved an amendment on 19 December 1975 which prohibited aid to any Angolan faction without Congressional approval. Given the tanks and 122mm cluster-mounted rockets received by the MPLA and the eventual build-up of some 20,000 Cuban troops, lack of Western materiel appears to have been an important cause of the South African withdrawal in Angola. On 22 January 1976, South African forces withdrew to a maximum depth of 50 km inside Angola.<sup>14</sup>

The outcome of South Africa's Angolan invasion, viewed by some analysts as a debacle for the South African military and by others as merely a reversal, had a heavy influence on South African military planning for the remainder of the 1970s. This was the SADF's first experience in regional conventional warfare

and the losses sustained from the Soviet 122mm rockets spurred the government to order the state arms producer, Armscor, to begin work on the long-range G-5 and G-6 howitzer.<sup>15</sup> The positioning of some 20,000 Cuban and East German soldiers of the border with Namibia was a physical manifestation of the ever-discussed 'communist threat' to the Afrikaner state. These forces served as the external threat which justified further expansion of South African military doctrine to counter what officially was termed the 'Total Onslaught' against white South Africa. As noted above, the military doctrine to counter this supposed threat was, logically, called 'Total Strategy'.

The emphasis on external threats led South Africa to re-define the security politics of the entire region. Pretoria sought to create a cordon sanitaire of frontline countries in which the ANC and SWAPO were denied logistical or military support and where South Africa could develop and maintain critical leverage over the local governments. South African military planners viewed the ultimate threat to the country as a conventional assault from across the border. Therefore, the highest long-term goal of the destabilisation policy was the consolidation of economic and military influence over the frontline states. <sup>16</sup>

The concept of security concerns being met by improving conditions within South Africa for the non-white communities

received little emphasis during the 1960s 70s and 80s. This was partly because such things as bringing black educational standards up to those of whites would be enormously expensive given the size of the black population and the very great discrepancy that existed in terms of money spent per student. In any case, improving the political and economic status of Black Africans would have contradicted precisely the Apartheid system that the white ruling-class sought to defend during this period. Indeed, it was natural to concentrate on outside threats to society: Placing greater emphasis on internal threats to the country would only too quickly have exposed the inherent contradictions in South African society.

#### Pretoria's assault on external 'threats'

A legacy of the increased emphasis on external threats to South Africa was the muscular military response outside the South African and Namibian borders during the period 1980-87. The offensive posture appears to have been initiated for a number of reasons: it was partly designed to appease the Afrikaner right wing who threatened to block the ruling National Party's limited reform programme; partly as an act of defiance to show the world that South Africa would not go soft in the face of growing inter-

national sanctions; partly to convince the frontline states to enter into 'security agreements' with Pretoria; and partly because domestic armaments production levels during this period made it easy and, indeed, expedient to run down some of the military's growing stocks of weapons and munitions.

During the 1980-87 period, SADF forces conducted a series of major operations in Angola and launched attacks of varying intensity on Mozambique, Lesotho and Botswana. The stated South African targets in these raids were said to be ANC or SWAPO bases and personnel, but the level of fighting between the South African armed forces and regular Angolan forces led the International Institute for Strategic Studies to describe the South African presence in Angola as "a state of undeclared war against Angola".<sup>17</sup>

#### Conventional weapons for conventional wars

The priority given to external threats in the 1960s 70s and 80s can be illustrated by examining the various components of the South African armed forces. For years Pretoria sanctioned the development of forces and military installations to, on the one hand, show that the country was a member of the Western community

of nations, and, on the other hand, to counter what was always a highly improbable scenario: Namely that the Soviet Union would back or lead an attack on South Africa launched from the front-line states. It is difficult to comprehend South African statements from this time which talk about deterring a landward threat, simply because no conventional landward threat existed to deter during the 1960s and 70s.

South Africa imported tanks, cargo vehicles, anti-tank guns and Mirage III fighters, all of which were directed at landward threats <sup>18</sup> which might develop in the future. The efficacy of many of these weapon systems remains highly questionable for a number of reasons. First, there is the problem African conditions. Systems designed for the North German Plain or the Baltic Sea may be far less useful in Namibian or South Indian Ocean conditions. Secondly, one can ask what was the purpose of such systems. A military trained for irregular warfare -- probably the only serious threat to South Africa -- was perhaps the single most important element of defence forces needed by the white South African state. Would re-conditioned tanks be of any use to counter-insurgency forces? It is possible that such weapons systems were procured due to lack of alternative available armaments on the world market or the relatively backward state of South strategic thinking. However the most likely reason adoption seems to have been Pretoria's above-mentioned attempts to prove that it was indeed a Western country. The

similar military hardware and the anti-communist rhetoric created a material and 'intellectual' facade in common with other Western armed forces. A South Africa with compatible equipment and doctrine to NATO might provide an incentive to Western states to form a military alliance with South Africa.

Pretoria, it appears, built up an armed forces of a not very appropriate nature -- from a strictly military sense -- aimed at an exaggerated external threat to serve as a diplomatic tool beginning in the 1960s. As a consequence of this policy, the South African navy was run down, most air force bases were stationed 400 miles inland,<sup>19</sup> and emphasis was given to improving tank forces and strategic thinking stressed forces capable of striking outwards. Most significantly, the South African Navy became the poor cousin to the army and air force due to the emphasis on landward threat of conventional forces to South Africa.

Shifts in threat perception forced the navy through the most fundamental changes of any of the South African Defence Force branches. In the 1960s, when Pretoria sought an alliance with the West, a larger, Western-type navy was developed so that South Africa could, in concert with the West 'protect' the Cape route. This posture was essentially reversed in the late 1970s. With the emphasis on landward defence, navy was scaled down and smaller coastal patrol forces comprised of fast patrol boats and in-

shore minesweepers were given priority. The rationale seems to have been that as the West would not involve itself with the SADF, the navy stood no chance of fending off a major power. The navy was therefore forced to bear the brunt of budgetary constraints imposed on what was then seen to be the least vital of the armed services.

But the idea that an African navy did not need Western-type capabilities lost favour in Pretoria during the 1980s. South Africa curiously ignored the threat of even a limited Western naval blockade of the country, although the potential harm a blockade could inflict would have been considerable: 91 per cent of South Africa's trade with the world is conveyed by sea.<sup>20</sup> In the mid-1980s South African strategists awoke to this potential danger, and initiated policies to rebuild the navy into a force capable of at least deterring a naval blockade. The submarine yards, closed in 1981, were reopened to enable replacements to be built for the navy's three Daphne-class submarines, which will reportedly be obsolete by the mid-1990s. Two frigates have been brought out of mothballs and there are plans to purchase more corvettes from Israel. Finally, a commercial tanker is being modified to carry helicopters to serve in an offshore early warning capability.<sup>21</sup>

By the end of the Cold War there was far less emphasis on the external threat. The continued civil war in Angola and the virtual decomposition of Mozambique, along with the dependency or

weakness of South Africa's other neighbors made the enunciation of an external threat even more incredible than it was in the late 1970s. The withdrawal of Cuban troops from Angola, Namibian independence, and the rise of unrest in the townships clearly showed that the real threat to Pretoria was obviously much closer to home.

Nevertheless, for nearly two generations, the South African government has concentrated security policy concerns on external forces while ignoring or underplaying the domestic security risks inherent in a society where four-fifths of the population are effectively cut off from political and economic participation. The initiation of reforms under the de Klerk administration are a final admission of Pretoria's misdirected security policies of the past.

3) Victim of arms embargoes and arms control restrictions:

South Africa has been the victim of more international arms embargo legislation than any other country in modern history.

The first embargo in 1963, United Nations Security Council Resolution 181 of 7 August, called for the voluntary cessation of all sales of arms and military equipment to South Africa. Security Council Resolution 182 of 4 December 1963 broadened the

embargo to include equipment and materials for arms production.

The 1963 voluntary resolutions were replaced by a mandatory arms embargo of Resolution 418 from 4 November 1977.

An embargo on arms imports from South Africa was established by the non-mandatory Security Council Resolution 558 of 13 December 1984.

The only other country that has been the victim of a mandatory United Nations arms embargo has been Rhodesia.

Although the UN embargoes have not been nearly as thorough or tough as the U.S.-led COCOM strategic embargo against the Soviet Union and Eastern Europe, South Africa has been the "single most embargoed nation in the world."<sup>22</sup> (For the text of UN Resolutions 181, 182 and 418 see Appendix 14.)

#### 4) Structural requirements and the limits of technology and finance:

South Africa was able to finance both the growth of its armed forces and the development of Armscor, the state armaments manufacturer, through the dynamic economic growth of the 1960s and 70s. But the stagnation of country's economy in the 1980s, along with the increased success of the international arms sanctions movement and the general decline of confidence in South Africa in corporate circles created a more difficult situation in the 1980s. From the financial perspective it appears doubtful that

Pretoria could have afforded the development and production costs for ships, submarines, or fighter aircraft -- even if the technology had been available.

The question in the 1980s was whether Armscor could afford -- in security terms -- to build second-rate systems, given the twin facts that the white South Africans were vastly outnumbered in southern Africa and that potential enemies were able to import advanced weapons from the industrialised countries and other Third World suppliers. As will be shown below, Armscor failed in its bid to build major weapons systems required by the SADF and this leads to one of the main points that I will make in this chapter. Namely that South Africa has found it impossible to develop both advanced and indigenous arms industries.

Furthermore, there are questions as to whether Armscor was even able to maintain existing arms production lines. The economic crunch began to hit Pretoria's military acquisitions in the early 1980s and indigenous overproduction of military equipment for the domestic market being put at up to 50 percent.<sup>23</sup> The decline in South African arms production began in 1982<sup>24</sup> and led to sharp reduction in arms industry personnel as projects such as the Impala aircraft assembly line have been closed down. Armscor ended the 1980s with its most active production in the areas of armoured vehicles, small arms and ammunition. Production at a number of factories had reportedly been halted and some facili-

ties have been mothballed.

South Africa is far less advanced in terms of military technology than Israel and has been almost totally reliant on imported military know-how, components, and production licences. As will be shown below, without the benefit of foreign assistance few of South Africa's military production projects would have been realised in the past two decades.

#### South Africa's military industries

Armaments production capabilities in South Africa grew enormously during the period from 1965 to 1990. Pretoria's ruling elites were forced to shift to 'indigenous' production of weapons and military supplies largely due to international ostracism of the country's apartheid system expressed through the mandatory United Nations embargo on the sales of arms and arms production equipment to South Africa.

The beginnings of South Africa's present day arms manufacturing capacity were created during the Second World War. South Africa, fighting with other Commonwealth and colonial forces on the side of the United Kingdom was cut off from its normal military suppliers in Britain. As a result, light aircraft, armoured vehicles, howitzers, mortars and ammunition were assembled in

South Africa during the war <sup>25</sup>. Most of these industries reduced or terminated production with the end of hostilities in 1945. At least three reasons can be given for this seemingly precipitous move. First, such production was not cost effective in South Africa and no economies of scale existed. Second, there existed no compelling external factors to maintain a domestic arms industry: South Africa had served loyally in the War and scarcely expected to have its Western allies embargo the sale of arms and technology. In any case, nearly all of Africa remained under the domination of the colonial powers. Third, the vast quantities of surplus weapons left around the world after the Second World War could be bought easily and cheaply. In the immediate post-War period South Africa only produced munitions until the establishment of the first rifle factory in 1953.

The development and structure of South Africa's military industries

In the wake of the 1961 Sharpeville Massacre, South Africa was forced to leave the Commonwealth. This date marks the beginning of efforts to diversify the country's indigenous arms industry and to create better economies of scale by exporting to the United States. In December 1963 the United Nations Security

Council voted to impose a voluntary arms embargo on South Africa. Britain and France supported the embargo but only with regard to weapons for internal use and it appeared both countries would continue selling arms to South Africa as long as they were not overtly designed for police use. But in 1964, in a move that has characterised the vacillation of British arms sales policy to South Africa, the newly elected Labour government announced that no further arms of any type would be sold to Pretoria.

The South African government under Prime Minister Hendrick Verwoerd responded by rushing a bill through parliament which created an Armaments Production Board (APB) which was given authority to develop, manufacture or otherwise acquire all weapons or munitions that might be necessary for the South African Defence Force (SADF). According to South African sources, rapid progress was made despite the UN arms embargo. In 1965 Defence Minister P.W. Botha announced that South Africa had negotiated 127 arms production licences from foreign producers <sup>26</sup>. The APB did not seek to create a major state-owned arms industry, but rather to integrate state and private industry <sup>27</sup>. Indeed, the fact that today some 70 per cent of South Africa's present military production remains within the realm of private industry <sup>28</sup> is a matter of considerable pride for South Africa's conservative white elite. (One note on methodology is necessary: 'Production' of weapons and military supplies by Armscor is taken to mean production at plants owned by Armscor, at private plants or

at the plants of subcontractors. Armscor co-ordinates the material needs of the SADF and provides the private suppliers with technical aid, guidance and export markets.)

Work had begun on the development of advanced weapons systems even before the creation of the APB. In 1963, for example, the National Rocket Institute was established by the Council for Scientific and Industrial Research and was ordered to develop an air-to-air missile system. The first locally assembled missile system was reportedly tested in 1968.

The APB was converted into a state corporation and renamed the Armaments Development and Manufacturing Corporation (Armscor) in 1968. Armscor's management is directly responsible to the South African Ministry of Defence, the old state arsenal system was dismantled and replaced with an arrangement somewhat similar to that which exists in France: close co-operation between private industry and government albeit under state guidance. Members drawn from private industry sit on the Defence Planning Committee which advises the Ministry of Defence on decisions regarding Armscor, and the private sector has naturally maintained pressure on Armscor to procure as much as possible from commercial sources.

At the time of its creation Armscor was directed "to meet, as effectively and economically as possible, the armaments requirements of the Republic", and was empowered to achieve this

through: development, manufacture, standardisation, maintenance, acquisition, and "by collaborating with, or assisting or rendering services to, or utilizing the services of, any person, body or institution or any department of state".<sup>29</sup> Aided by the existing steel and mining explosives industries, by an abundant supply of coal for energy, and by the buoyant economy of the 1960s and 1970s, Armscor was able to overcome many of the technological and economic barriers it faced in such an undertaking. Armscor was successful in supplying an active South African military with many of its basic needs, but serious technological limitations remained and recent developments with regard to fighter aircraft and submarines show that South Africa will remain dependent on outside sources for its next generations of these and other advanced weapons systems.

It needs to be stressed that reliable information on Armscor's activities remains difficult to obtain. The state apparatus for secrecy has grown steadily since 1948 and the most recent addition to the protective shell of legislation that encases Armscor is the 1980 amendment to the Armaments Development and Protection Act which:

prohibits the disclosure of any information  
in relation to the acquisition, supply, marketing  
importation, export, development, manufacture,  
maintenance, or repair of, or research in connection

with armaments by, for, on behalf of, or for the benefit of the Armaments Corporation or a subsidiary company. 30

Weapons production does not, therefore, constitute a subject which can be easily discussed in South Africa, even among academics. The effect of this censorship is evident in some South African literature on the country's domestic arms industries and the military. The reader is often left with the sense that the authors know far more about the subject than they are willing to commit to paper, and that what is written is sometimes purposely lacking in detail.

#### Arms production in South Africa

Armaments manufactured in South Africa are, as the South African authorities never tire of emphasising, custom-designed to meet the geographic, climatic, and strategic demands placed upon them by African conditions, and the tactical demands of the SADF. Indeed, this has meant that in some cases the emphasis has been on fairly low-level technology. 31

With regard to military vehicle systems, high mobility is considered important and because of the long distances covered

over rough country, wheels are preferred to tracks. Tracked vehicles also tend to break down far more frequently than wheeled vehicles. Due to SADF fears of being outnumbered in combat (due in part to the limited white conscription base) force multiplying weapons and military systems which can easily be modernised are favoured. In addition, SADF tactics place emphasis on night-fighting and Armscor supplies night-fighting equipment. Standardisation is given high priority both at the level of sub-assemblies and components. Examples of such standardisation can be found in tyres, gearboxes, engines and communications equipment. South African-produced weapons systems tend to conform with other standard Western systems. The Kukri, for instance, which is an export version of the V3B 1R guided missile has mechanical and electrical interfaces that conform to both the U.S. Sidewinder Aero 3B and the French M550 Magic launchers. <sup>32</sup>

Generally speaking, South African armaments manufactures are characterised by the production of a narrow range of systems which are advanced relative to sub-Saharan African standards. Pretoria, for example, claims total self-sufficiency with regard to the production of small arms and ammunition, yet it appears that even in this relatively unadvanced area of arms manufacture Armscor prefers to import certain equipment due to concerns over quality or cost. The South African government has itself admitted in the 1977 Defence White Paper that "locally manufactured arms will necessarily have a cost premium". <sup>33</sup>

## Aircraft

Limited domestic production of military aircraft in South Africa first began in 1930. However, the project reportedly suffered from lack of funds and with the outbreak of the Second World War in 1939 the South African Air Force was equipped with aircraft ill-suited for combat tasks.<sup>34</sup>

South Africa re-embarked on domestic production of military aircraft in the 1960s and in the past three decades Armscor's Atlas aircraft factory has produced a variety of medium technology planes for South Africa's air force. However, it should be stressed that Atlas has not been involved in the design of indigenous aircraft.

As Signe Landgren has noted "French, British, and Israeli participation and technology created the South African aircraft industry....To date, Atlas has not presented one single aircraft which could be called indigenous."<sup>35</sup> What Armscor and the South African government have claimed are indigenous airplane and helicopter designs are actually re-designs and that the main tasks of the country's aircraft industry have been refitting, modification and upgrading work.<sup>36</sup>

The Atlas Aircraft Corporation was set up in 1964 as a private company (it was taken over by the state in 1969) and

construction of Atlas's factory was completed in 1967 with plans and assistance from France's Sud-Aviation.<sup>37</sup> The factory was specifically designed for the licenced manufacture of the Italian Aermachi M.B. 326M jet trainer/light attack plane, which Armscor has renamed the Impala. In 1973, South Africa made an agreement with Italy to produce the more advanced M.B 326K light-strike version of the aircraft which armscor has designated the Impala II. From 1978 a more advanced Impala III was reportedly manufactured. South Africa received considerable foreign assistance in setting up the Impala production line -- more than 1,000 British and Italian engineers and technicians worked on the project and special team from Rolls Royce set up the Impala's engine assembly line.<sup>38</sup>

The Impala incorporates U.S. designed avionics and the British Rolls Royce 540 Viper jet engine, licenced by Britain to the Italian Piaggio concern, which sub-licences it to South Africa. The more advanced Viper 632 Turbojet which powers the Impala II was jointly developed by Rolls Royce and Fiat. South Africa was one of the first countries to receive the engine from Italy. No information is available on the local content of the Viper 540 still being assembled in South Africa.<sup>39</sup>

By the late 1980s Armscor had manufactured as many Impalas as were required by the South African Air Force and the production line at Atlas was closed down. South Africa reportedly has some 239 Impala aircraft<sup>40</sup>, of which 200 were assembled or

partially manufactured domestically.

The most important element of South Africa's Air Force are its Mirage fighters. South Africa began receiving Mirage III's in 1963. The Mirage F1 was acquired under a deal made in June 1971 between Armscor and Marcel Dassault/Breguet Aviation and Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (SNECMA) of France. The agreement provided for licensed production of the entire F1 fighter/interceptor including engines and electrical equipment.<sup>41</sup> However, despite the fact that a number of academic studies report that South Africa has manufactured the Mirage, there is no evidence to suggest that Atlas ever did more than assemble knocked-down F1's which arrived from France.<sup>42</sup> Indeed, this seems to be borne out in Pretoria's 1986 White Paper on Defence and Armaments Supply which states that: "By way of the construction of Impala aircraft and the repair and modification of SA Air Force naval combat aircraft and helicopters, the aviation industry has already reached a satisfactory capability".<sup>43</sup> No mention whatsoever is made of manufacturing Mirages during the late 1970s and it would appear that the Ministry of Defence finally gave up the pretense that the aircraft was ever manufactured by Atlas.

The initial F1 order was for 48 planes of which 16 were the F1-CZ interceptor version (assembled at Atlas from 1976-77) and 32 were the F1-AZ ground-attack version (assembled from 1973-76).

The gradual shift to licenced production of the F1 at Atlas was planned, but the entire project was canceled in 1977 when the French government decided to include licenced production of the Mirage under provisions of the Mandatory UN arms embargo. Therefore, the advanced stages of indigenous Mirage manufacture were never reached and Atlas assembled only 48 of the aircraft.<sup>44</sup>

In July 1986, South Africa announced the development of what it claimed was a 'mid-life update' of the Mirage 3 in which 50 percent of the of the aircraft was reconstructed. According to Jane's Defence Weekly, the unveiling ceremony, headed by South African President P.W. Botha, was more on a scale usually for the roll-out of a new fighter prototype. Official South African reports have said the Cheetah, as the new aircraft is called, is the result of years of top-secret research and development. But privately, foreign ministry officials have admitted the Cheetah is, indeed, an Israeli Kfir with an admixture of avionics from French and British sources.

In appearance the Cheetah is very similar to the Kfir. This was reported by a number of correspondents who attended the unveiling ceremony.<sup>45</sup> Nevertheless, Jane's Defence Weekly also reported that while the

...small fixed foreplanes, dog-tooth wing  
leading edges and drooped radar nose correspond  
to the IAI (Israel Aircraft Industries) Kfir-TC2....

The lack of an air scoop at the base of the fin, as fitted to the Kfir, confirms the absence of the General Electric J79 engine. <sup>46</sup>

The Kfir uses a U.S. General Electric J79 engine which due to the arms embargo is -- in theory -- unobtainable for Pretoria. Some sources say the Cheetah is powered by a French SNECMA Atar 9 engine which the Financial Times reported is made under an "Israeli-South African military co-operation pact" <sup>47</sup> but others say that Israel has subsequently sold licence-produced U.S. J79 engines to South Africa for the Cheetah. <sup>48</sup>

Landgren describes the Cheetah as follows:

In sum, about 50 percent of the old Mirage 3 is reconstructed and brought up to the same standard as the Israeli Kfir-2....Thus, the aircraft presented as proof of 'home-grown achievement of development', is a 50 per cent reconstruction of the 24-year-old Mirage 3 and draws heavily on Israeli and French know-how. <sup>49</sup>

The Mirage 3 redesign will not add any new planes to the South African Air Force -- contrary to claims by Defence Minister

Magnus Malan at the Cheetah unveiling. Instead, the existing Mirage fleet will be modified to Cheetah standard.<sup>50</sup>

Atlas Aircraft continues to manufacture the dual civil-military C-4M Kudo, which is based on the AM-3CM light spotter plane built by Aeronautica Macchi of Italy. (The Am-3CM is itself based on the American Lockheed 60.) The six or seven seat Kudo is used for cargo, general utility and spotting. It is powered by a U.S. Avco Lycoming G50-480 engine, manufactured under licence in Italy.

A smaller general purpose plane, the Italian AM.3C, designated Bosbok, is assembled under licence by Atlas. The Bosbok is used by the air force for reconnaissance, forward air controlling and transport.

The Durban-based National Dynamics Company (a privately owned concern) produces a remotely piloted drone called the Eyrie. National Dynamics claims to have designed the drone but some sources have noted a similarity with both the American Lockheed Aquila and the German Dornier Minidrohne. According to Jane's Weapon Systems the Eyrie is not similar to the Israeli Scout and Mastiff drones.<sup>51</sup>

During the 1970s and 80s South African leaders debated the building of an indigenous helicopter to replace the country's aging Alouette 3s, Pumas and Super Frelons. In March 1986 a new light attack helicopter, the Alpha XH-1 was unveiled at the Latin American Aerospace Trade Fair held in Chile. Although the Alpha

was apparently derived from the Alouette 3, it was never put into full scale production. Armscor's chairman, Fred Bell, has admitted the XH-1 is powered by a foreign engine, produced under licence from an unidentified country and Jane's World Combat Aircraft notes that the XH-1 uses a French engine, tail rotor and transmission.<sup>52</sup> No armament or threat assessment went into the Alpha's design and according to official sources it served merely as a flying test-bed for the more recently unveiled XPT-1 attack and transport helicopter. The XPT-1 is not an operational prototype, but rather a slightly modified Puma helicopter from the air force's existing fleet. The XPT-1 carries a 20mm helmet sighted gun and four outboard pods firing 68mm air-to-ground unguided rockets.<sup>53</sup>

## Missiles

South Africa has produced a limited number of missile systems which have been highly dependent on foreign inputs including technology from France, Israel, Germany and the United States.

The state-run rocket research Institute (RRI) was established in 1963 with West German co-operation. The RRI -- set up under the auspices of the University of Pretoria -- drew on

expertise from Germany's Max Planck Institute of Aeronomy and the Institute for Stratospheric Physics at Lindau. West Germany's Herman Oberth Gesellschaft in Bremen and the Waffen und Luftrues-tung, an umbrella organisation for some 30 West German firms involved in the rocket industry (including BMW, Siemens, Robert Bosch and Liebherr-Africa), aided South Africa in early rocket development work.<sup>54</sup>

South Africa's first missile project was reportedly canceled after what were claimed to be successful tests of a prototype designated Whiplash in 1968.

The RRI was involved in setting up the joint French-South African Cactus/Crotale surface-to-air (SAM) missile programme in the 1960s. Under the agreement, South Africa supplied the financing and France built the missile. It does not appear that the Crotale -- designated Cactus by Pretoria -- was ever assembled in South Africa.<sup>55</sup> It is also reported that South Africa financed France's Milan anti-tank missile, the Matra R-530 and the R-550 Magic air-to-air missile.<sup>56</sup>

South Africa's Kukri air-to-air missile project appears to have been a continuation of the Whiplash programme from the 1960s. The Kukri's forerunner, designated V3, was reportedly completed in the mid-1970s. The V3 is based on a fusion of technology from the French Magic R-550, the U.S. Sidewinder and other French missile technology. French missile assistance came to an end in 1977 and the Kukri is one of the few South African-

produced weapons that Western analysts consider to exhibit traits indigenous development. (But it too is derived from the French Magic and resembles the Israeli Shafrir.) The system is unique in that it utilises a helmet-mounted sight system which allows the pilot to 'look and shoot' (The missile sighting system is connected to the movements of the pilot's right eye.)<sup>57</sup>

Pretoria claims the Skerpioen ship-to-ship missile, manufactured in South Africa, is an indigenous system. However, observers say it is the Israeli Gabriel-2 produced under licence, or possibly an upgraded version of the Gabriel.<sup>58</sup>

In 1982 Armscor announced that work had commenced on an anti-ship missile system, similar to the French Exocet and a prototype was tested the same year. During the 1980s it was reported that Armscor had managed to obtain technical information on France's MM-38 Exocet missile through sympathetic high-ranking French officials -- but not the French government itself. In 1983, U.S. intelligence reported that Pretoria was actually co-producing Aerospatiale's Exocet missile.<sup>59</sup>

Key American missile technology has also been shipped to South Africa. According to a Financial Times / ABC News Nightline report, U.S. ballistic missile technology and military equipment was illegally shipped to South Africa between 1984 and 1988 with full knowledge of the American Central Intelligence Agency. The exports from the Pennsylvania-based International

Signal and Control included telemetry tracking antennae, which follow missiles in flight and pick up data such as fuel consumption, velocity and gravitational forces; gyroscopic equipment for the guidance systems of the ballistic missiles; and, photo-imaging film readers, used to determine the performance of missiles. "The antennae and film reader, used together, would form the backbone of a system to develop medium-range missiles," said an unnamed former high-ranking U.S. intelligence official cited in the report.<sup>60</sup>

A further important South African system is the Walkiri is multi-barrelled rocket-launcher. Based on the Soviet Stalin Organ system, the Walkiri a truck-mobile system, capable of firing up to 24 unguided missiles as a ripple, with a range of 22 km. Landgren says it is likely South Africa received assistance from Israel or Taiwan for the Walkiri project.<sup>61</sup>

#### Armoured vehicles, howitzers and tanks

One of South Africa's few high technology military achievements is the G5 155mm field gun and the G6, a self-propelled version of the G5. Both guns are regarded by some analysts to be the most advanced systems of their type in the world. The G5 and G6 use what are known as 'base bleed' projectiles. Such munitions

generate gas at the rear of the shell which has been fired so as to destroy the partial vacuum that reduces the range of the projectile. This helps give the G5/6 system its extended range -- 37.5 km. as opposed to 30 km. with standard projectiles.

Base bleed ammunition is difficult to produce and few developing arms producers possess the necessary technology for its manufacture. Unsurprisingly, the system is not an example of indigenous South African weapons development, as claimed by Armscor. Most of the technology for the gun and ammunition was supplied by the American Space Research Corporation and is based on technology obtained from Sweden's Bofors and Belgium's Pouderies Reunis de Belgique. Armscor was able to buy an entire plant for the manufacture of G5/G6 ammunition from West Germany's Rheinmetall via a clandestine shipment through Paraguay and Brazil.<sup>62</sup>

South Africa's armoured vehicle industry has drawn heavily on foreign technology and components. It has been relatively easy to import vehicles, engines and electronic components as 'civilian goods' thus evading both the voluntary and mandatory UN embargoes. It is interesting to note that in 1980, prior to the commencement multinational corporate divestment in South Africa, eight foreign auto manufacturers had branches in the country. These included: Chrysler, Ford and General Motors (USA); Toyota, Datsun-Nissan (Japan); British Leyland (UK); Volkswagen (West

Germany); and Alfa Romeo (Italy).<sup>63</sup>

After importing French Panhard AML armoured cars in 1961, South Africa obtained agreement for licenced production of the AML in 1963 and production began in 1966. The vehicle was produced under the designation Eland by Sandock-Austral and a series of upgrades have led to the Eland Mark 7. According to the military trade magazine Defense and Armament the Eland's engine originated in the U.S. Production of the Eland ceased in 1983 and was succeeded with the Ratel armoured vehicle.<sup>64</sup>

The Ratel is a 6x6 wheeled vehicle manufactured in South Africa, but based on prototype designed by the West German company Buessing, which was later incorporated into the Maschinen Fabrik Augsburg-Nuernberg (MAN). The bullet and napalm proof tyres are produced under licence from the Austrian Polyair company.<sup>65</sup>

Despite official claims, South Africa has never produced an indigenous tank of any sort. The Olifant main battle tank is a modernised version of the British Centurian 5 tank, in service in South Africa since 1955. Pretoria has been able to escape the arms embargo by importing used Centurians from Jordan and scrap Centurians from India for subsequent refurbishment and upgrading. The Olifant is reportedly powered by a Canadian engine and has armour, fire control systems and other modifications based on Israeli improvements to the Centurian. Armscor has re-equipped the Olifant with a 105mm gun of unknown origin.<sup>66</sup>

Arm Scor's Truckmaker's division produces the Samil range of vehicles based on designs and components from Magirus-Deutz and Unimog in Germany. These include more than 70 variants of troop carriers, ambulances, gun tractors and recovery trucks. A Samil line vehicle in widespread active use by the South African Army is the Buffel mine-proofed armoured personnel carrier. <sup>67</sup>

Following the 1977 Mandatory UN arms embargo, South Africa was compelled to begin production of diesel engines for military vehicles. Arm Scor obtained production licences and equipment from West Germany's Daimler-Benz and Canada's Massey-Ferguson for the establishment of the Atlantis Diesel Engine Works. Atlantis produces 21 different types of engines and has a capacity of 50,000 units per year. In a related development, South Africa obtained technology for the manufacture of gearboxes from West Germany's Zahnradfabriken and a gearbox plant was established by General Mining. <sup>68</sup>

#### Naval vessels

Arm Scor has faced considerable difficulty meeting the requirements of South Africa's navy. Although the British naval base at Simonstown was established in 1808 and became the most modern

dockyard in the southern hemisphere, modern South Africa did not begin producing naval vessels until 1978. Pretoria has two major dockyards: the naval dockyards at Simonstown and at Durban. Both naval yards have been expanded during the 1980s in line with South Africa's emphasis on upgrading existing ships.<sup>69</sup>

The Minister Class fast patrol boats, built by Sandock-Austral in Durban, are not of indigenous design but rather licence-produced Israeli Reshef Class fast patrol boats (which are themselves based on the West German Saar 4 Class built by Luersen). The Minister Class boats are armed with Skerpioen missiles and Italian and Swiss-designed guns.<sup>70</sup>

There have been numerous reports of a South African submarine project since the cancellation by Paris of Pretoria's order for two French Agosta Class submarines in 1977. The navy's three French-built Daphne Class submarines, commissioned in the early 1970s, are reaching the end of their normal service life (life expectancy of a submarine is 20-25 years). Official concern in the 1980s over the impact of a naval embargo -- particularly with regard to oil imports -- and the role played by submarines in landing troops along the African coast, appear to have contributed to the decision to replace the Daphne submarines.

Blueprints for the U-209 submarine, manufactured by the Howaldswerke-Deutsche Werft and the Ingenieurkontor Luebeck of West Germany were obtained with the assistance of top members of Germany's ruling Christian Democrats in the mid-1980s.<sup>71</sup> A

lengthy parliamentary investigation into the affair -- repeatedly blocked by the German government -- has shown that other German companies have shipped submarine components and a 1:5 scale model of the submarine to South Africa. State prosecutors in Berlin began an investigation in the summer of 1991 of charges that additional West German submarine components were shipped to South Africa via Alexander Schalck-Golodkowski's East German trading empire. Pretoria would require further technological assistance in a bid to build a submarine and there have been repeated rumours that Israel is assisting in the project -- the Israeli navy has operated German U-209s since the 1970s.<sup>72</sup>

Other South African naval programmes have included the conversion of the replenishment tanker Tafelsberg to an armed helicopter carrier in 1983-84. In 1986 the navy's new supply ship, the Drakensberg, was launched. West Germany's Howaldswerke Deutsche Werft and the Ingenieurkontor Luebeck were subsequently identified as suppliers to the Drakensberg project.<sup>73</sup> South Africa is also rumoured to have initiated a Corvette project, possibly in co-operation with Israel.

#### Light weapons and small arms

The small arms industry is the oldest, most successful branch of South African military production<sup>74</sup>, but as in the country's

other defence industry sectors, most of what Armscor and other private manufacturers produce is not of indigenous design.

South Africa has manufactured the Belgian Fabrique National (FN) FN FAL 7.62mm rifle, designate R1 since 1961. During the 1970s, South Africa began manufacturing the Israeli Galil (which itself is based on the Soviet AK-47), designated the R4. The R5 is a shortened version of the R4 for use by troops in armoured personnel carriers.<sup>75</sup>

The army's standard machine guns are licence produced. Both the Belgian FN MAG 7.62mm and the British Browning M1919A4 (designated M-G4) have been produced in South Africa since 1960. South Africa also manufactures the Israeli Uzi under a licence obtained from Belgium. The licence was reportedly revoked in 1963, but South Africa continued manufacturing the Uzi until at least the 1980s. The Uzi's replacement appears to be the SS-77, designed by Armscor, reportedly with inputs from the Belgian FN MAG and the Soviet Goryunov SG43.<sup>76</sup>

South Africa has been slow to develop indigenous production of pistols. Despite the UN arms embargo, European and American pistols were widely available. Beginning in the 1980s, however, the country experienced a shortage of handguns and prices jumped dramatically. For example, the price of an American Colt .45 pistol increased by 328 percent between 1983 and 1986.<sup>77</sup> A number of South African arms makers began producing pistols

during the 1980s but market forces acted against the new industries. The high prices attracted a flood of pistol imports from Eastern European Countries -- via West European dealers -- which were sold on the South African market in what the country's army newspaper called "a surreptitious dumping operation of the Eastern bloc".<sup>78</sup>

#### Military electronics and communications equipment

South Africa's military electronics and communications sectors have been developed since the 1970s with considerable foreign input. As Landgren has noted:

Access to US, British, French, West German and Israeli know-how remains indispensable, and access is facilitated by the fact that electronic components are practically impossible to define as either military or civilian.<sup>79</sup>

The pullout of U.S. electronics concerns from South Africa began only in the early 1980s. But the takeover of foreign subsidiaries by South African concerns did not mean a cut-off

from the former parent company. European and Japanese firms have for the most part remained in South Africa. Among the leading foreign concerns involved in the South African defence sector are Plessey, Racal Electronics, General Electric Corporation, Marconi, Decca and EMI Electronics (all from the UK); International Telephone and Telegraph, Sperry-Rand and IBM (USA); and Siemens and AEG-Telefunken (Germany).<sup>80</sup>

South Africa's first military electronics concern was Allied Technologies (Altech), established with British and French assistance.

Grinaker Electronics (Grinel) was created after South Africa bought the UK-owned Racal subsidiary in 1978. Grinel, which has close links with France's Silec DSI, produces tank and portable radios.

Tactel, one of South Africa's leading communications systems manufacturers, produces the French Thomson-CSF TRC-300 radio and Danish designed VHF (very high frequency) equipment.

Barlow electronics, owned by the South African Barlow Rand concern took a 50 percent holding in Britain's Marconi subsidiary in 1977, and in the same year bought the French-owned Fuchs Electronics. Eloptro is an Arm Scor subsidiary responsible for manufacture of optical equipment such as weapon night-sight systems. Production began in 1977 either under licence from Israel or based on ITT technology obtained through the U.S.

concern's South African subsidiary.<sup>81</sup>

Conclusion: Indigenous arms production in South Africa: The Grand Illusion?

South Africa has been the world's most embargoed country in terms of arms since the 1960s. Pretoria built a domestic arms manufacturing sector to counter the UN voluntary and the subsequent mandatory arms embargo.

But although South Africa manufactures some arms used by the country's army, the state-led arms producers were unable to produce any to the major weapons systems required to replace those cut-off by the UN-ordered embargo during the Cold War. The repeated up-grading of the country's outdated fighter, transport and reconnaissance aircraft, helicopters, naval vessels and submarines is proof of this failure.

South Africa's weapons manufacturing projects were heavily based on foreign technology. 'New' weapons systems unveiled during the 1980s, such as the Cheetah fighter and various helicopter prototypes, are examples of such foreign technology-based upgrades.

As one observer has noted: "...the South African arms industry owes its development to foreign input..."<sup>82</sup> Armscor's

claims of 'indigenous' development and production of arms simply do not correspond to reality. Based on the data presented in this chapter and in Chapter Seven on arms and technology imports, it will be evident that the vast majority of South African military manufactures are in reality copies of Western systems; domestic systems reliant on key foreign components; or, outright imports disguised with a 'Made in South Africa' label.

An aspect of South African arms production of particular interest to this dissertation is the impact of the international arms embargo. On the one hand, South Africa was able to evade the UN arms embargo and import large quantities of arms and military technology (as will be shown in Chapters Five and Seven), but the embargo appears to have staunched the sale of major systems such as aircraft and naval vessels to Pretoria. South Africa failed in its bid to manufacture such major systems and herein lies the limited success of the UN arms embargo on Pretoria. The embargo was able to block the sale of fighter aircraft and naval vessels which apartheid South Africa was unable to manufacture domestically and the state was forced to waste considerable resources trying to break out of this key functioning element of the United Nations' embargo during the final decades of the Cold War.

On closer examination, Armscor's 'self-sufficiency' appears to be something of a cleverly designed facade. Why, one might

ask, would Pretoria go through the motions to create such a deception? There would appear to be at least two possible reasons. First, Armscor's formidable indigenous weapons systems -- as depicted in the South African press and by government spokesmen -- did much to assure white South Africans in the 1980s that the state would provide the means for defence of the white-ruled society. Despite government statements about the usefulness of the Alpha XH-1 helicopter as a test platform, there is some speculation that the project went ahead more as a public relations gesture. If Pretoria had begun canceling important long-term military procurement programmes, white South Africans might have concluded they faced an insecure future, thus fueling white emigration pressures. Instead, with the frequent unveilings of 'new' indigenous military systems, uncritical Western military trade journals and the media reported one South African arms production triumph after another. The message in the 1980s was simple: Armscor produces a formidable array of weapons with which South Africa can protect itself regardless of the arms embargo supported by a misguided West.

Second, it is possible that the facade of Armscor's self-sufficiency was created to provide cover for countries which agree to ignore the UN embargo and export advanced weapon systems, components of technology to South Africa. As was the case with the Mirage F1 fighter, a system could be shipped unassembled to be 'indigenously manufactured' by Armscor. It is possible

that this facade was especially groomed during the 1980s to prepare for the launch of the 'indigenous' Cheetah/Kfir and other soon-to-be unveiled systems such as submarines or frigates.

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## Chapter Four

### Yugoslavian armaments production: a case study

#### Introduction

An important aspect of Yugoslavia's Cold War policy of nonalignment was the development of a broad-based military industrial sector. Belgrade repeatedly suffered from arms cutoffs and embargoes from unreliable suppliers, the first of which was in 1938 after the dismemberment of Czechoslovakia which had been Yugoslavia's main inter-war arms supplier.

The perceived importance of indigenous arms production capacity grew with the Yugoslav government's enunciation of the doctrine of Total National Defence (territorial defence) in the late 1960s. Total National Defence called for the entire Yugoslav population to defend the country against an invader. A key element of this policy was a widely dispersed domestic arms industry which was supposed to continue producing in times of war.

Although Yugoslavia differed in many ways from the other two case studies in this dissertation, it nevertheless shared a series of circumstantial and systemic similarities with Israel and South Africa. Before turning to the more substantive themes of this chapter, it is useful to review the four case study

similarities -- set forth in the Introduction -- as they apply to Yugoslavia.

1) Limitations on relations with other countries:

Unlike Israel and South Africa, the limitations on Yugoslavia's relations with other countries have partly been self-imposed. As a leading member of the Nonaligned Movement, Belgrade sought to distance itself from the Superpowers and their respective blocs during the Cold War.

Even before the end of the Second World War, Yugoslavia's Communist Party under Josip Broz Tito sought to shift the country away from USSR. The Red Army reached the eastern boundaries of Serbia in September 1944 and on 21 September, Tito flew to Moscow to conclude an agreement for joint Soviet-Yugoslav action on Yugoslav territory. Tito sought to guard against making it appear that the Soviet Union had installed him in power and had Yugoslav Communist partisans set up their own administration in liberated territory and were the first to enter Belgrade. Soviet troops remained in the country only as long as was necessary to complete the offensive against retreating German forces in Austria and Hungary.

After the war, Stalin tried to force Yugoslavia to form a federation with Bulgaria. The directive was regarded by the Central Committee of the Yugoslav Communist Party as a thinly

veiled attempt to dilute the Yugoslav leadership and weaken the Yugoslav path to communism. Belgrade distanced itself from Moscow and Stalin's directive was ignored.

In March 1948, Stalin formally accused the Yugoslav Communist Party of 'revisionism' and in June the Yugoslav Party was expelled from the Cominform. Beginning in the summer of that year, the Cominform countries and the USSR successively denounced their respective treaties of friendship and mutual assistance with Yugoslavia. Soviet forces carried out manoeuvres on the Hungarian and Romanian borders with Yugoslavia and the possibility of invasion "seemed by no means remote".<sup>1</sup>

At the time of this forced break with the Soviet Union and the East Bloc, Tito's relations with the West had, paradoxically, reached their lowest levels since the end of the Second World War. Despite the Yugoslav contribution to the allied war effort, leaders of the Western powers, and in particular the United States, regarded Tito's postwar backing for the Soviet Union, his militant anti-Americanism, and his support for the Greek Communists as proof that Yugoslavia was the number one Soviet satellite.<sup>2</sup>

Nevertheless, with the onset of the Cold War, any weakening or break-up of what was widely regarded in the West as the 'Soviet Bloc' was a high priority for U.S. leaders. Even before the Yugoslav Communist Party formally modified its previous foreign policy, Washington had already taken the first steps to support

what it regarded as a more independent Yugoslav stance. In autumn 1948, the U.S. released the Yugoslav Royalist treasury of some \$47 million, and in early 1949 eased restrictions on exports to Yugoslavia. In September 1949 the first American loan to Belgrade of \$20 million was approved -- the political value of the gesture was far greater than the sum involved. In October, over Soviet objection, the U.S. supported Yugoslavia's admission to the UN Security Council. Finally, in December 1949, Washington gave a public guarantee of support for Yugoslavia in the event of a Cominform attack.<sup>3</sup>

For Tito, turning to the West for financial and military aid remained a political heresy, and as late as 1951 he publicly stated that Yugoslavia would never seek Western arms<sup>4</sup> -- even though the United States became Belgrade's single most important arms supplier from 1951-57.

The first Soviet-Yugoslav reconciliation, in 1955, began with a visit by Khrushchev and Bulganin in which they publicly apologised for post-1948 Soviet policy toward Yugoslavia on their arrival in Belgrade. But this first reconciliation lasted until 1957 when it foundered on, among other things, Chinese hostility to Yugoslav 'revisionism' at a time when Moscow was making every effort to maintain the USSR's deteriorating relations with China.

The Soviet invasion of Hungary in 1956, coming as it did during the thaw with Moscow, placed the Yugoslav leadership in a

highly awkward situation. The intervention was accepted by Tito as a 'lesser evil' and as a response to a situation which should never have been allowed to develop. This, however, satisfied none of the parties concerned with Belgrade's stance on the issue: Many Yugoslavs were alarmed about the endorsement of any Soviet intervention, and about the surrender of Hungarian leader Imre Nagy from asylum in the Yugoslav embassy in Budapest to his subsequent execution. Western leaders were angered over what they viewed as Tito's double standard given his criticisms of the 1956 Suez War. (Military sales from the United States were halted in 1957.) Soviet leaders were angered over what they perceived as ambivalence in Belgrade and the reaffirmation that of the idea that Yugoslavia should serve as an international model for socialism. Thus, Belgrade's insistence on taking an independent position served to severely damage relations with both East and West. But as Duncan Wilson has noted: "The essential moral of November 1956 was however that in the last resort Tito supported the existence of a 'socialist camp' even if he could not join it".<sup>5</sup>

The apparent impossibility of rebuilding a lasting relationship with the Soviet Union and Eastern Europe (given Tito's determination to adhere to a Yugoslav socialist path) and the ideological aversion to the West, left Belgrade with few choices for foreign friends other than the growing number of Third World countries. During the late 1950s Tito came to play an important

role in the build-up of the Nonaligned Movement. Following extensive travel in Africa and Asia, Tito organised a major world conference of non-aligned states in Belgrade in September 1961.

During the final two decades of Tito's rule, relations with both the Soviet Union and the United States warmed and cooled repeatedly. Links with Moscow improved in the early 1960s, but in spring 1968 Tito warned the Soviet leadership that any attempt to use force against the Dubcek government in Czechoslovakia would end in catastrophe. There was considerable Yugoslav enthusiasm for the 'Prague Spring' and Tito perhaps saw the governments of Eastern Europe looking to Belgrade for guidance.<sup>6</sup>

The August 1968 invasion of Czechoslovakia by Warsaw Pact forces came as an enormous shock to the Yugoslav leadership. The fact that Moscow could 'discipline' a socialist state without any serious reaction from the West added to the alarm of Yugoslavia's ruling Communists. Many in Belgrade believed that Romania and then Yugoslavia itself could become the victim's of Warsaw Pact 'disciplinary' forces.

The crushing of the Prague Spring movement marked a watershed in Yugoslav defence doctrine. Warsaw Pact forces were once again transformed into Belgrade's main military threat. A new territorial defence policy -- which viewed guerrilla warfare as a means to combat a superior invading force -- became official policy in February 1969. The landmark National Defence Law of

that year changed the very character of Yugoslav defence policy. Tito also met with Romanian leader Nicolae Ceausecu, and both men declared their determination to resist foreign aggression.

Relations with the U.S. warmed again during the 1970s, but in the final years of Tito's rule it appears that yet a further attempt at rapprochement with the USSR was attempted. Tito visited Moscow in 1979 and military co-operation with the Soviet Union was increased slightly. Nevertheless, Soviet use of Yugoslav naval facilities on the Adriatic was curtailed in 1979, officially due to a series of major earthquakes.<sup>7</sup>

In conclusion, Yugoslavia's relations with both Superpowers (and their respective blocs) were complicated and limited from 1945 through the end of the Cold War due to Belgrade's determination to maintain ideological purity and to lead in development of an international model for state socialism. Relations with Moscow ran a turbulent hot-cold during this period, while ties to Washington were always limited due to the leading role of the Communist Party in the Yugoslav political system.

Tito's desire to follow a nonaligned policy on the then East-West geopolitical faultline forced self-imposed limitations on the country's relations with the major powers in the post-war world. The implication of such a policy, linked to Belgrade's desire to play leadership role in non-industrialized Nonaligned Movement, was the establishment of an indigenous arms manufacturing capacity not least to break the world arms sales oligopoly

still controlled by a few industrialized powers during the 1950s and 60s.

2) External threats more widely perceived than internal threats yet internal threat probably of more fundamental danger to the state:

From 1945 the Yugoslav leadership largely perceived external threats as posing the greatest danger to the state.<sup>8</sup> Only in the initial post-Second World War period and again in the late 1980s and early 1990s did the central government view the major threat to the Yugoslav federation as coming from the country's mosaic of national, ethnic and religious groups. Defence planning from the late 1940s to the mid-1980s concentrated on external threats to the country.

But as the 1991 Yugoslav civil war and the subsequent break-up of the state showed, secessionist aspirations of the republics and autonomous regions remained an at least an equal danger to the Yugoslav federation.

Given the recent dissolution of Yugoslavia due to internal forces, it is useful to briefly review the national, ethnic and religious composition before turning to Belgrade's post-1945

defence policy and its concentration on external threats.

#### Unresolved nationality questions

"If anybody attacks us, we shall be united as one."

(Ranking Yugoslav official visiting a 'friendly' country in 1971.)

"But what will happen if nobody attacks you?"

(Ranking official from the 'friendly' country.)<sup>9</sup>

The Kingdom of Serbs, Croats and Slovenes was established on 1 December 1918 as one of the successor states of First World War. It comprised the former Austro-Hungarian provinces of Croatia-Slovenia, Dalmatia, and Bosnia-Herzegovina; the former independent kingdoms of Serbia (including present day Macedonia) and Montenegro; and small territories annexed from Austria and Hungary. The kingdom was renamed Yugoslavia in 1929, when internal borders were redrawn in an effort to break apart the various national and ethnic groups.

Despite a long history of efforts by the central authorities to develop a distinctive Yugoslav nationality, the old national questions and animosities remained and proved to be the most

enduring threats to the existence of the federal state.

In this sense, Yugoslavia was similar to Israel and white South Africa. All three countries faced widely fluctuating levels of external threat (or perceptions thereof) in the post-1945 era and developed their respective security regimes accordingly. However, for all three states a long-term threat to national existence appears to come from developments concerning the nationalities within their respective frontiers.

Yugoslavia was a multi-national federation comprised of six republics: Serbia (population, 1981 estimate, 9,313,000), Croatia (4,601,000), Bosnia-Hercegovina (4,120,000), Macedonia (1,912,000), Slovenia (1,892,000), and Montenegro (580,000), and two autonomous provinces within Serbia: Vojvodina and Kosovo-Metohija. Only some 1.2 million out of a total population of 22.4 million officially acquired the 'Yugoslav' nationality.<sup>10</sup> (Despite this, Tito himself maintained as late as 1962 that the national question had been solved via the fostering of a comprehensive Yugoslav socialist consciousness during the 1950s.) The ethnic, national and religious composition of Yugoslavia expressed in percentages at the time of the 1981 census was as follows: Serbs, 36.2 percent; Croats, 19.7 percent; Slovenes, 7.8 percent; Bosnian Moslems (regarded as a separate ethnic group), 8.9 percent; Macedonians, 6 percent; Albanians, 7.7 percent; Montenegrins Serbs, 2.5 percent; Hungarians, 2 percent;

and, Turks, 1 percent. In addition there were smaller groups including Slovaks, Romanians, Bulgarians, Czechs, and, Italians. Some 41 percent of the population was Serbian or Macedonian Orthodox, 31 percent was Roman Catholic, 12 percent was Moslem, and with Protestants and Jews each comprising less than 1 percent.<sup>11</sup>

The withdrawal of Slovenia and Croatia from the Yugoslav federation in 1991 makes it instructive to note an often overlooked 'frontier' that existed within Yugoslavia: Namely the old boundary between those regions which were formerly in the Austro-Hungarian Empire (roughly, Slovenia, Croatia and Dalmatia), and those which were in the Ottoman Empire (roughly Serbia, Bosnia, and Macedonia).

A number of nationality issues proved to be internal problems of recurring nature for Belgrade. These included Serb domination of the Yugoslav federation; the Albanian question; and, the Serbo-Croatian conflict.

The domination of Yugoslavia by the formerly independent state of Serbia began in 1918 with the establishment of the Serbian Karadjordjevic dynasty as the new state's ruling family. In post-1945 Yugoslavia, the predominant role of Serbia appeared to be checked when Tito (a Croat) created the two autonomous provinces of Kosovo and Vojodina in 1974, which were 'broken off' from Serbia and given the same rights as the other six republics. But by the late 1980s, Serbia again asserted a dominant role

under its populist, orthodox Communist leader Slobodan Milosevic. In October 1988, mobs loyal to Milosevic indirectly toppled the Communist Party leadership in Vojvodina and Montenegro and also prompted a purge in Kosovo. In March 1989, Serbia asserted full control over Kosovo and Vojvodina through a constitutional change which brought both autonomous regions back under full Serbian sovereignty.<sup>12</sup>

Milosevic owed part of his enhanced role during the late 1980s to the recurring tensions between Serbs and Albanians. The largely Albanian Kosovo and its Pec region are regarded as the very cradle of Serbian civilization. Defeated by the Ottoman Turks in 1389, when the Serbs recaptured Kosovo in 1912-13, it was considered something of an entry to Jerusalem. But the subsequent massacres of ethnic Albanians in the region appear to have begun the contemporary poisoning of Serbo-Albanian relations. The region was colonised by Serbs with the goal of re-establishing Serbian dominance. Cyclical violence continued after 1945, and under Aleksander Rankovic, the head of Yugoslav state security during the early 1960s, the Serb population in Kosovo was given considerable liberty to maltreat the Albanians.

The Serbo-Albanian conflict became so violent that Tito's own position appeared under threat and Rankovic was expelled from the Communist Part in 1966. Greater autonomy and expanded cultural rights were granted to the ethnic Albanians in 1968, and in

1974 the autonomous province of Kosovo was created. Violent riots by Albanian nationalists, which resulted in several deaths, took place in 1981. In 1989 more than 20 died during clashes with the Yugoslav federal army in what The Economist called an "Intifada in the Balkans".<sup>13</sup> Kosovo's Serbian population increasingly viewed itself as abandoned and under threat during the 1980s and it was alleged that ethnic Albanians, who comprise 90 percent of the population in Kosovo, were engaged in acts of intimidation so as to force the Serb population to leave. Serbo-Albanian antipathy ran so deep by the late 1980s, that newspaper articles in Serbia equated the Albanians with the Turks who vanquished Serbia in fourteenth century.<sup>14</sup>

A final Yugoslav nationalities conflict is that between the Serbs and Croats. The fighting between Serbian and Croation forces during the summer of 1991 was only the latest outburst in the violent relationship between Serbs and Croats since Yugoslavia's creation. Croation resentment of Serb domination between 1918 and 1941 was manifested in the massacres of reportedly hundreds of thousands of ethnic Serbs living in Croatia during the short-lived Croation state created by the Nazis during the Second World War.<sup>15</sup> In 1971, following Croation demands concerning control of the armed forces, education, and language, an originally sympathetic Tito ultimately sent the federal army to crush the nationalists, purge the Croation Communist Party, and restore central authority.

## Defence policy directed at external threats

But despite these internal conflicts the Yugoslav People's Army has been "preoccupied" with external security since 1948.<sup>16</sup> Yugoslav military forces were designed to defend the country against all external threats with a purely conventional army for nearly 25 years after the Second World War. Although post-War Yugoslav defence planning always included some elements of guerrilla warfare, the idea of territorial defence, based on mass popular involvement, was not formally enunciated as a new doctrine until 1969.

The decision to emphasise a standard conventional force immediately after the Second World War was influenced by a number of factors. First, Soviet models were highly regarded during this period and it was natural that the Yugoslav army should take examples from the administrative and structural models of the Red Army. Second, in the initial post-War period the main military problem for Belgrade was internal: the central government needed large forces in order to reassert control over a fragmented country. Third, Yugoslavia viewed itself as a member of the victorious allies club and planned to acquire territories from Italy and Austria and expand the Yugoslav federation to include

much of the Balkans. Thus, in the initial post-War period "All these factors, coupled with the lack of a major external threat, pointed to the need for a strong centralized army able to intervene quickly in a local conflict." <sup>17</sup>

But the crisis between Yugoslavia and the Cominform powers, which began in 1947, changed the entire Yugoslavian defence calculus. The expulsion of Belgrade from the Cominform in 1948 and the crisis with the East Bloc -- which lasted until Stalin's death in 1953 -- marked a clear shift in the Yugoslav leadership toward emphasising external dangers to the state.

Following the first Yugoslav-Soviet rapprochement in 1955 Belgrade came to view the external threat as coming from the West. The Israeli seizure of Arab lands in the Six Day War; the U.S. involvement in Vietnam and the Dominican Republic; the ousting of Sukarno in Indonesia, Nkrumah in Ghana, and Ben Bella in Algeria, and the coup d'état in Greece, all served to enhance this perception.<sup>18</sup> The August 1968 invasion of Czechoslovakia by Warsaw Pact forces came as such a shock to the Yugoslav leadership precisely because it so undermined what had become the conventional 1960s Weltanschauung.

In the aftermath of the 1968 Warsaw Pact invasion of Czechoslovakia, Tito and other senior Communist leaders viewed Yugoslavia as under potential threat of invasion from Warsaw Pact forces. During the initial crisis period the Yugoslav People's Army was placed on a state of alert and large numbers of reserves

were called into active service. Forces were redeployed from the old areas of threat perception -- the Italian, Greek and Austrian borders -- and redeployed along the eastern and northern Yugoslav frontiers. This call-up and redeployment revealed considerable weaknesses in the mobilisation and logistics system of the army <sup>19</sup> and thus highlighted the arguments which had been raised against over-dependence on conventional forces to defend the country.

A detailed new 'Law of Total National Defence' (which had been under preparation prior to the invasion of Czechoslovakia) was rushed through the Federal Assembly and ratified early in 1969. Under the National Defence Law it was emphasised that any invader would face both the regular army and also the popular militia, comprised of all Yugoslavs from 18 to 65 years of age armed with cheap defensive types of weapons. The hope was to make the Yugoslav federal state appear as tough as the Americans had found the North Vietnamese.<sup>20</sup>

Under the National Defence Law it was established that the Yugoslav armed forces consisted of both the Yugoslav People's Army and the Territorial Defence forces. The former encompasses the army, air force and the navy as a unitary force. The latter includes the Territorial Defence units. This was a radical change from the past where the Yugoslav People's Army was the sole armed force for the country's defence: The 1969 law made

both army and territorial defence forces co-equals, at least in theory.

In the years following the 1969 National Defence Law, pressures grew for a de-centralisation of the armed forces. In June 1971 the Yugoslav Federal Assembly adopted the 36th Amendment to the constitution of 1963 which empowered the constituent republics and autonomous provinces of the federation to organise and direct their respective territorial and civil defence units. But following the subsequent 1971 unrest in Croatia, Tito and the Yugoslav army pushed through a new National Defence Law in 1974 replacing that of 1969. The significant change in the 1974 Law is that it emphasises the central character of the Yugoslav defence system.<sup>21</sup>

This move to re-centralise the armed forces into one of Yugoslavia's few institutions not divided into its republican parts remained deeply unpopular. During the early 1990s, as the Yugoslav federation began its break-up, one of the most contentious issues were attempts by the federal army to disarm the republican defence forces.

In an ironic historical twist, the republican armed forces -- built up to defend the Yugoslav federal state against the external Warsaw Pact threat -- came to comprise a key element of the long underestimated centrifugal forces tearing the country apart. The territorial units of republics like Slovenia partly proved that Tito's old goal of creating defence forces modeled on

the North Vietnam had been met: Slovenian forces defended their home territory against the 'foreign' Yugoslav federal forces with far more tenacity than most observers -- including the central government in Belgrade -- had expected.

3) Victim of arms embargoes and arms control restrictions:

Yugoslavia has been the victim of a series of arms cutoffs and embargoes which predate the Second World War. In the first of these in 1938, the dismemberment of Czechoslovakia meant that Belgrade's primary inter-War arms supplier ceased to exist.

From 1945-48, Yugoslavia received arms from the Soviet Union, but already by 1947 disagreements between Tito and Stalin over foreign policy began to taint the arms sales relationship between Moscow and its client. In 1948 after the Yugoslav military delegation in Moscow was unable to arrange for the supply of any further weapons and equipment for the country's nascent shipyards and defence production sector "(Tito) made no attempt to conceal the very serious consequences of the attitudes now adopted by the Soviet authorities for the Yugoslav armaments industry and Five Year Plans."<sup>22</sup> This was a classic example of the historic Soviet unwillingness to share arms manufacturing

technologies with allies.

During the entire Cold War, the Yugoslav leadership repeatedly attempted to play off one superpower against the other with regard to arms sales. At the first sign of a split between Moscow and Belgrade, the United States signaled willingness to supply financial credits and arms. The first shipment of American arms arrived in May 1951 and further U.S. arms exports were formalised through the Military Assistance Agreement between the U.S. and Yugoslavia in November of that year.

But in 1956 Washington temporarily withheld deliveries of military aircraft and other equipment. All American military assistance grants to Belgrade were terminated by 1958.<sup>23</sup>

During the 1960s the Soviet Union again became Yugoslavia's main foreign arms supplier. Repeated attempts by Belgrade to diversify its sources of major weapons systems "were only slowly reciprocated by Western governments"<sup>24</sup> which were hesitant to embrace the Communist-led state.

The USSR again used arms sales to exert pressure on Belgrade in 1970. Moscow attached conditions to the renewal of a five-year arms purchasing agreement on the verge of expiration, which included a demand that Yugoslavia co-operate more closely with Warsaw Pact forces.<sup>25</sup>

The final example of a foreign arms cut-off to Yugoslavia was in July 1991. In response to federal army moves against Slovenia, the European Community approved a full arms embargo

against Belgrade, as did countries like Sweden.

4) Structural requirements and the limits of technology and finance:

Yugoslavia has been highly reliant on foreign technology for the development of its defence sector industries. As will be shown below, most Yugoslav weapons are copies of foreign systems; licence-produced systems; or else require key foreign components.

Yugoslavia's defence industries have also been indirectly reliant on foreign financing. During the period 1949-53, for instance, the West (especially the U.S.) underwrote all Yugoslav trade deficits and provided extra aid after the catastrophic drought of 1950. Total aid from the West during this period amounted to over \$1.5 billion -- a considerable sum at this time -- and, according to Robert Byrnes: "This made it possible for the Yugoslav government to proceed with plans for industrialization and building an armament industry".<sup>26</sup>

During the 1980s, when such volumes of foreign aid were not forthcoming, Yugoslav defence industrial spending on projects such as a multi-billion dollar fighter aircraft programme, helped steer the country toward economic catastrophe. By the end of the

1980s, Yugoslavia had slid into a political and economic crisis which was crowned by inflation rates of over 200 percent and a foreign debt of more than \$20 billion.<sup>27</sup> With the breakup of the Yugoslav federation in 1991, the United States and the European Community cut all foreign aid to Belgrade.

#### The Yugoslavian military industrial sector

The Yugoslav leadership fostered the development of a domestic defence industrial sector since the end of the Second World War -- far longer than the two other case studies in this dissertation. As will be shown below, the resultant industrial infrastructure is somewhat different than that of Israel and South Africa. This reflects, among other things, Yugoslavia's more limited financial means and a series of decisions in Belgrade regarding the maintenance of high levels of civil goods production in defence factories and favouring production of more basic weapon systems over state-of-the-art technology.

It must be stressed that there has been very limited reporting or analysis of Yugoslavia's arms industry or arms exports in

the country's press or in domestic academic publications. One of the first instances occurred in early 1988 when the Slovenian youth magazine Mladina criticised the Yugoslav military for delivering weapons to Ethiopia while other countries were sending food aid. In response, the state prosecutor brought charges against the magazine. Nevertheless, Mladina's coverage stimulated similar, albeit less radical coverage of this and similar stories in papers such as the Slovenian Communist Party newspaper Delo.<sup>28</sup> The quantity and quality of independent reporting and study on the Yugoslav arms industry compares very badly with Israel and even poorly with South Africa.

The development rationale for Yugoslavia's military industries

The rationale for developing a domestic arms industry, as described by Yugoslav security analysts, are similar to those of Israel and South Africa. These include:

- 1) The ending of technological and other forms of dependence on the leading producers of armaments and military equipment.

- 2) To speed development of the national economy and tech-

nical development; and to create greater scope for employment.

3) To improve the balance of payments in dealing with other countries by reducing expenditures for military imports and to secure means of payment from arms exports.<sup>29</sup>

I will examine points one and three in this section. Point two lies beyond the scope of this dissertation.

The desire to reduce Yugoslav dependency on foreign sources of weapons and military materiel played the primary role in the decision to develop a domestic arms industry. Three historical problems with arms supply and a key foreign policy shift combined to make development of a domestic arms industry a priority for post-1948 Yugoslavia.

Historical problem number one is Belgrade's experience on the unreliability of foreign arms suppliers, outlined above.

Historical problem number two stems from the difficulty of supplying a partisan army during a conflict, a serious problem for the Yugoslav Communists during the Second World War. As Col. Fabijan Trgo said in an essay published in a volume of Tito's Selected Military Works, "Obtaining weapons...was one of knottiest problems faced by the Partisans. The chief source of arms for the units were captured enemy weapons...."<sup>30</sup> Yugoslav poli-

cy, particularly after the 1969, placed emphasis on territorial defence and stressed development of arms industries which could continue to function during a war. It should be noted that the idea that arms industries could function during a war was regarded with some skepticism by foreign observers.

Historical problem number three is the poor quality, high price and potential unsuitability of imported weapons. In 1950 Tito described imported tanks from the Soviet Union as "worn out", guns which were "obsolete", field telephones that were "unworkable", and other military supplies that equally "worn, rusty and useless". Furthermore, Tito complained that the price for such imported equipment was far more than Yugoslavia could afford.<sup>31</sup> The cost of importing weapons remained a major concern of an increasingly indebted Yugoslavia. The unsuitability of imported weapons is a potential problem of more contemporary origin which centres on the post-1969 shift to a territorial defence doctrine. Weapons systems for Yugoslavia's armed forces were to be rugged, operational with the smallest of units, easily repairable, cheap, effective under Balkan conditions, and, compatible with Yugoslav territorial defence tactical doctrines.

Belgrade's foreign policy shift to a leader of the Non-Aligned movement is a further factor which positively influenced development of an indigenous arms industry. "Nonalignment called for nondependence on one or the other bloc for weapons, and

logically demanded development of indigenous capacities."<sup>32</sup> Indigenous production of arms in Yugoslavia was a goal, not least so as to offer other aspiring members of the non-aligned world an alternative source of arms.

The initial push to develop indigenous arms manufacturing infrastructure in Yugoslavia came during the period 1948-53. Prior to 1948 the Soviet Union had not allowed Belgrade to build its own arms industries and this ultimately became one of the issues of contention between Tito and Stalin. The Soviet desire to prevent Belgrade from developing indigenous arms production capabilities was so extreme that despite the fact that Yugoslavia imported Soviet mortar systems, even an application to build a factory to manufacture shells was rejected.<sup>33</sup>

#### The structure of the Yugoslav defence sector

The structure and production programme of Yugoslav defence industries was unique in a number of aspects. First, unlike most former East European state socialist countries, the majority of Yugoslavia's defence industries were not state-owned, but rather are operated under a worker self-management system. Second, probably none of Yugoslavia's defence industries were solely devoted to military production. According to Yugoslav sources, only

30 percent of the capacity of arms manufacturers was devoted to weapons production.<sup>34</sup> No official figures for defence sector employment are available but a SIPRI study estimates that some 60-70,000 people worked the Yugoslav arms industry.<sup>35</sup>

Nicol lists some 27 industries as having played a role in Yugoslav armaments production.<sup>36</sup> Among these companies were some of the largest industrial concerns in Yugoslavia. Zavodi Crevna Zastava, which ranked number ten in earnings, manufactured only arms until 1953, after which it began to manufacture Fiat automobiles and other light vehicles. The concern specializes in light weapons and anti-aircraft systems.

Soko Aircraft, in a joint-venture with Romania manufactures the Orao fighter aircraft. The Jastreb Airplane and Glider factory produces both the Galeb and the Jastreb reconnaissance, training and operational conversion aircraft.

Iskra Amalgamated Enterprise, established in 1946 as an electronics and precision-mechanics concern, was the most important Yugoslav producer of hand-held and tank laser range-finders.

The Tovarna Automobilov in Motorjev -- known by its acronym TAM -- manufactures the TAM line of trucks and the M-70 light pontoon bridge.

Rade Koncar is one of former Yugoslavia's largest electrical concerns. It produces, among other things, tactical communications systems.

Prva Petoljetka, based in Trstenik, specialises in hydraulic and pneumatic equipment seals and tools for military vehicles, submarines and aircraft, as well as pneumatic components for guns and missile launchers.<sup>37</sup>

Interestingly, ten of the 27 concerns listed by Nicol are shipyards. In keeping with the policy of mixing civilian with military production, it appears the Yugoslav authorities have made a serious effort to distribute naval projects among the country's shipyards. The shipbuilding industry was Yugoslavia's third biggest export earner and although shipyards in nearly every country have been forced to close since the first oil crisis of 1973-74, even by the end of the 1980s not a single Yugoslav shipyard had been closed down.<sup>38</sup>

#### Legal aspects of Yugoslav arms production

As most Yugoslav arms producers were not state-owned, the country had a host of laws governing manufacture and sale of weapons which changed considerably as the defence sector grew. The 1965 Law on Enterprises Manufacturing Goods for Particular Military Purposes regulated government allocations and set standards required for Yugoslav defence materiel. New national defence laws were passed in 1969 and 1974, as were additional federal regulations for arms producers. In February 1975, delegates from

Yugoslavia's arms producers met and ratified the establishment of the Industrial Association for the manufacture of Weapons and Military Equipment (INVOJ). The stated purpose of the organisation was to promote greater efficiency in the use of existing facilities, to co-ordinate defence production and research and to improve productivity. In addition, the INVOJ was to assist in developing economies of scale in production and procurement of raw materials. No list of member companies is available as membership in the INVOJ is considered a state secret. However, one Yugoslav source reported that in 1978 the association had 30 members and that while no new weapons plants were being built, the number of industries involved in defence production continued to grow.<sup>39</sup>

In 1978 further legislation concerning the arms industry was proposed in the Federal Assembly. The reason for the proposed laws was: 1) a fear that the arms industry was becoming out-of-date in some sectors; 2) the realisation that existing laws did not take into account the growing number of sub-contractors for components and sub-assemblies; 3) the desire to control prices for weapons, components and raw materials used in arms production; 4) the need to co-ordinate arms exports; 5) the desire to move production facilities and exports under a stricter security control regime.<sup>40</sup>

The Federal Assembly subsequently ratified three new laws

dealing with the arms industry in 1979. The first of these brought arms producers under tighter state control in that it required Yugoslav arms producers and the Federal Directorate for Sales and Reserves of Products for Special Purposes reconstitute the INVOJ association as a state body. The third law centralised control over arms production through the Federal Secretariat of National Defence (FSND), which is empowered to decide which concerns were to function as arms producers. Yugoslav defence production was regulated by Belgrade under the terms of this third Law and was fixed at levels set by respective Five Year Plans. Nichol argues that the Laws of 1979 -- which gave the FSND greater control over the relatively de-centralised arms industries -- paralleled moves by the Yugoslav army to recentralise control over territorial forces and represent an aspect of the growing role of the military in Yugoslav politics and society from the late 1970s.<sup>41</sup>

#### Arms production in Yugoslavia

The Yugoslav arms industry advanced considerably since its difficult birth in the late 1940s, when German designs were among the main sources for light weapons production.<sup>42</sup> At the time of break-up in 1991, the country's defence sector produced everything from small arms up to the Orao fighter aircraft. In

making this point, however, it must be stressed that there was a major foreign content in all advanced Yugoslav weapon systems, and that even the most of the country's 'domestic' small arms are copies of foreign systems.

Nevertheless, the explicit acceptance by Yugoslav authorities of high levels of foreign components and production under foreign licensing agreements made Yugoslavia different from Israel and South Africa. The Yugoslav leadership regarded licensing as an economical means of obtaining weapons, components and defence technology transfer. It was a broadly accepted Yugoslav defence procurement policy that to save R&D costs it was often preferable to manufacture arms under licence.<sup>43</sup> This did not mean that Yugoslav defence planners regarded licensed production of arms as positive. The army monitored foreign licensing agreements for arms production and in 1982 reported that out of 540 types of major weapons and military equipment systems produced in Yugoslavia, some 60 were tied to foreign licences.<sup>44</sup> This assertion ignores the fact Yugoslavia relied on foreign suppliers for its most sophisticated weapons systems -- as will be shown below.

Despite the considerable efforts to build up a credible defence industrial sector, Yugoslavia, similar to Israel and South Africa, appears to have fallen technologically ever further behind the major arms producers during the 1970s and 80s. Anton

Bebler has noted that as military R&D and defence production accelerated in both the East the West blocs, Yugoslavia found it could not compete.

Economic, scientific, technical, political, and other barriers prohibit Yugoslavia from participating in these developments in a serious manner and (instead) Yugoslavia must rely on foreign assistance or else buy modern weapons in the international market."<sup>45</sup>

Technology transfer via licensing and the copying of foreign systems was, therefore, the backbone of military research and development in Yugoslavia. This naturally meant that much of the country's military production was not anywhere near state-of-the-art. But since the 1960s, defence policy officials made some effort to model security policy on the country's structural and economic constraints. As Brzoska and Ohlson have observed: "Yugoslavia does not attempt to produce weapons at such a high level...but has a broad basis for the production of less advanced weapons."<sup>46</sup>

The bulk of the Yugoslav Army's major weapons systems are either manufactured under licence or are bought 'off the shelf' from foreign suppliers. (Belgrade's considerable dependency on

outright arms imports will be examined in Chapter Seven.) Before examining Yugoslav defence production on a sector by sector basis, it is useful to review the major military systems manufactured in Yugoslavia under foreign licence. These include:

-Soviet T-54/55, T-62, and T-72 tanks.

-The Soviet Shersben fast attack boat.

-The Aerospatiale-Westland Gazelle helicopter (designated Partizan), under French licence.

-The Viper MK 632-41 turbojet engine and afterburners for Yugoslavia's Orao fighters, under licence from the UK's Rolls-Royce. The Orao reportedly has navigation and fire control systems of UK, French and Swedish origin. The Yugoslav manufactured Galeb fighter also is powered by Viper engines.

-Snapper and Sagger anti-tank guided missiles from the former Soviet Union.

-The 81mm M-68 and 120mm UBM-52 mortars are built under licence from Germany's Hotchkiss-Brandt.

-The three-barrelled 20mm anti-aircraft M-55 and M-57 cannons are manufactured under licence from Hispano-Suiza, now part of the Oerlikon-Buhrle Group of Switzerland. A variant of the M-55 is built under licence from Galileo of Italy.

-The towing vehicle for the M-55 is the Fiat Campagnola 1107 built under licence from Fiat.

-The TAM 43 engine for the TAM 1500 truck is produced under licence from Klockner-Humboldt-Deutz of Germany; the TAM Pi 561 and Pi 563 trucks under licence from Czechoslovakia; the TAM 4500, 5000, 5500 and 6500 trucks under licence from Magirus-Deutz of Germany; the FAP 2220 BDS and FAP 2020 BS truck engines are produced under licence from Britain's BL; the FAP 4, 6, 10 13, 15, and 18 trucks are built under licence from Saurer of Austria.

-The diesel engine for the M-60 armoured personnel carrier is produced under licence from Steyr of Austria.

-Diesel engines from Pielstick of France and Proteus gas turbines from Rolls Royce of the UK for fast attack craft.

-Diesel engines from General Motors for the M-117 class minesweeper.

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Sources: Nichol, 'Yugoslavia', in Katz, pp. 344-6, 362 fn. 36; Mark Urban, 'Yugoslavia offered military technology', The Independent, 4 November 1986; Milan N. Vego, 'Yugoslav armed forces since 1968', pp. 150-2; 'Orao - jugoslawisch-rumänisches Kampflugzeug,', Neue Züricher Zeitung, 19 December 1975; Richard Holmes, 'Yugoslavia', in John Keegan (ed.), World Armies 2nd ed. (London: Macmillan, 1979), p. 674.

Yugoslav approaches to weapons design were similar to those in the former Soviet Union. Emphasis was on follow-on systems and off-the-shelf components. Foreign weapon systems were carefully analysed to glean new innovations. Under such a design regime, innovation took place in a highly conservative and incremental manner. Nichol claims that such design practices did not stifle the creativity of Yugoslav weapons designers and that the overall level of the country's industrial and scientific development allowed researchers to assimilate innovations and graft Western components and techniques to produce some unique Yugoslav systems. Yugoslav Laser range finders and anti-tank rockets are cited as particular examples, but the author is only able to cite official Yugoslav claims of their 'distinctive nature' and effectiveness.<sup>47</sup>

## Aircraft

Yugoslavia had three important aircraft manufacturers prior to the Second World War: Ikarus, the First Serb Aircraft Factory and the Zmaj Airplane and Hydroplane Factory. All were destroyed during the war and in 1946 the Ikarus plant was nationalised and the remnants and technical staff of the three pre-War concerns were incorporated under Ikarus.<sup>48</sup>

Production of the Soviet Ilyushin IL-2, a trainer version of the IL-2 and the YAK-3 at the reconstructed Ikarus plant began before 1948. The first 'Yugoslav' aircraft produced after the war was the S-49 trainer which was based on the Soviet Yak-9. Ikarus produced Yugoslavia's first jet aircraft in the early 1950s, including the 451 M trainer and the 452 reconnaissance aircraft.<sup>49</sup>

The Orao (eagle) fighter/ground attack aircraft project, undertaken jointly with Romania's CIAR aircraft factory (but with Yugoslavia's Soko Metal Industries in the senior position) is an example of the technical abilities which placed Yugoslavia among the more advanced arms producers of the industrialising countries. The Orao, which bears a marked similarity to the Anglo-French Jaguar and the Fiat G-91Y, made its first test flight in 1974.<sup>50</sup> The Yugoslav Air Force had taken delivery of some 80

Oraos by 1988.<sup>51</sup> Since 1982 the Orao had been manufactured in at least five versions including one with the more advanced Rolls-Royce 632 Viper engine.<sup>52</sup>

As is the case with major aircraft projects in Israel and South Africa, the Orao has such a high foreign component input that analysts must question whether it can really be considered indigenous. In addition to using Rolls-Royce engines manufactured under licence, the Orao requires a variety of other foreign components. These include hydraulic landing gear based on designs from Messier-Hispano-Bugatti; cockpit seats designed by the UK's Martin Baker; main electrical system supplied by Lucas; a GEC Avionics three-axis stability augmentation system; and, a Thomson-CSF head-up display for the aircraft's fire-control system.<sup>53</sup>

An earlier Yugoslav aviation project was the Soko G2-A Galeb (seagull) trainer/light attack aircraft, first test flown in 1961. Produced in two versions, the Galeb also requires key foreign components for its manufacture. These include Rolls-Royce Viper 11 MK 22-6 turbojet engines; a British Aerospace Folland cockpit; a Marconi radio compass; and, an Aereospatale radio transceiver.<sup>54</sup>

The Soko G-4 Super Galeb light strike and training aircraft is a completely redesigned plane, meant to replace the G-2 Galeb. First tested in 1978, the G-4 Super Galeb is powered by a Viper

mk 632 engine from the UK's Rolls-Royce. The G-4 requires a number of other important foreign components for its construction. These include Dunlop tyres; a Martin-Baker cockpit; a radio compass from GEC; a Collins marker beacon receiver and radio altimeter; and, a Ferranti gyro gunsight.

The most ambitious Yugoslav aerospace project for the 1990s was the manufacture of a supersonic multi-role fighter, the Novi Avion, as a replacement for the air force's MiG-21s. Despite criticism over rising costs -- now projected at well over \$2 billion -- the project remained on track.<sup>55</sup> Yugoslavia's influential military lobby regarded the Novi Avion of crucial importance, not merely for the air force, but also for technical spinoffs which it was claimed would narrow the gap separating Yugoslavia from most developed countries.

But foreign observers say Yugoslavia may have over-reached in the Novi Avion project and, if the project is not canceled due to the Yugoslav break-up, it will be 1995 at the earliest before production of the airframe can begin.<sup>56</sup> Yugoslav officials recognised that the Novi Avion would require a vast foreign input in order to get off the ground. Discussions regarding joint development of the airframe were held with U.S. and European companies including Boeing, Aerospatiale, Dassault-Breguet, and Messerschmidt-Bölkow-Blohm. The Novi Avion's engine will also be an import. Rolls-Royce, Pratt & Whitney and General Electric have submitted proposals to Belgrade and Yugoslav officials were

expected to choose from the Turbo-Union RB. 199, the Pratt & Whitney PW1120, and the General Electric F404.<sup>57</sup>

### Naval vessels

Yugoslavia's shipyards manufactured submarines and naval vessels up to the size of corvettes beginning in the 1950s. As with most areas of Yugoslav domestic arms production, naval shipbuilding requires considerable inputs of foreign technology and components.

Yugoslavia's submarine manufacturing programme began with launch of the first Sutjeska class patrol submarine in 1958. Built at the Uljanik Shipyards, the Sutjeska was subsequently modified with Soviet electronic equipment and weapons systems. A successor to the Sutjeska class was the Heroj class submarine, first launched in 1967. The Heroj class submarines were manufactured with Soviet electronic equipment and weapons systems. Likewise, the 1970s generation of Yugoslav submarines, the Sava class, was also built with Soviet electronics and weapons systems. The first vessel from the 1980s generation of Yugoslav submarines, the Una class, was commissioned in 1985. Little is known of its construction or armaments.<sup>58</sup>

Yugoslavia also built a two-man submarine, the R-2 Mala

class, which has been exported to a number of countries.

Yugoslavia's shipyards manufactured a variety of corvettes and smaller patrol boats. The Kobra class type 400 corvette, first launched in 1985, uses a German MTU 538 TB 92 diesel engine. The Mornar class corvette, manufactured in the 1950s and 60s, is powered by a SEMT-Pielstick diesel engine and is fitted with Soviet sonar equipment.<sup>59</sup>

The Koncar class missile/fast patrol boat, designed by the Naval Shipping Institute in Zagreb, is based on Sweden's Spica-class fast patrol boat and uses Rolls-Royce gas turbines and German MTU diesel engines. The Koncar's fire control system is a Swedish FCS 9 LV 200 and the radar is a Dutch Philips TAB system.<sup>60</sup>

The Mirna class fast attack/patrol boats, first commissioned in 1981 use SEMT Pielstick diesel engines.

Former Yugoslav shipyards produce a number of smaller patrol boats which appear to be mostly indigenous. These include the Kraljevica class types 131, 501, and 519 large patrol craft and the types 15, 16, 18, 20 and 80 coastal patrol craft.<sup>61</sup>

## Rockets

Yugoslavia has a limited rocket production programme. The M-77

Oganj multiple rocket system, which fires a round of 32 128mm rockets was developed in the early 1970s and is reportedly similar -- but inferior -- to the Czechoslovakian RM-70. The range of the rockets is 20 km. The entire system is either mounted on a Yugoslav FAP 2220 BDS truck or produced in a towed version known as the M-63 which has a maximum range of just under 9 km.<sup>62</sup>

#### Tanks, armoured vehicles and howitzers

Yugoslavia has manufactured the T-72/T-74 tank under licence since the early 1980s. The tank, designated M-84, is the country's main battle tank.

Yugoslavia's ISKARA concern and Sweden's L.M. Ericsson had a co-operation agreement since at least the 1970s for the development of lasers, some of which have been used to upgrade Yugoslavia's Soviet-manufactured T-54/T-55 tanks.

The BOV-3 triple 20mm self-propelled anti-aircraft gun system was unveiled in 1984. Nothing is known about foreign input to the system other than that the engines powering the vehicle are German Deutz type F 6L 413 F diesels.<sup>63</sup>

The M-980 mechanised infantry combat vehicle entered production in the early 1970s. Although designed in Yugoslavia, it requires a number of key foreign components. These include a

French engine, Soviet anti-tank weapons, and a 20mm cannon manufactured under Swiss licence.<sup>64</sup>

The M-55 A2 anti-aircraft gun, manufactured since 1955, is basically an licence-produced weapon consisting of three Hispano-Suiza guns mounted on a towed carriage. The system is produced in a number of modified versions. The M-75 anti-aircraft gun is based on a Hispano-Suiza gun.<sup>65</sup>

Yugoslavia's M65 155mm howitzer is a copy of the U.S. M114A1 howitzer. According to Jane's Armour and Artillery: "The M65 is virtually identical to the American model and differs only in detail."<sup>66</sup>

#### Light weapons and small arms

Yugoslavia is not only reliant on foreign technology or licenced production for major weapons systems. A second area of dependency is in the area of small arms and light weapons systems which are actually copies of foreign systems. Given the limitations of sources it is impossible to compile a complete listing, but the following provides an illustration:

-Standard issue 7.62mm pistol is a copy of the Soviet Tokarev

TT23

-9mm M65 pistol is a copy of the Tokarev TT

-7.62mm sub-machine gun (SMG) is a copy of the PPSH 1

-7.62 M59/66 automatic rifle is a copy of the Soviet SKS

-7.62mm M70 assault rifle is a copy of the Soviet AK-47.

-7.62mm M65A/B is a copy of the Soviet Kalashnikov LMG

-7.62mm M53 SARAC LMG is a copy of the German MB42

-M-48 bolt action rifle is a copy of the German Mauser 98K

-the 50mm light mortar is similar to the British 2 inch light mortar; the 60mm M-57 has been developed from the U.S. 60mm M-2; the 81mm M-31 is a copy of the U.S. 81mm M-1

-the M-57 anti-tank grenade launcher is similar to the Czech p-27; the M-18 57mm recoilless gun is based on U.S. design.

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Sources: 'Yugoslavia', in John Keegan (ed.), World Armies, 2nd ed. (London: Macmillan, 1979), p. 674; Milan Vego, 'Yugoslav

armed forces since 1968', in Defence Yearbook 1983 (Oxford: Brassey's for RUSI, 1983), p. 152.

## Conclusion

Yugoslavia was subjected to a rigorous arms embargo by the Soviet Union and its East Bloc allies beginning in 1948. This embargo sparked initial development of the country's arms manufacturing sector in the late 1940s and 50s. Arms production capabilities were further expanded after the 1968 Warsaw Pact invasion of Czechoslovakia.

But from the preceding pages it is clear that Yugoslavia failed to achieve the desired independence of foreign arms suppliers through the development of domestic weapons production. Belgrade remained highly dependent on the industrialised countries for technology and components for development of its arms industries throughout the Cold War and almost all domestically manufactured Yugoslav weapons required key foreign components or technology inputs.

As with Israel and South Africa, fighter aircraft illustrate the depth of Third World military industry dependency in the case of Yugoslavia. Belgrade's <sup>Novi Avion</sup> fighter -- if built -- will require a foreign engine, numerous other foreign components and

probably the full-scale technical participation of an aerospace concern from one of the industrialised countries. The <sup>Novi Avion</sup> is a mirror for most of Yugoslavia's other 'indigenous' weapons systems which were licence-produced or merely copies of Soviet or Western systems.

The reliance of Yugoslav Army on indigenously manufactured copies of foreign weapons systems, licence-produced arms, or key weapons systems requiring foreign components was only part of the story concerning chronic Yugoslav dependence on outside sources for arms during the Cold War. Prior to its 1991 break-up, Belgrade still relied on Soviet weapons systems for all its front-line defences. Important imports from the former Soviet Union in the 1980s included MiG-29 fighters, tanks and naval vessels. This aspect of the limited success of Yugoslavia's indigenous arms production sector is illustrated in Chapter Seven which outlines Belgrade's imports of 'off the shelf' weapons systems.

As an example of Third World arms production, Yugoslavia serves as middle point between the lavish military industry development aid enjoyed by Israel and severity of the UN arms embargo imposed on South Africa. Although Belgrade was able to produce an array of weapons systems during more than 40 years of Cold War production, the fact that the country never broke free of military dependency on the industrialised states -- especially the former Soviet Union -- must serve as a warning to other

aspiring Third World arms producers which, like former Yugoslavia, lack a powerful economy or a wealthy patron.

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**Part Three -- Arms export and imports**

## Chapter Five

### Israel and South Africa: A Dual-Level Relationship Matures

The significance of the Israeli-South African military, nuclear and economic relationship for this dissertation is with regard to the importance of Israel as a major international arms supplier -- capable of evading mandatory United Nations sanctions with impunity for over a decade. Some defence analysts claim that Israel's arms exports to Argentina during the 1982 Falklands/Malvinas War marked the first time that a Third World military supplier was able to play a major role in international relations. But as I will argue below, Israel truly began its role as a key international arms dealer -- albeit in terms of serving sensitive, internationally unpopular clients, and not by export volume -- in 1977 when it refused to abide by the mandatory UN arms embargo on South Africa.

Study of the Israeli-South African relationship has been something of a growth industry in both the media and academia during recent years. The reasons for this increased attention are at least two-fold. First, it is a reflection of the maturing and deepening relationship between these two countries during the final two decades of the Cold War. The relationship matured in that both states came to recognise that Israel would have to remain on the record as dissociating itself from South Africa.

At the same time technical and military trade between both countries continued, albeit with an even lower profile. <sup>1</sup> Klieman argues that Israel now has a two-tiered relationship with South Africa. On the one hand Israeli officials shun public contacts but on the other they have sought 'constructive engagement' to secure important strategic co-operation. Links have deepened in that Israeli military exports to South Africa have been increasingly in the form of military technology and services while South Africa has apparently provided Israel with test sites for nuclear weapons and has directed investment toward the Jewish state.<sup>2</sup>

A second reason for the increased publicity given to Israeli-South African links -- although admittedly less salient for this dissertation -- is that the implications of the relationship have been deeply troubling for many. Traditional supporters of Israel regard the Jewish state as a Phoenix which arose from the horrors of the Second World War. Thus pictures of a former Nazi-sympathiser, South Africa Prime Minister John Vorster, laying a wreath on the Vad Yeshem Memorial to Holocaust victims during an official visit to Israel in 1976, came as a profound shock.<sup>3</sup> Many non-Israelis, particularly in Western Europe and the United States have been equally troubled by the relationship. James Adams, defence correspondent for the Sunday Times reflects this sense of unease in the very title of his book on the subject: The Unnatural Alliance, Israel and South Africa.<sup>4</sup> Finally,

traditional anti-Zionists, both in the West and in the Third World, regard the Israeli-South African relationship as a vindication of their views on the true nature of Zionism.

This chapter will examine the Israel-South African relationship beginning in 1973, but with emphasis on the 1980s. I will argue that links with Israel became one of South Africa's most important foreign policy endeavours during the 1980s and possibly beyond (although the de Klerk reforms may lead to a lifting of the United Nations arms embargo on Pretoria). This conclusion is drawn by illustrating varying elements of the relationship:

First, Israel has clearly been the most important supplier of arms and military technology to South Africa since the 1977 UN mandatory embargo.

Second, is Israel's nuclear relationship with South Africa. Although South Africa's nuclear capabilities have been developed with the assistance of a number of Western countries, the links with Israel have in recent years served as a conduit for advanced technology for which there were increasingly few other sources.

Third, overall economic relations, though not directly covered in this dissertation, are a further area of importance between Pretoria and Jerusalem. Officially, economic ties are rather limited, but if diamonds and arms are included, Israel's economic importance to South Africa grows considerably. Furthermore, the potential for Pretoria to use Israel as a conduit for South African exports to the United States (given the Israeli-

American free trade agreement) and the European Community make the official trade figures and the unofficial trade a somewhat insufficient measure of the economic relationship.<sup>5</sup>

This chapter will address the following themes:

-Changes in Israeli-South African relations during the 1980s; i.e., was the apparent down-grading of bilateral relations by Jerusalem reality or a public relations ploy?

-Direct Israeli exports of arms and military equipment to South Africa.

-An assessment of the level and nature of general technology transfer to South Africa and the nature of investment patterns between both countries.

-The nuclear question.

#### The Relationship Endures

Ties between Israel and South Africa actually predate the Israeli state. The long friendship between future South African Prime Minister Jan Smuts and Chaim Weizmann, then President of the

British Zionist Federation, began in 1917 and the influential Smuts helped secure the Balfour Declaration (which committed Britain to the creation of a Jewish homeland in Palestine). The history of early Zionist/Israeli-South African relations through the early 1970s has been competently presented in a number of works.<sup>6</sup> I shall not dwell upon it here and will instead move directly to the 1970s where the foundations for the present, heightened, relationship were laid.

The year 1973 was a turning point for Israeli-South African relations. Up until this time, Israel had been cultivating trade and military links with a great number of black African countries.<sup>7</sup> But during and after the 1973 Arab-Israeli War, 29 out of 32 African states severed diplomatic ties with Israel (the exceptions were Lesotho, Malawi and Swaziland). This diplomatic catastrophe, in concert with the initial military and intelligence debacle of the War and the Arab oil embargo, which made relations with the West more problematic, all served to encourage consideration of new approaches to Israeli foreign policy.<sup>8</sup> It should also be noted that South Africa was not passive during the 1973 Arab-Israeli War. Pretoria allowed more than \$30 million to be sent by South African Jews to Israel and some 1,500 volunteers left South Africa to serve in Israel during the War.<sup>9</sup> There are even reports that an Israeli fighter with South African markings was shot down by Egyptian forces.<sup>10</sup>

South African links with Israel grew rapidly after the War.

In 1974 Israel re-established diplomatic representation in South Africa. (Diplomatic ties had been cut back in 1963 in a bid to develop links with black Africa.) In 1975 three events served to propel Israel further toward South Africa. First, U.S. Secretary of State Henry Kissinger encouraged Israel to assist South Africa's involvement in the Angolan war, something which the U.S. Congress had forbidden the CIA to do. Second, President Gerald Ford's 're-assessment' of U.S. aid to all Middle East countries greatly concerned the Israeli leadership which had already come to be dependent on American aid. Thus South African capital gained potential new importance. Finally, in November 1975, the United Nations adopted a resolution which termed Zionism "a form of racism and racial discrimination." This was followed by the granting of UN general assembly observer status to a delegation from the Palestine Liberation Organisation (PLO).<sup>11</sup>

In March 1976, Israeli Defence Minister Shimon Peres made a secret trip to South Africa and invited South African Prime Minister John Vorster to make an official visit to Israel. Vorster arrived in April and met with the entire Israeli leadership: Prime Minister Yitzhak Rabin, Foreign Minister Yigal Allon, President Ephraim Katzir and many others. A series of agreements were concluded covering commercial, trade, fiscal and other arrangements. In addition, a series of secret agreements were also reportedly made covering arms sales and nuclear co-

operation. On his departure, Vorster told reporters that all agreements would be overseen by a joint cabinet-level committee which would meet annually and that a special steering committee would co-ordinate the exchange of information and encourage scientific and industrial co-operation.<sup>12</sup>

Increasingly formal links were thus established to accommodate the growth in South African relations with Israel. Menachem Begin's victory in the 1977 election and the establishment of the Likud coalition meant Pretoria had a solid ally in Jerusalem: At the time Begin assumed the premiership he was chairman of the Israel-South African Friendship League.

#### U.S. pressure for compliance with the UN arms embargo

Criticism of South Africa and apartheid grew considerably in the United States during mid-1980s. Among the results of this criticism was the Comprehensive Anti-Apartheid Bill of 1986. Of particular concern to Israeli officials, with regard to South African links, was an amendment drafted by Senators Charles Mathias of Maryland and Dan Evans of Washington, both members of the Republican Party. This amendment appeared as Section 508 of the final bill and required President Reagan to conduct a study on the extent to which the international arms embargo on the sale and export of arms and military technology to South Africa had

been violated. It further required that a report be submitted to Congress 180 days after the passage of the anti-apartheid legislation, setting forth the findings of the study, "including an identification of the countries engaged in such sales and exports [to South Africa]." <sup>13</sup> The Report was to be prepared by the State Department's Bureau of Intelligence and Research.

The potential difficulty for Israel, given the close links which had developed with Pretoria, was that the 1986 Anti-Apartheid Act recommended that President Reagan consider cutting off U.S. military aid to countries that had sold arms or military technology to South Africa. This would have meant a huge financial loss, as Israel received some \$1.8 billion in military aid and a further \$1.2 billion in economic aid from Washington in 1986.

But as the report deadline of 1 April 1987 approached, it became clear that the U.S. Congress was less than enthusiastic about carrying out its obligations with regard to Section 508 of the Comprehensive Anti-Apartheid Bill.<sup>14</sup> During January and February, Israeli representatives worked to achieve an understanding with the Reagan administration over what it would take to satisfy Congress. On 19 March the Israeli government announced that it would sign no new military contracts with Pretoria and reduce its political and cultural ties with South Africa (nothing was said about terminating existing contracts which may

have had many years to run). Interestingly, an article appearing in the Jerusalem Post three days later noted that South Africa seemed "unruffled" by the news that Israel intended to adopt limited sanctions against it, and that the normally truculent foreign minister, Pik Botha, had been "to say the least, muted" in his response to the Israeli announcement.<sup>15</sup> Possibly this was because nine years earlier -- in 1978 -- the Israeli government also made a formal written pledge to the United Nations which flatly stated that Israel would not sell arms to South Africa in compliance with the UN arms embargo.<sup>16</sup>

The report Compliance with the U.N. Arms Embargo was duly delivered to Congress and an unclassified version was distributed to the public. The report contained little that was not already known and many of its findings were open to serious question. For example, the report asserted that: "The United States has strictly enforced the mandatory arms embargo, and no exceptions have been authorized with respect to any prohibited sale or export."<sup>17</sup> In fact, under the Reagan administration's policy of constructive engagement this had clearly not been the case (see Chapter Seven). Section Six of the report sets forth a slim set of findings: "We believe companies in France, Italy, and Israel have continued to be involved in the maintenance and upgrade of major systems provided before the 1977 embargo."<sup>18</sup> This is followed by an implicit acceptance of the Israeli government pledge to cut military links with Pretoria:

Prior to the Israeli government's decision on March 18 (sic) not to sign new military contracts and to let existing contracts expire, Israel appears to have sold military systems, and sub-systems and provided technical assistance on a regular basis.<sup>19</sup>

And here, after concluding that "Companies in Germany, the United Kingdom, the Netherlands, and Switzerland have on occasion exported articles covered by the embargo..."<sup>20</sup> the study ends.

The report blatantly failed to address the question of South African arms imports in a vigorous manner. Indications are that Israeli officials made an agreement with the Reagan administration regarding measures designed to satisfy the U.S. Congress, and the report was then tailored to buttress the Israeli pledge of 19 March not to sign any new military contracts with South Africa. Even this was not demonstrated in a convincing way by the report in that it is implied that Israeli military sales to South Africa would be cut off fairly quickly if Israel honoured the pledge. However, this was far from certain: Nobody knew how long the existing Israeli contracts with South Africa had to run, and they may, in any case, have automatic renewal clauses written into them.

More fundamentally, it seems improbable that the Israelis ever planned to abide by their 19 March pledge. By the admission of Israeli officials, far too much is at stake. Although the total value of annual Israeli arms sales to South Africa remains a state secret, it appears that earlier figures of \$125 million annually were far too low. A variety of sources have put total annual arms sales at between \$400 and \$800 million <sup>21</sup> and hundreds if not thousands of jobs depend on these export sales. Few observers seriously believed that South Africa need fear an arms embargo from the Israelis. Indeed, this was precisely what some Israeli politicians, academics and journalists themselves said. A report in the Washington Post quoted Simcha Dinitz, former Israeli ambassador to the United States (1973-78) and Knesset member as saying he expected:

...a 'deprofilization' of Israel's presence in South Africa. In other words, the special relationship between the two nations - particularly in what is called 'strategic affairs' - will continue, but in a much less visible manner and with less direct involvement of the military so as not to clash with the will of (the American) Congress.<sup>22</sup>

This, then, is the view of one relatively high-ranking Israeli politician. Unsurprisingly, a number of academics and journalists with varying political inclinations have drawn similar conclusions regarding Israel's future relations with South Africa. Benjamin Beit-Hallahmi of the University of Haifa, in his book The Israeli Connection. Who Israel Arms and Why, has written that regarding Israeli links with South Africa:

The solution is to follow the precedent established in the 1977 arms embargo: when pressed to do so, Israel's representatives will deny any dealings with South Africa....[the 19 March declaration] was an obvious public-relations move designed to counter the effect of the report scheduled to be submitted to Congress on April 1. But in practice nothing will change.[emphasis added] <sup>23</sup>

Beit-Hallahmi argues that Israeli involvement in South Africa is of far greater importance to Israel than is widely recognised and that the Israelis will only leave when they are forced out as was the case in Iran, Algeria, Rhodesia "and other places".<sup>24</sup>

The publisher of Israeli Foreign Affairs, Jane Hunter, argues that Israeli officials have purposely leaked stories which intimate that Israel will phase-out existing military contracts with Pretoria and not enter into new ones. This, she contends, was all part of the programme to convince the U.S. Congress that it would adhere to the 19 March declaration. Hunter argues that Congress was weak in its enforcement of Section 508 of the Comprehensive Anti-Apartheid Act in part because of insufficient domestic political pressure.<sup>25</sup> Members of the U.S. Congress appear to have been wary of tangling with the powerful pro-Israel lobbies, particularly when many of their constituents were less than interested in the issues involved and others were taking Israeli promises at face value. Regarding future prospects, Hunter concludes: "At present it is very clear that Israel will not have to exert itself very hard to convince Congress that it has stopped dealing with Pretoria..."<sup>26</sup>

But in fact, Israel may not have had to convince many senior officials in Washington to allow military trade with South Africa to continue. Andrew and Leslie Cockburn report in their investigative work Dangerous Liaison, The Inside Story of the U.S. -Israeli Covert Relationship that Israel served as a Cold War proxy for U.S. arms sales to Pretoria. The authors say:

It would appear that tacit approval by a series of Democratic and Republican administrations for

Israeli arms sales to South Africa has resembled the duplicitous policy of arms sales to Iran: public sanctions together with covert sales.... U.S. defense and intelligence agencies, as well as inhabitants in the Oval Office have at times had classified agendas which have undermined the good intentions of the guardians of sanctions. This was in part because Cold War strategic thinking placed South Africa firmly in the Western camp....<sup>27</sup>

Interestingly, parts of the facade designed to shield Israel's links to South Africa may now be lifted. Following the initiation of the de Klerk reforms, Israel announced in November 1990 that it would "re-examine" its ties to South Africa.<sup>28</sup> The world was presented with the curious spectacle of Israel 'abandoning' sanctions it never implemented in the first place in July 1991 when the Israeli cabinet announced the lifting of all political and economic sanctions (but not military sanctions) aimed at South Africa.<sup>29</sup>

## South African Imports of Israeli Arms and Military Materiel

There is little doubt that during the late 1970s and 1980s South Africa was Israel's biggest customer for arms and other military equipment. Even before this period Pretoria was a key Israeli customer: The Stockholm International Peace Research Institute (SIPRI) has estimated that between 1970 and 1979 South Africa received over 35 per cent of Israel's total arms exports.<sup>30</sup> During the 1980s the trend was toward greater South African imports of Israeli services, military components and the upgrading of existing equipment as opposed to imports of complete Israeli weapon systems.<sup>31</sup>

Accurate figures for the total value of Israeli arms exports to South Africa during the 1980s are impossible to obtain and the various figures available diverge widely. The Israeli Economist reported that sales to South Africa totaled some \$100 million annually.<sup>32</sup> A United Nations report published in 1987 said Israel was South Africa's biggest arms supplier and that two-way arms sales between the countries was \$500 million per year.<sup>33</sup> A series of reports in the Los Angeles Times put Israeli arms exports to South Africa at between \$500-800 million annually.<sup>34</sup> It should be emphasised that these higher figures are theoretically possible. South African defence spending for 1989-90 was some \$3.7 billion of which \$2.4 billion was channeled through a

special defence account not subject to public audit. The special defence account exists primarily for clandestine weapons acquisitions from abroad.<sup>35</sup>

South Africa's arms imports from Israel during the 1970s have been documented in Chapters Three and Seven and in Appendix 4.<sup>36</sup> South Africa purchased three Reshef-class fast patrol boats in 1978 and subsequently manufactured another nine under license at the Sandock-Austral Shipyards in Durban. Dvora class patrol boats have also reportedly been manufactured in South Africa under Israeli license. At least 108 Gabriel-2 ship-to-ship missiles were ordered and Pretoria produces the missile under license, which it has renamed Scorpion.<sup>37</sup> Israel has provided South Africa with its Scout and Mastiff remotely piloted vehicles, one of which was shot down over Mozambique in 1983. Armscor manufactures the Uzi submachine gun and the Galil assault rifle (designated R-4) under license. Other South African imports from Israel have included small arms, night sights, microwave protection and detection systems, electronic fences and anti-personnel mines.

Following the imposition of the UN mandatory arms embargo in 1977, secrecy regarding South Africa's arms imports was nearly absolute and it was not until 1986-87 that a number of major arms deals with Israel were confirmed.<sup>38</sup> Recent official Israeli admissions as to the high value of arms exports to South Africa

indicate that considerable trade took place over the period between 1977 and 1985. Few details have emerged as to the precise nature of South Africa's imports during this period but it seems probable that the bulk of the trade was in high technology components used in South Africa's numerous weapons refitting programmes and other less easily traced systems and equipment.

#### Aircraft -- The Cheetah project

"You don't have to be a genius to see our fingerprints all over it."

(Israeli cabinet minister commenting on South Africa's Cheetah fighter project.)<sup>39</sup>

In July 1986, South Africa's Atlas Aircraft Industries announced the development of what it claimed was a "mid-life-update" of the Mirage 3 fighter, in which some 50 per cent of the aircraft had been reconstructed. Official South African reports stated that this 'new' aircraft, designated the Cheetah, was the result of years of top secret research and development. Privately, however, foreign ministry officials in Pretoria admitted that the Cheetah was mostly an Israeli Kfir with an admixture of British

and French avionics.<sup>40</sup> The Israeli Kfir is itself derived from the Mirage 3, with elements of Mirage 5 technology. It appears that Israel Aircraft Industries sold South Africa a modernisation package which had been used to convert the SAAF's Mirage 3s into the Kfir-TC2, one of the most recent upgrades of the Kfir, or the Kfir-TC7. According to the trade journal Flight International the Cheetah retains the original Snecma Atar 9K engine which is jointly produced by Israel and South Africa.<sup>41</sup> It is not known whether Israel has supplied South Africa with Mirage/Kfir airframes. Nevertheless, one report from Pretoria quoted military sources as saying it should now be possible to build the Cheetah from scratch if necessary.<sup>42</sup> What this possibly means is that observers should not be surprised if 'indigenous' Cheetahs (read Kfirs) begin replacing the SAAF's Mirage 3s some of which are now more than 25 years old.

The Cheetah, however, appeared to have been a temporary Cold War solution for Pretoria. Ultimately South Africa planned to build a more advanced fighter based on a combination of the original Mirage IIIs, the Cheetah, and technology from Israel's canceled Lavi fighter project. The Financial Times correspondent in Tel Aviv reported that while Israel's Lavi fighter project may have been canceled

...its ghost lives on, in the shape of

a burgeoning drive to export the home-grown technologies at the heart of the aircraft ...[and that] Among the countries known to be seriously interested in using Israeli expertise in avionics and on-board electronic warfare systems designed for the Lavi are South Africa... 43

This is denied by South African officials 44 but belied by Pretoria's vigorous efforts to recruit a specially targeted group of some 600 key members from the 3,000 strong Lavi production team who lost their jobs at Israel Aircraft Industries after the Lavi's cancellation.45 The South African government offered salaries of US\$5000-7000 a month and by December 1987 Jane's Defence Weekly reported that some 50 former Lavi engineers and technicians had accepted the offer and were already in South Africa. 46 In 1989 the U.S. television network NBC reported that at least 75 Israeli engineers from the Lavi project, had been transferred -- with the approval of the Israeli government -- to work on South African aviation projects.47

Recent reports from South Africa say that while the first Cheetah squadron at the Louis Trichardt airbase in the northern Transvaal became operational in April 1988, Israeli technicians from the Lavi project were "already helping the South Africans to update the Cheetah".48

## Other Aircraft

A second recent major Israeli arms deal with South Africa was reported in early 1986. With the assistance of the Saudi Arabian arms dealer, Adnan Khasogghi, Israel was able to import 60 Gazelle helicopters from Egypt (manufactured in Egypt under French license) armoured personnel carriers, cannons, mortars, 20,000 semi-automatic rifles, and 12,000 machine guns. Fifty of the helicopters (and an unknown amount of the remaining equipment) were immediately shipped to South Africa.<sup>49</sup> The helicopters were clearly for Pretoria, but it is possible that some of the arms were destined for UNITA or the 'Mozambique National Resistance' (RENAMO).

In October 1986 the South African Air Force confirmed the acquisition of a number of Boeing 707 aircraft from Israel.<sup>50</sup> Initial reports maintained that the aircraft were in-flight refueling tankers, but an article in Jane's Defence Weekly<sup>51</sup> said that the aircraft were equipped with "sophisticated SIGNIT originating in Israel" (most likely the ELTA Electronics Industries' EL/L-8300 'strategic' system).<sup>52</sup> This system provides an automatic intercept, analysis and direction-finding capability

against radar signals within specified bands. ELTA describes the system as being capable of handling up to 300 signals simultaneously, any three of which can be in the same frequency band. In addition, the system includes data fusion facilities and real time reportage of data to remote ground stations. Maximum detection range of 'hostile' signals is between 400 and 450 kilometres. This system can be fitted to an aircraft such as the 707 which is already equipped for in-flight refueling.<sup>53</sup> The number of 707s South Africa bought from Israel remains unclear, estimates range from two to six.<sup>54</sup>

The Cold War implications of South Africa's acquisition of the 707 SIGINT platforms and in-flight refueling capability combined with the Cheetah/Kfir fighter were considerable: South Africa acquired the means to launch attacks against targets all over subequatorial Africa. Reports on the combat abilities of the Cheetah are few and mixed but with either a Cheetah -- or Mirage upgraded with Lavi components -- the SAAF would be able to attack targets at distances of up to 2,000 miles (3,200 km). The South African government was thus in a position to pursue a policy of economic destabilisation even more effectively should it have chosen to do so. The Beira Corridor, the Tazara Railway (Tanzania / Zambia Railway Authority) railway and other transport routes throughout southern Africa were potentially far more vulnerable. Pretoria was also in a position to maintain or increase the economic dependency of the southern African states

and merely the existence of the enhanced air-strike abilities of the SAAF was a potential influence southern African leaders. Indeed, the South African government seemed anxious to publicise its enhanced strike abilities: South African radio reported at length the initial story of the 707 sale which was broken by the Sunday Telegraph along with a re-confirmation by an SAAF spokesman that the aircraft had been delivered some months earlier. The spokesman did not question the Sunday Telegraph's assertions that Dar es Salaam, the Tazara Railway and Soviet radar installations in the frontline states might now be potential targets for the SAAF.<sup>55</sup>

Israel also supplied South Africa with Astra aircraft which may be used as replacements for the SAAF's Shackleton maritime reconnaissance aircraft which were retired in 1984. The lack of replacements for the Shackletons forced the South Africa to end its marine reconnaissance in the region. In October 1987 Israel's energy minister, Moshe Shahal, announced that Israel would pay part of its coal debt to South Africa with Astra aircraft.<sup>56</sup> The Astra, which is derived from the Westwind executive jet, is available in a maritime Sea Scan version as well as an executive aircraft.

## Rockets

South Africa test-fired an intermediate-range ballistic missile in July 1989, which according to United States government sources, was an improved Israeli Jericho II missile. A report by the U.S. television network NBC -- citing American intelligence sources -- said that Israel was helping Pretoria build the missile in exchange for a regular supply of enriched uranium for its own nuclear weapons programme.<sup>57</sup>

The test in which a long-range version of the Jericho II known as the Shavit (Comet) flew 900 miles appears to have been conducted jointly by Pretoria and Jerusalem. A second test of what South African officials described as a "booster rocket" was conducted at the country's Overberg test site in November 1990.<sup>58</sup> Other reports have said that Israel is co-operating with South Africa in the development of a photo-reconnaissance satellite and that a joint launch programme is planned which would provide South Africa with a satellite to monitor neighboring countries.<sup>59</sup>

It remains unclear whether South Africa will actually manufacture the upgraded Jericho II missile. The 1989 NBC report remains the only source to date which says Israel was aiding South Africa in construction of the missile.

Israel and South Africa were reportedly involved in the 1989 Blowpipe scandal in which French police arrested five men trying

to sell a model of a British Blowpipe missile stolen from an army base in Northern Ireland. Security sources in Whitehall said the Mossad had been involved in a long-running operation with South Africa's Armscor to acquire details of Britain's Starstreak high-velocity missile which is based on technology first developed for the Blowpipe:

The ultimate goal of the Paris operation is thought to have been for South Africa and Israel to undertake joint development of the a series of high-speed missiles for use by both ground and air forces.<sup>60</sup>

The Blowpipe scandal is yet another example of both Israel and South Africa's chronic reliance on foreign technology for which they lack the expertise or financial means to develop indigenously.

### Submarines

Submarines are a further area of possible present and future Israeli-South African co-operation. The navies of both countries urgently require new submarines: South Africa's three Daphne

class submarines have long passed their half-life and Israel's three Type 206 submarines are something of an embarrassment given the high standards met by other major Israeli military systems.

It must be stressed that the evidence of Israeli-South African co-operation in submarine manufacture is extremely limited. Nevertheless, enough information is available so as to allow speculation on recent developments.

Submarine technology is one area in which Israel is still notably deficient. The cancellation of the Lavi fighter project freed a considerable proportion of military funds and the Israeli Defence Ministry gave its approval in April 1988 for the purchase of three German dolphin class medium sized submarines. (German submarines were preferred as the United States no longer manufactures the appropriate diesel motors). The project was subsequently canceled due to financial constraints, but during the 1991 Gulf War Germany agreed to fund two submarines for the Israeli Navy.

Curiously, South Africa also sought to buy West German submarines. South African diplomats in Bonn paid at least DM 423 million for the construction plans and components for the West German U-209 submarine.<sup>61</sup> South African officials reportedly liked the U-209 because of its ability to fire ship-to-ship missiles through its torpedo tubes. There has been speculation that Israel, which has been supplied with the U.S. Harpoon ship-to-ship missile, will supply South Africa with the relevant

technology which will be converted into a submarine launched missile.<sup>62</sup> Such a system would appear to fit with shifts in South African strategic doctrine during the 1980s which sought to strengthen the navy against what was perceived as the threat of a possible oil embargo.

Recent possible evidence of Israeli co-operation with South Africa's submarine programme has come to light in the course of government investigations in Germany following the scandal over the sale of the U-209 plans and components to Pretoria. An article in the German weekly, Der Spiegel, reported the discovery of documents which show that Israel may have served as a conduit for shipments of West German submarine components to South Africa.<sup>63</sup> The case outlined in Der Spiegel regards a 1:5 scale plastic model of a fully functioning submarine which is necessary to allow South African engineers interpret the plans and provide a demonstration of the craft's electrical systems. No evidence of direct shipment to South Africa of such a model has been discovered, but government investigators discovered customs declarations in a file marked 'South Africa' which record the shipment of a 1,804 kilogram container which was sent by the Kiel-based Howaldtswerft to Israel in December 1986. State investigators in Kiel have said the shipment had nothing to do with the South African business but refused to say what was in the container. Der Spiegel posed two questions. First, how did

the documents for a sale to Israel get into the South Africa file? Second, if they really have nothing to do with the sale to South Africa, then why have officials left them in the file during the course of the investigation?

Are Israel and South Africa co-operating on a joint submarine project? Pretoria obtained plans and components for the U-209 but would need considerable technical assistance if the project is to be realised. Israel will receive technical assistance from Germany and the United States for its own submarines and could eventually be in a position to assist South Africa with the more demanding aspects of the project. A number of other countries may also work with Pretoria in this area. Chile was cited as an early partner for South African submarine production, although it now seems that Taiwan or Brazil, which recently announced a nuclear submarine project, are also possible candidates.

It should be noted, however, that official South African sources continue to deny that a new submarine will be built. According to the South African Navy's Vice Admiral, Glen Syndercombe, the modernisation of the Navy's existing submarines is planned. This, it is claimed, will allow them to remain in service beyond the year 2000.<sup>64</sup>

General technology transfer, investment and corporate relations

The Israeli-South African relationship has, at its heart, technology transfer and investment. Israel, with its superior scientific base and special links with the United States, is able to supply South Africa with advanced technology and components for the arms industry. In exchange, Pretoria has invested considerable sums in Israel and allows the 110,000 strong South African Jewish community a special dispensation to remit funds to Israel. (South African Jews are noted for contributing the highest level of funds per capita to Israel of any Jewish community in the world.)

South Africa's industrial base stagnated during the 1980s both due to the emigration of skilled professionals<sup>65</sup> and the international sanctions and divestment campaign which weaned away, among others, the computer companies.<sup>66</sup> Thus, the acquisition of microelectric, computer and military technology became an urgent priority for the South African government. Such transfers appear to have become the basis for Israeli exports to South Africa. Unlike major weapons systems such exports are exceedingly difficult to trace. Enforcement of the UN mandatory arms embargo regarding such items is nearly impossible and only limited information on such trade is available.

A series of agreements governing co-operation in science and technology have been signed by South Africa and Israel since

1976. Most of these, however, have been made in secret or else contain secret annexes and we can only surmise as to their scope. One agreement was signed in 1983, which according to a supplement published with the South African Financial Mail, extended existing collaboration in science through the creation of a framework of co-operation between South African and Israeli companies which was designed to develop and exploit technology with commercial applications.<sup>67</sup> The objective of the programme is to encourage technological co-operation between firms in both countries, although the programme manager, Brigadier Jan Willers, admitted that the larger part of the development projects are being carried out in Israel "because of Israeli aptitude for high-tech". South Africa's aptitude he says, "lies in natural resources and the industries they foster".<sup>68</sup> This very neatly illustrates the nature of the Israeli-South African technological relationship: Israel supplies the know-how and South Africa the finances and raw materials.

A further agreement on science and technology was signed early in 1985. The pact reportedly called for joint ventures and projects in high technology fields valued at the surprisingly low figure of \$5 million.<sup>69</sup>

It is beyond the scope of this chapter to detail the numerous small or non-military projects that have been undertaken between South Africa and Israel. Instead I will briefly examine those endeavours -- at least those which are known -- with

military significance for Pretoria.

One of the earlier examples of technical co-operation in the 1970s was the establishment South Africa's ship-building industry with the aid of personnel sent from the Haifa shipyard to the Sandock-Austral yard in Durban. Prior to this, South Africa's ship-building industry was "virtually non-existent"<sup>70</sup> and Pretoria went on to manufacture the Israeli Reshef class fast patrol boat under license and then graduated up to the Drakensberg naval command and supply vessel. The largest ship manufactured in South Africa to date, the Drakensberg, was built with the assistance of West German blueprints and electrical components.<sup>71</sup>

The Israeli electronics industry has merited consistent South African interest. The level of Israeli involvement in South Africa is reportedly high, but direct evidence for military applications of Israeli investment is again limited. The major Israeli investor in South Africa in this field is Koor, the Histadrut labour federation's holding company. Its enterprises in South Africa include a substantial holding in Consolidated Power; a battery plant; an emergency lighting plant, and an agricultural chemical plant.<sup>72</sup> Koor also owns 51 percent of the share capital of South Africa's Iskoor Steel concern.<sup>73</sup> Iskoor has been involved in joint venture to overhaul and modernise South Africa's Centurion tanks and armoured cars<sup>74</sup>. The Koor

subsidiary Tadiran Electronics was listed in the 1987-88 Johannesburg telephone book, although Tadiran claims to have closed all operations in South Africa in 1982.<sup>75</sup> Koor borrowed some \$80 million from four major South African banks during the late 1980s in what the Jerusalem Post said was "an apparent effort to restructure and diversify its loan portfolio."<sup>76</sup> This again is a classic illustration of the Israeli-South African relationship in which Pretoria supplies the capital and Israel the know-how. In August 1987 the Histadrut instructed all its subsidiaries to break ties with South Africa once present contracts have expired.<sup>77</sup> Whether this policy was actually implemented is not known.

A further source of high technology transfers to South Africans may be Pretoria's own investments in Israel. South Africa's Africa-Israel Investments owns Kiryat Weizmann, one of Israel's major science oriented industrial parks. Scientific agreements between Israel and South Africa allow the discoveries of Kiryat Weizmann researchers to be passed on to South African universities.<sup>78</sup> Construction of a second South African financed high technology park was begun at Rishon LeZion in March 1987; ironically just the time when Israel was assuring the United States that it was cutting back its ties with South Africa.<sup>79</sup> South Africa's giant Anglo American Corporation announced in 1990 that it had established a fund in Israel for investment in "technology-based" projects. Julian Ogilvie-Thompson, Anglo American's chairman, said: "South Africa has a limited base of

technology. If we are to make significant strides in the industrial sphere then we have to have access to foreign technology markets."<sup>80</sup>

Technology imports have been important for South Africa and will become even more vital if the arms embargo against the country is maintained.

#### Israeli - South African Nuclear Relations

Before any assessment of the level of Israeli aid for South Africa's nuclear programme can be made two issues need to be noted. First, the rationale behind South Africa's acquisition of nuclear weapons and second, the nuclear facilities presently available in the country.

The military rationale seems to be based on a fairly straightforward point: Namely that after the liquidation of the Portuguese Empire and the surrender of Rhodesia, South African leaders perceived increasing concentrations of hostile forces on or near the country's borders. As the UN mandatory arms embargo began to grow teeth <sup>81</sup> Pretoria found itself in a conventional arms race in which the regional superiority of the SADF was eroded. Under the Cold War conditions of the 1980s it was clear

that this was an arms race that South Africa could, in the long term, ultimately lose. As neighboring states such as Angola began to receive sophisticated radar, anti-aircraft systems and aircraft such as the MiG-23, Pretoria pinned its hopes on the new Cheetah fighter. But as Christopher Coker pointed out in 1987:

...it can only be a matter of time before the Angolans receive even more modern equipment. If the South Africans engage in an arms race, they will never win. They will never be able to match system for system, plane for plane, only upgrade existing models that are already a generation or more old.<sup>82</sup>

The belief that Armscor produces first echelon weapons systems and that these systems are indigenously manufactured was one fallacy of South African arms production. But Armscor's weaknesses were increasingly noticed and from the early 1980s the South African military "began to demand more sophisticated weapons and less of the weapons the South African industry can produce."<sup>83</sup> Before the end of the Cold War it appeared that South Africa would lose its conventional military superiority in the region. The one alternative -- other than launching a serious peace initiative -- was to rush development of nuclear forces; an area

where Pretoria had a comparative advantage. A further incentive was the Soviet Union's historic reluctance to transfer nuclear weapons, let alone technology, to even its closest allies.

Manpower shortages were a further military reason for the development of South African nuclear weapons. South Africa had only 29,100 regular troops in 1986, the remaining 67,900 were conscripts.<sup>84</sup> In the 1980s the South African military was 20 per cent short of officers, and trained pilots were even further under strength. During the 1970s and 80s South Africa developed sophisticated border defences on the Israeli model, but the army simply lacked the necessary forces to permanently man such a defence perimeter.<sup>85</sup>

The manner in which South African nuclear weapons would be deployed is open to debate. During the 1980s some observers thought such forces could be used as a deterrence, directed at neighboring states to prevent attacks from being launched on South Africa. Such a doctrine might have proved a cheaper and more feasible project than attempting to match the conventional forces of neighboring states. Whether it would have been effective, from a political standpoint is open to debate. Some observers argue that nuclear deterrence tends to break down when the opposing side(s) do not possess nuclear weapons.<sup>86</sup> Others argue that given South Africa's history of brazen attacks on its neighbours and the comments by South African officials that 'no

rules will apply in the defence of South Africa's right to exist', the deterrence value of the Bomb would be very great and among other things it could block the imposition of sanctions on Pretoria.<sup>87</sup>

The actual use of nuclear weapons against concentrated forces would have been possible given the low population levels along much of the border region and in Namibia. There is also the possibility that the South African government developed plans in the 1970s and 80s to use low-yield neutron-type bombs against the domestic black majority.

One final consideration on the use of nuclear weapons for Pretoria is slightly less horrific. This is their diplomatic value. The example of the Bomb as a diplomatic tool may come from Israel. Dr. Francis Perrin, who headed France's nuclear programme from 1951-1970, when Paris built Israel's Dimona reactor, plutonium plant, and assisted in the construction of an Israeli atomic bomb has stated:

We thought the Israeli bomb was aimed against the Americans, not to launch it against America but to say 'if you don't want to help us in a critical situation we will require you to help us, otherwise we will use our nuclear bombs.'<sup>88</sup>

A similar policy for South Africa might have been viewed as a means to reverse the erosion of Pretoria's prized ties to the Western community of nations.

### South Africa's nuclear infrastructure

According to Leonard Spector's The New Nuclear Nations, South Africa has two light-water/low-enriched uranium Power Reactors, Koeberg I and II which were supplied by Framatome of France; a Uranium Conversion plant probably supplied by the United Kingdom; a Reprocessing Plant of uncertain origin; an Enrichment plant supplied by a consortium of West German, Swiss, French and American firms; a Fuel Fabrication plant of unknown origin; and two research reactors. South Africa has reasonably assured reserves of uranium totaling some 313,000 metric tons.

This chapter is limited to the Israeli role in South Africa's nuclear programme but it is clear from the above that a host of Western countries -- in particular the U.S., France, Britain, and West Germany -- were involved in the build up of Pretoria's overall nuclear programme. As Abdul Minty has pointed out, these Western nations, in addition to Israel, bear collective responsibility for the development of South African nuclear weapons.<sup>89</sup>

## Israeli nuclear assistance to South Africa

Precise information regarding Israeli technology or hardware transfers to South Africa is difficult to obtain. Details which have emerged seem to point toward collaboration more on the military aspects of nuclear technology and, equally important, the technology of nuclear weapon delivery systems. One of the first instances of Israeli assistance was during the mid-1970s when Israel, along with the CIA, the Pentagon and State Department, helped organise a shipment to South Africa of technology to manufacture a 155mm Howitzer which not only could deliver a conventional shell 30 per cent further than any comparable system, but which could also serve as a nuclear delivery system.<sup>90</sup>

In 1976, when then Prime Minister Vorster visited Israel, one of the important bargaining points he brought was an offer to allow Israel test missile delivery systems and nuclear devices in or near South African territory. Israel had participated in the testing of a French surface-to-surface missile in the Sahara in 1964 but since then had not the opportunity to test the performance of its own weapons except through computer simulation.<sup>91</sup> It would appear that negotiations were successful for in August 1977 the Soviet Union informed the Carter administration that satellite photographs indicated that preparations to detonate a nucle-

ar device were being made in the Kalahari Desert. American, British, French and West German intelligence subsequently confirmed the Soviet discovery.<sup>92</sup> Diplomatic pressure was applied on Pretoria by all of the above countries and the test was canceled with the site subsequently being dismantled. If there was indeed a test planned it was apparently an Israeli test, for South Africa reportedly did not possess sufficiently enriched uranium required for nuclear weapons production in 1977.<sup>93</sup>

Despite this setback, it appears that Israel and South Africa successfully tested a small nuclear warhead in the South Indian Ocean on 22 September 1979. The test was observed by a United States government Vela satellite which was specifically designed to detect nuclear explosions. The validity of the satellite's finding was questioned by a number of officials in the Carter administration. However, subsequent study of documents released under the American Freedom of Information Act and a number of independent investigations by U.S. intelligence agencies and scientists corroborate the Vela observation.<sup>94</sup> It is likely that a second nuclear test was carried out in the same area late in 1980. In November of that year, the United States Geological Survey observed a phenomena resembling a strong earthquake in the same area where the 1979 nuclear device was believed to have been tested. In December satellite sensors registered radiation caused by a heat source in the same area.

According to a book written by Amos Perlmutter, Michael Handel and Uri Bar-Joseph (the latter formerly in the Israeli Air Force), the 1979 test was a joint Israeli-South African experiment of a nuclear shell fired from a 155mm Howitzer.<sup>95</sup> Ronald Walters has argued the 1979 and 1980 tests may have been of neutron bombs, given the paucity of radioactive fallout. He believes that the tests were a collaborative effort between Israel and South Africa.<sup>96</sup> The American television network CBS reported in February 1980 that Israel, in co-operation with South Africa, had exploded a nuclear bomb near the coast of South Africa in September 1979.<sup>97</sup> James Adams reports that "very senior members" of Israel's intelligence community told him that the explosion was not an Israeli bomb but that there was indeed a nuclear explosion in the area on this date and that the Israel has helped South Africa with its nuclear programme.<sup>98</sup>

Andrew and Leslie Cockburn cite a former senior CIA official who says the explosion on September 22 was much more than just a small atomic device.

...the CIA man revealed that the two countries had been testing the fission trigger known as "the pit" for a hydrogen bomb. The dramatic assessment that both Israel and South Africa were building H-Bombs was classified top secret....It was thus the official CIA view, which the White House conveniently

suppressed.<sup>99</sup>

In 1990, reports made public by the American Central Intelligence Agency, confirmed that the 1979 test had indeed been a small atomic bomb.<sup>100</sup>

From the above evidence it can be concluded that the 1979 incident was a test of an as yet unidentified nuclear system. In keeping with the structure of the Israeli-South African relationship it appears that Jerusalem supplied the nuclear system in exchange for Pretoria supplying the test site.

South Africa's President P.W. Botha came close to admitting that Pretoria possessed nuclear weapons in 1983 when he warned the world to think twice before contemplating military action against his country: "They might find we have military weapons they do not know about", Botha said.<sup>101</sup>

Further evidence concerning general South African acquisition of Israeli nuclear technology has grown in recent years. The most startling information was provided by Mordechai Vanunu, a former Israeli nuclear technician at Israel's Dimona nuclear facility, who gave a series of interviews which were published in the Sunday Times. In addition to describing in detail Israel's plutonium extraction techniques and processes for manufacturing

nuclear weapons, Vanunu also said that South African scientists frequently worked at the Dimona facility. According to Robin Morgan who headed the Sunday Times investigative team which interviewed Vanunu:

...it was common knowledge at the plant that South African metallurgists, technicians, and scientists were there on exchange programs... Vanunu said he had never met one of the South Africans. [But] It was one of his sterling traits that he never embellished any of the information he provided....Vanunu was aware of the South Africans' presence because his fellow workers would tell him.<sup>102</sup>

In his book, By Way of Deception, Mossad defector Victor Ostrovsky also says that Israel assisted the South African nuclear programme:

It was no secret...that we helped South Africa with its nuclear program. We supplied them with most of their military equipment. We trained their special units. We worked hand in hand with

them for years. These are two countries that regard themselves as needing the doomsday machine and they were prepared to use it.<sup>103</sup>

Ostrovsky's claims are partially backed by the above-mentioned CIA documents, released under the U.S. Freedom of Information Act in 1990. Regarding Israeli South African nuclear relations the documents state:

Israelis have not only participated in certain South African nuclear research activities over the past few years, but they have also offered and transferred various sorts of advanced nonnuclear weapons technology to South Africa.<sup>104</sup>

James Adams argues that as international pressure on South Africa mounted, and the flow of nuclear technology and personnel from the West began to dwindle, the gap was filled by Israel and Taiwan in return for a steady supply of uranium. Adams writes:

Specifically in the nuclear field, Israel agreed to help South Africa in any way possible,

including the development of nuclear power stations for peaceful purposes and helping the South African government develop a nuclear capability. According to officials in South Africa, there are 'several dozen' Israeli scientists working in South Africa at any one time.<sup>105</sup>

Adams marks the actual start of Israeli-South African nuclear cooperation as being in the mid-1960s, when Israel assisted in construction of South Africa's second research reactor, Safari 2.

The evidence outlined above appear to make it quite clear that Israeli has been assisting South Africa with its nuclear development for many years. But the question remains: Does South Africa have the Bomb? There has been no admission from Pretoria, but evidence seems to indicate that South Africa has had nuclear weapons, or the capacity to rapidly assemble such weapons, since the early 1980s. In 1977, then French Prime Minister Raymond Barre told journalists, while defending the sale of nuclear power stations to Pretoria: "South Africa already has nuclear capability." The point being that additional French sales would supposedly add nothing to South Africa's nuclear-military capability.<sup>106</sup> More recently, Leonard Spector, an associate at the Carnegie Endowment International Peace, testified to a U.S. Senate Governmental Affairs Committee that South

Africa had the ability to enrich its domestically produced uranium to bomb-grade status and that Pretoria has probably had nuclear weapons manufacturing capability since 1980. This was confirmed by South Africa's foreign minister, Roelof Botha, who announced at a press conference held in Vienna in 1988, that his country was indeed capable of manufacturing nuclear weapons. Botha refused to answer questions as to whether South Africa already possessed nuclear weapons.<sup>107</sup>

To conclude this section on the South African nuclear question, it should be re-emphasised that South Africa received nuclear assistance from a number of Western countries since the 1950s. But it must be stressed that from the 1970s, as Western states appear to have begun reducing their nuclear links in light of Pretoria's growing international ostracism, links with the Israeli nuclear community appear to have been maintained and possibly expanded.<sup>108</sup>

#### Potential nuclear delivery systems

Pretoria's ties to Israel are equally important with regard to potential delivery systems for nuclear weapons. These systems

have been outlined above and in Chapters Two and Three and include the 155mm Howitzer, the technology for which Israeli agents helped smuggle to South Africa; the Kfir fighter technology which was used to upgrade South Africa's Mirage (Cheetah) fighter-bombers; and, the in-flight tankers and SIGINT systems which greatly increased the range of the South African Air Force. The Jericho II missile, which Israel has reportedly armed with nuclear warheads, would be an important nuclear delivery system, if Pretoria has indeed taken delivery of the system or its technology.

As South African sources of more advanced military equipment or technology were slowly cut-off from the late 1970s, Pretoria increasingly relied on Israel as a key supplier of weapons/technology which could be utilised in a nuclear delivery capacity. If it is accepted that South Africa indeed became capable of producing nuclear weapons in the early 1980s, then the provision of delivery systems became one of the most important military questions for the late 1980s and beyond. At present it is Israel which appears to remain Pretoria's single most reliable supplier of such systems and technology.

## Conclusion

During the 1970s and 80s, Israel became the single most important source for South Africa's arms and military technology imports. In defiance of the UN arms embargo, Israel supplied Pretoria with missiles, gun-boats, helicopters, fighter aircraft modernisation packages, reconnaissance aircraft and a variety of small arms and other equipment (see Appendix 4). In return Jerusalem received capital, raw materials and access to nuclear weapons testing sites from white-ruled South Africa during the Cold War.

The Israeli-South African relationship endured during the most concerted period of international sanctions activity against the white-ruled South Africa from the mid-1980s through to the initiation of the de Klerk reforms. The relationship now looks set to deepen as international pressures recede when confronted with a reformist South Africa.

Israel will remain a key ally for Pretoria given that the UN arms embargo is likely to remain in place until the end of white minority rule in South Africa. Thus, a deepening of links between the two countries will occur via a dual-level relationship in which Israeli rhetoric will always be quite different from Israeli actions. This will be a small inconvenience for the South African government which is long accustomed to accepting

overt invective with covert benefits. For Jerusalem the only relevant point beyond the collective Israeli conscience is what Washington thinks: As the recipient of some \$4 billion in direct annual U.S. military and economic aid, it is fortunate for Jerusalem that the State Department and successive American governments have always been easily persuaded that Israeli links to South Africa are of a limited nature or else have used Israel as a proxy arms supplier as part of a secret Cold War political agenda.

Israel's broad military links to South Africa since the 1970s have special significance because they represent the first example in which a non-Northern arms producer has successfully defied the old arms exporter oligopoly for an extended period in modern times. The paradox is that Israel's success in supplying South Africa with arms comes despite Jerusalem's rapidly growing financial, military and technological dependency on its American patron during this period.

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(104) Director of Central Intelligence, 'The 22 September 1979 Event', Interagency Intelligence Memorandum, December 1979, p. 10, published by the Natural Resources Defense Council (Washington, DC) in 26 September 1990 press release.

(105) James Adams, The Unnatural Alliance: 166-67.

(106) Raymond Barre's comments are reported in Ronald Walters, South Africa and the Bomb, p. 2. See also: James Adams, The Unnatural Alliance, p. 186; and, Leonard Spector, The New Nuclear Nations, pp. 220-22.

(107) Cited in: Tim Ahern, 'Study warns of nuclear weapons risks

in South Africa', Philadelphia Inquirer, 1 March 1987.

(108) Though as Abdul Minty points out, the Reagan administration, under its so-called policy of constructive engagement has been quite liberal in approving US exports for South Africa's nuclear industry. Abdul Minty, 'South Africa's nuclear capability'. pp. 173-174.

## Chapter Six

### Arms exports from Israel, South Africa and Yugoslavia and some diplomatic and economic motivations

This chapter assesses the level of arms exports from Israel, South Africa and Yugoslavia and looks at some of the diplomatic and economic motivations for weapons export sales.

The case study countries for this dissertation have become Third World military exporters of varying significance during the past three decades. As I will show below, Israel, South Africa and Yugoslavia have engaged in arms exports for a variety of reasons, of which the economic and diplomatic rationales have been among the most important. This will be followed by an examination of the major buyer countries of arms from the three case study countries.

This chapter will attempt to answer the 'Why?' question with regard to Israeli, South African and Yugoslav arms exports and then assess in detail the level and nature of military exports from the case study countries.

### The 'Why?' of Third World arms exports

States which export arms usually do so for a complex mixture of reasons. Andrew Ross argues that while the initiation of defence

industrialisation in the Third World is usually prompted by political and military considerations the export drive is fueled by economic motivations.<sup>1</sup> Although economic objectives have played a key role in the development of Third World arms exports, I have found that the political-security-diplomatic rationale has also been an important motivation for military exports.

As Edward Kolodziej has noted, there are at least four broad ways in which to explain, not simply arms transfers, but to pose the question, "of the why of arms transfers." First, some studies portray arms transfers as a product of state objectives. Second, are works which focus on military factors such as mission requirements, environmental factors, and modernisation. A third approach is taken by studies that stress the internal or domestic governmental bureaucratic, and private industrial forces which push for arms transfers. (In Chapter One this approach was addressed by examining the role played by the military and security interests in the respective case study societies.) Fourth, is the systemic approach which concentrates on such factors as bloc cohesion, ideological locus, and the impact of technological change. <sup>2</sup>

In attempting to answer the 'Why' of arms exports in this chapter, I will look at arms transfers as primarily as a product of state objectives and private business interests.

Before turning to the respective case studies, it is useful to examine the concept of arms transfers through the three broad

patterns of supply set forth in a Stockholm International Peace Research Institute study. These are defined as: 1) hegemonic, 2) industrial and 3) restrictive.<sup>3</sup>

The hegemonic pattern of arms exports is -- obviously -- where arms transfers are used by one country to dominate other. The clearest model of the hegemonic arms delivery relationship is one in which arms exports from the industrialised countries to developing countries are used to support particular groups in power or to prevent or support the emergence alternative groups. The post-1945 Cold War is replete with American and Soviet examples of such arms supply behaviour.<sup>4</sup> Of greater relevance to this dissertation is the hegemonic pattern where lesser powers use arms exports for more limited ends, such as inducing or preventing certain actions by the recipient country. One example of such export policy from the Cold War period was West Germany's policy of only supplying arms or military assistance to countries which refused to grant diplomatic recognition to East Germany.

As will be evident in the survey below of military exports from Israeli, South Africa and Yugoslavia, all three countries have exported arms in pursuit of explicit political and diplomatic gains. Israel used military exports as a means to break out of diplomatic isolation and as an inducement to convince other countries to recognise Jerusalem as the Israeli capital. South Africa, too, used arms exports as a diplomatic tool to escape its

international pariah status. Yugoslav arms exports were aimed at supporting the Nonaligned Movement and reducing the dependency of developing countries on the industrialised powers.

The industrial pattern of arms supply occurs in situations where it is important for the supplier country to maintain indigenous arms industries: The supplier must export arms in order to obtain necessary capital to maintain the domestic defence sector. (The SIPRI study does not include the military-industrial complex phenomenon under this definition.) Israel and South Africa clearly fall under this rubric; Yugoslavia does too, albeit to a lesser extent.

The restrictive pattern is where military exports are not supplied to countries where this may directly or indirectly involve the supplier in a local or international conflict. Israel is clearly in this position with its strictly limited military exports to the Arab world. Until the end of the Cold War in Europe, Jerusalem was in a similar position with regard to the former East Bloc due to American sensitivities. The South African government was unwilling to sell arms to the frontline African states. In the case of Yugoslavia there is little evidence of arms denials under the restrictive pattern.

As no country transfers arms for a single reason, the above three patterns are not mutually exclusive. Arms export policy is the result of decisions taken by possibly different government bodies, groups, corporations, and individuals. It may result

from a compromise between competing pressure groups. <sup>5</sup> Nevertheless, in the remainder of this chapter I will attempt to show -- as far as possible -- which of the influences shaping respective arms export policy of Israel, South Africa and Yugoslavia were predominant during the 1970s and 80s.

### Israeli Arms Exports

The value and volume of annual Israeli arms, military technology and military services exports has dramatically increased during the past three decades. In the early 1960s Israel reportedly exported a mere \$6.5 million worth of arms annually.<sup>6</sup> For the year 1988 the total value of military export orders was \$2 billion, according to a report presented to the Israeli parliament by then Israeli Defence Minister Yitzhak Rabin.<sup>7</sup> Although in overall volume Israel lagged far behind the major arms suppliers (USA, USSR, France, UK, and, China), during the 1980s Israel was variously ranked as being the world's seventh to the eighteenth largest exporter of conventional weapons.<sup>8</sup> A SIPRI study found that between 1978 and 1988, Israeli arms exports totaled \$4.3 billion, making Israel the thirteenth biggest arms dealer in the world for this period.<sup>9</sup>

Israel's overall ranking remains an issue of some debate but

this is less important than the fact that Israel was the fifth or sixth largest pro-Western arms supplier and among the top three Third World suppliers during the 1980s.<sup>10</sup> Furthermore, weapons now comprise between one-fifth and one-third of total Israeli industrial exports<sup>11</sup> and this accords Israel the distinction of having the most weapons-intensive export economy in the world. Between the earliest Israeli exports of surplus military equipment and ammunition in the 1950s to the exports of the Kfir fighter in the 1980s Israel has reportedly exported military materiel to more than 60 countries, national liberation movements, and insurgency groups.

The rapid growth of Israeli military export sales over the past three decades can be attributed to a series of domestic and international factors (in addition to the elements of military industrial complex discussed in Chapter One). On the domestic level these include: 1) government subsidies and overall low costs for arms manufacturers; 2) the fact that Israeli weapons systems have been combat tested; 3) the relatively advanced technology of Israeli arms; 4) the fact that Israel is a reliable supplier and resupplier of arms; and, 5) a lax arms export decision-making process in Jerusalem.<sup>12</sup> Let us examine these points in more detail:

1) Through the mid-1980s the success of Israel military export sales owed a great deal to heavy government subsidies which

greatly reduced the unit-cost for advanced systems. Direct subsidies for all Israeli exports in the early 1980s were approximately 20 per cent of value added but in the industrial (and agricultural) sector benefits from a further set of subsidies pushed the effective subsidy rate as high as 30 to 50 per cent.<sup>13</sup> Furthermore, in order to prevent Israeli exports from being priced out of the market because of domestic cost increases, there were a series of devaluations of the Israeli Shekel. Israeli labour costs are, in any case, relatively low and Israel's large pool of skilled labour remains poorly paid in comparison with the West. Hence, for a variety of structural reasons Israel has been able to produce weapons systems which are often far more cost competitive than those of the West.

2) A second key advantage for Israeli arms exports is that many Israeli systems have been combat tested (or are sold as such) by an army which has captured popular imagination in international military circles. This fact remains an important reason for the popularity and international prestige of Israeli weapons and is stressed in Israeli defence sector marketing campaigns. An advertisement for the Reshef-class fast patrol boat has the caption: "Built in Israel. Bred in Battle. Respected Everywhere." <sup>14</sup>

3) A third factor contributing to the success of Israeli military exports is the relatively high level of Israeli military research and development -- compared with other Third World arms producers -- and Israel's special connections used to obtain Western military technology. Israel has been able to produce weapons systems with qualitative standards which come close to or match those produced by the Western countries.

The Merkava tank is an example of a battle-tested and cheap system which incorporates key Western components and technology. At the beginning of the 1980s the price for a Merkava was some \$900,000 compared with \$1.4 million for the West German Leopard 2 and \$1.5 million for Chrysler Corporation's M-1. And neither the Leopard 2 or the M-1 underwent serious testing in active service during the 1970s and 80s.<sup>15</sup>

4) A fourth factor contributing to the success of Israel's military export drive has been the reliability of supply and resupply. Israel appears to have deliberately cultivated this image to contrast with the stop-start arms supply policies followed by, say, the United States under the Carter administration. Israel's resupply of Argentina during the Falklands/Malvinas War may have damaged relations with the United Kingdom, but it unequivocally demonstrated that Israel was the arms dealer which would always deliver.

## 5) Arms export decision-making process lax

Arms export decision-making authority is highly concentrated in Israel. Decisions are made at the sub-cabinet level and only very large or politically sensitive deals are supposed to reach the cabinet itself. However, there is a long history of the Israeli cabinet simply not being informed even of deals which fall under the sensitive rubrics. On a number of occasions the Cabinet has only discovered major arms deals through reports in the foreign media or by mere chance. Two particularly controversial examples where the cabinet only learned after public disclosure will suffice here: the sale of mortar shells by Soltam to West Germany in 1959 and the disclosures in 1982 of arms sales to Iran and Argentina.<sup>16</sup> Klieman concludes that cases such as these illustrate how the cabinet tends to be forum for discussion of arms sales after, rather than before the fact. Although a Ministerial Committee on Weapons Transfers exists, it has steadily lost influence. Klieman argues that:

No known criteria have been established for assessing either the utility of arms transfers or, conversely, their irrelevance or counter-productivity for national security. Arms export

diplomacy is dealt with piecemeal and has not been subjected to comprehensive study in all of its dimensions at the highest levels of government.<sup>17</sup>

This appears to fit with ex-Mossad agent Victor Ostrovsky's description of lax arms export sales approval given by the Kaisarut (liaison) division of the Mossad. Ostrovsky describes a situation where an Israeli arms-salesman came to the office wanting approval from the then prime minister, Shimon Peres, for the sale of 20-30 U.S.-made Skyhawk fighters to Indonesia.

American approval would also have been required for the re-export of the aircraft but Ostrovsky writes: "I was quite sure there was no way the Americans would approve the sale."<sup>18</sup>

Ostrovsky says that when he refused to grant immediate approval for the Skyhawk export the man demanded to see his superior, Amy Yaar.

About 20 minutes later the man left Yaar's office and walked by mine. Holding the contract under his chin for me to see, and grinning from ear to ear, he said, "Apparently Mr. Peres was in, after all."

Peres, in reality, was probably in Jerusalem, and would certainly have known nothing about his

signature being put on these documents.<sup>19</sup>

The key role played by the Mossad in arranging Israeli arms exports has been confirmed by Dan Raviv and Yossi Melman who wrote in the Washington Post:

Because these arms export deals usually have to be secret, the Israeli intelligence community has an active hand in the transactions. The Mossad...often instructs its spies to act as salesmen and shipping agents for defense exports.<sup>20</sup>

Raviv and Melman conclude the Israeli arms exports drive "used to be much better controlled by government authorities than it is now" and that the arms sales middlemen "were now attempting to dictate Israeli foreign policy based on their own quest for financial gain."<sup>21</sup>

Such arms sales libertarianism must be viewed as an important part of the overall domestic environment in which Israeli military exports have flourished in the past two decades.

In sum, there are few controls on arms exports in Israel. Indeed, the internal bureaucratic pressures are for approving sales and "The presumption is that unless presented with solid

political or diplomatic reasons to the contrary, requests for arms ought to be answered affirmatively."<sup>22</sup>

Systemic and circumstantial factors favouring Israeli arms exports

On the international level, a series of factors which have aided the growth of Israeli arms exports (and arms production) can be broadly divided into two categories: systemic and circumstantial. As systemic inputs to the calculus for arms sales Aaron Klieman lists:

- 1) Israel's diplomatic isolation
- 2) Few sources of arms supply
- 3) Israeli dependence on the United States
- 4) Israeli competitiveness
- 5) No international safeguards

- 6) 'Security dilemma' of all states
- 7) Conventional arms race
- 8) Third World rearmament
- 9) No international constraints <sup>23</sup>

The first four of the above systemic inputs to the development of Israel's defence sector and arms export programme are examined above and in Chapter Two. Points five through nine comprise systemic inputs of a more general nature which lie beyond the scope of this dissertation.

Of far greater importance in analysing the growth of Israeli arms exports are the circumstantial inputs. Klieman lists some 18 domestic and regional circumstantial inputs which influence the Israeli calculus for arms sales to varying degrees. <sup>24</sup> In the pages below I will examine four circumstantial inputs -- some drawn from Klieman's list and some not -- which are especially important in explaining the growth of Israel's arms exports. These include: 1) the economic rationale for arms exports; 2) the political-security-diplomatic rationale for arms exports; and, 3) the imperatives created in the aftermath of the 1973

Arab-Israeli War.

1) Arms exports: the economic rationale

The economic rationale has evolved to become the primary motivation for Israeli military exports. In the 1950s and 60s indigenously produced arms from Israel's then modest military industries, or surplus equipment, was exported mainly on security or political-diplomatic grounds. By the 1970s, with the expansion of Israel's military-industrial sector and the doctrine of greater military self-sufficiency, larger volumes of Israeli arms were exported increasingly on pure economic grounds.

The growth of the Israel's state-owned arms industries, along with the expansion of the Israeli military following the 1967 War, increased Israel's already high defence expenditures from 11.77 per cent of GDP (1967) to 17.43 per cent (1972).<sup>25</sup> As arms manufacture was one of the few areas where Israel was developing a comparative advantage, one goal of boosting arms exports seems to have been the raising of GDP so as to bring down overall defence spending to more acceptable levels. In more recent years, with the increase of smaller, private manufacturers of military materiel and greater emphasis on state concerns operating in the black with fewer government subsidies the arguments advanced for exports are more straightforward: Namely that

arms export sales mean profit and that they should be used to raise additional funds for technological and scientific research and development.<sup>26</sup>

The emphasis on reaching greater self-sufficiency in arms production provides a series of compelling economic arguments for increasing arms exports. A key question is unit cost of a particular system. For a major weapon system with a projected development cost of, say, \$1 billion, the number of units required by the Israeli Defence Forces will probably be too small to bring unit cost down to a competitive level. Thus, for a small country like Israel, the projected export volume of the system may be decisive in determining whether the project receives approval. The same principle applies to smaller weapons systems and equipment. In order to achieve unit cost savings it is necessary to organise large-volume, long-term production. According to Neubach and Peri such export-led unit cost savings have been achieved particularly with regard to ammunition and communications equipment.<sup>27</sup>

Economic considerations stemming from the Israeli policy of maintaining arms production surge capacity, i.e., the potential for a rapid increase in military output during times of crisis or war, further encourage arms exports. High volumes of exports allow for production lines to be kept open after the needs of the IDF have been met.<sup>28</sup> Surge capacity remains an important element

of Israeli military preparedness and is in itself an important reason for the massive investment in armaments industry infrastructure.

Employment and prevention of brain-drain provide further compelling economic incentives for Israeli arms exports. The expansion of Israel's arms industries and subsequent military exports have provided thousands of new jobs during the past two decades. The government plays an important role in the economic system in Israel and the state is thus expected to provide employment opportunities: "...the military industries, which are subject to government control and influence in various ways, serve as one means to this end".<sup>29</sup> The Israeli military sector employs a large proportion of the country's skilled professionals and scientists. The maintenance of these industries helps prevent Israeli brain drain and provides an immigration incentive for persons with advanced technological and scientific skills.

A large proportion of the arms exported by Israel are refurbished systems which have been withdrawn from the IDF or captured during war. Israel's commitment to qualitative superiority and the continued willingness of the United States to supply Israel with its most advanced armaments since the 1970s has led to a rapid turnover rate for Israeli military hardware. Refurbished or obsolete weapons systems have a particularly high value-added component and the most important of these sales appear to have been made purely for economic gain. Examples of such exports can

be seen in aircraft sales to Indonesia, Malaysia, El Salvador, and Argentina in the late 1970s and early 80s. <sup>30</sup> According to an estimate by The Israeli Economist, exports of obsolete equipment were worth some \$200 million in 1982 -- possibly a fifth of Israeli arms exports for that year.<sup>31</sup>

A final economic ground for Israeli military sales is that arms may be used as a means for Jerusalem to acquire vital raw materials through barter. Iran, for example paid for some of the arms it received with oil and South Africa has paid for some of its imports with coal, steel and uranium.<sup>32</sup>

## 2) Arms exports: the political - security - diplomatic rationale

Although economic imperatives have come to be the driving force for Israeli arms sales in the 1970s and 80s, <sup>33</sup> Jerusalem also exports military materiel as a means to achieve a range of political, security and diplomatic ends. Aaron Klieman points out that:

...current Israeli arms export diplomacy serves as an extension of the country's overall approach to external affairs. In fact, defenders of this present course maintain that given forced

diplomatic isolation the sale of arms and technology is one of the few effective techniques remaining to further Israeli goals overseas.<sup>34</sup>

Klieman stresses that all Israeli governments, irrespective of their ideological orientation, have shared a common set of objectives in 'confronting the real world'. Among these has been the effort to offset Israel's isolation in the Middle East "by setting up a worldwide network of mutually beneficial cultural, commercial, and diplomatic ties".<sup>35</sup>

Klieman sets forth eight separate diplomatic goals which, he argues, figure prominently in Israel's pursuit of international defence relationships. These include: arms as influence; arms as prestige; arms as military contacts; arms as commerce, arms and the Jewish factor; arms as preemption; arms Western security and the United States; and, arms as independence.

-Arms as influence: While admitting that the leverage of a smaller arms supplier remains more limited than that of a larger state, Klieman nevertheless asserts that the Israeli leadership subscribes to the commonly accepted view that friends can be won and states influenced by providing arms for their security needs. While the benefits of direct influence remain unclear and while Israel is in no position to threaten arms sanctions against its

clients, Israeli military assistance appears to enhance bilateral political relationships which already exist and facilitates collaborative efforts in intelligence and anti-terrorism. Klieman posits that the influence of Israeli military exports, while transient, remain worthwhile in that arms sales serve as a better short-term instrument for maintaining and expanding influence in the Third World than economic aid and trade.<sup>36</sup>

-Arms as prestige: Israeli arms exports impact on Israeli international prestige in two radically different ways. On the one hand military exports to South Africa and various dictatorships in Africa and Latin America have long been a cause of Israel's international condemnation. On the other hand, Israel's well known roll in conventional arms transfers offer certain symbolic benefits which serve to counter the country's isolation from a realpolitik standpoint. Klieman argues Israeli arms exports show that Israel has something more tangible to offer than mere moral support to governments prepared to deal with Jerusalem. Israel's military reputation and the range of Israeli weapons available for export appear to have helped revive Israel's relations with the Third World in the 1980s and Klieman attributes the resumption of diplomatic relations with Zaire, Liberia, and Sri Lanka to the interest these countries had in obtaining military support from Israel. Klieman argues that power is a function of reputa-

tion and that arms exports are an important means to build Israel's reputation in this direction. "Success in this arms market...confirms not only that Israel is a reality...but that it is also a factor to be reckoned with world as well as regional politics."<sup>37</sup>

-Arms as military contacts: Klieman views military exports as an especially useful diplomatic tool when directed at Third World countries under a direct or indirect military government. Indeed, Israeli attempts at gaining influence in Third World countries appear to be targeted far more at junior officers with ambitions for power than at the government or state. Hence, the early Israeli contacts with Idi Amin and Joseph Mobutu. Such contact are even more common in Latin America. According to Klieman "Israeli military transactions have established liaison with this most significant political elite in the majority of Central and South American countries." (emphasis added)<sup>38</sup> As Neubach and Peri note, such ties based on arms exports can often serve as a substitute for overt diplomatic relations.<sup>39</sup>

-Arms as commerce: Military exports serve as tools for Israel's commercial diplomacy. As the Israeli economy industrialised over the past decades, Jerusalem's diplomatic thrusts have increasingly been aimed at creating opportunities for trade. Military sales frequently provide the initial access point to a market

from which civilian deals can be spun-off. This occurred in Iran during the 1970s, in Zaire during the 1980s,<sup>40</sup> and apparently also in Guatemala, South Africa and South Africa's Bantustans. Taking a slightly different angle, Neubach and Peri posit that such commercial relations via arms exports sometimes develop as the fourth stratum of a covert relationship. Citing the examples of Iran under the Shah and Morocco, they argue that the upper stratum of relations consists of personal relations between heads of state, the second stratum consists of training and guidance for the leader's personal guard and/or internal security services, and a third stratum of a broader nature between the respective military establishments.<sup>41</sup> The fourth stratum of economic ties develops as military trade ties are transformed into civilian economic relations, as happened in Israel's relationship with Amin's Uganda.

-Arms and the Jewish factor: An important aspect of Israeli diplomacy has been a commitment to the safety and welfare of the 10 million Jews residing outside of Israel in some 80 different countries. Klieman notes that there is a significant correlation between the presence of Jews in a country and its being a recipient of Israeli military exports with particularly significant examples being Iran under the Shah, South Africa and Argentina. In these cases, arms and military sales appear, at least partly,

to have been inspired with the goal of maintaining contact with the Jewish populations in these countries to facilitate their emigration to Israel.<sup>42</sup> A more extreme set of such examples include countries such as Ethiopia, Morocco, and revolutionary Iran,<sup>43</sup> which have in effect used their Jewish populations as hostages. In these cases arms transfers may have been the only diplomatic tool available to serve Israeli statecraft.

Klieman's thesis on the 'Jewish factor' is contested by Neubach and Peri, who dismiss the justification of arms sales to Argentina and South Africa on the 'Jews as hostages' ground as a mere public relations ploy.<sup>44</sup>

The Jewish factor has in recent years also functioned in a different manner. Many countries have come to see improving ties with Israel as a means to improve their image in the United States. Israeli diplomats "are not above suggesting the purchase of its military goods as an acceptable and fair quid pro quo for using the near-legendary strength of the pro-Israel lobby in Congress...on behalf of the arms client..."<sup>45</sup> This argument is an especially strong selling point in the Third World and one such client appears to have been Zaire. However, other countries using Israel as a conduit to Washington, such as the former Comecon/Warsaw Pact states appear to have sought to improved relations with Jerusalem without buying Israeli arms.

-Arms as preemption: Military exports serve as an important tool

through which Israeli diplomats seek to preempt Arab diplomatic gains which would further isolate and weaken Israel. Klieman argues that in the face of Arab efforts to boycott, blackmail or buy-off Third World countries into abstaining from contact with Israel, military exports are an important resource in Jerusalem's counter-offensive. Moving to a preemption in a broader sense, Israeli arms exports are used to exacerbate inter-Arab and inter-regional conflicts and Israeli arms sales to royalist forces in Yemen, Morocco, Kurdish separatists, the Lebanese Phalange, and Iran can partly be classified under this rubric.<sup>46</sup>

-Arms, Western security and the United States: Like South Africa, Israel has always conceived of itself as a member of the Western community of nations and regards itself as an important Middle Eastern element of the Western security system. However, Israel has been regarded by the West as being problematic, if not a downright liability in the regional and Arab-Israeli context.<sup>47</sup> The Israel leadership is, therefore, placed in a position where it feels that it must take positive action to confirm the country's value to the West. In cases where a United States administration finds it politically impossible to supply arms to a given country -- either because of domestic political or legal obstacles or because of sensitivities in the recipient state in being seen to accept American arms -- Israel is available as a

substitute supplier. This approach appears to have been especially favoured in Central America with the Iran-Contra scandal providing the starkest example of Israel serving as a U.S. proxy and also with regard to American arms sales to Iran, South Africa and the Angolan counter-revolutionary forces.

-Arms as independence: Klieman argues that if the notion of sovereignty for all modern states is meaningless in absolute terms, a country like Israel which has such limited options, must exploit every possible advantage to gain some degree of political latitude. He regards the sale of weapons as offering this essential margin for a more independent foreign policy and concludes that as Israel clings to a tenuous independent role in world politics some of the success can be traced to Israeli military sales.

### 3) The imperatives created in the aftermath of the 1973 Arab-Israeli War

Through 1973 Israeli arms exports were based mainly on small arms, reselling surplus or captured military systems along with some service and repair work. In the aftermath of the 1973 War a series of circumstance helped bring about both a quantitative and

qualitative rise in Israeli arms exports. Some of these factors have been discussed above but it is useful to restate them here to present a full picture of the post-1973 context. First, the Israeli defence production sector underwent considerable growth during the period from 1967-72, with overall defence expenditure as a percentage of GDP increasing to over 17 percent.<sup>48</sup> Israel was thus in a situation where it could produce an increased volume of military equipment of a more sophisticated nature not only for the domestic market but also for export.

Second, the OPEC oil price increase worsened Israel's balance of payments deficit through the burden of more expensive imported petroleum. At the same time Israel was forced to compete in a regional arms race against the newly rich OPEC Arab states which were able to purchase vast quantities of advanced weapons in the post-1973 period. Among the Israeli responses to meet the expanded costs of defence in this new situation was a vigorous programme to increase the volume of arms exports.<sup>49</sup>

Third, the response of the Israeli government following the 1973 War was to further increase subsidies and grants to defence sector industries which underwrote between 30 and 80 per cent of weapons development costs. In addition, repayments to the state from sales of military systems developed or produced with government funding were reduced.<sup>50</sup> What this appears to have meant in practice is that not only could Israeli arms be offered for

export at lower prices but also that higher margins of profit could be made on sales: In sum an invitation for Israeli arms manufacturers to increase exports.

The fourth factor contributing to the rise in Israeli arms exports in the post-1973 period was the acceleration of U.S. arms exports to Israel which after the War. This allowed the release many older IDF weapons systems for export sales.<sup>51</sup>

A fifth factor may be found in, what for lack of a better term, we may refer to as the 'international climate' for arms sales in the 1970s. The Latin American countries -- taking out the massive loans which subsequently shackled many of their respective economies -- provided Israel with the single most important regional market. Iran under the Shah and South Africa following Prime Minister Vorster's Israel visit in 1976 also provided Israel with buoyant arms export markets during this period. Although it may be unwise to delimit history into strict time-periods, it can be argued that a series of conflicts -- many of which have cooled or disappeared with the end of the Cold War -- had their genesis in the 1970s. These include the wars following the liquidation of Portugal's African empire, the Iran-Iraq War, and the series of revolutionary and counter-revolutionary insurgencies in Central America and Africa. In all of these conflicts Israel, as we will see below, proved both willing and able to supply combatants with military equipment ranging from small arms and military training to jet fighters.

A sixth and final factor assisting the growth of Israeli arms exports in the post-1973 era was the supportive nature of successive Israeli governments. In a similar, albeit reverse manner, as has occurred in France, the shift from a socialist to conservative government meant little fundamental change in arms export policy. Indeed, as Klieman points out, Shimon Peres, as defence minister from 1974 to 1977, used this period in office to stimulate or complete programmes which he himself had initiated some 20 years earlier as director-general of the defence ministry. The arrival of the Likud coalition served as "...a reinforcement and acceleration of the previously existing pro-arms orientation than a fresh policy initiative..."<sup>52</sup>

### The Nature of Israeli Arms Exports

Israeli military exports can be divided into at least five (overlapping) categories: local manufactures, re-exports, services, retrofit, and components/technology.<sup>53</sup>

Local manufactures and the export limitations placed on major systems have been discussed above. Although a range of Israeli-built systems are offered for export, the fact is that

few locally manufactured major systems have been sold in large numbers. Only two major systems -- the Gabriel ship-to-ship missile and the Reshef fast patrol boat -- can be said to have succeeded in the international market. As one observer points out: "Solely from the standpoint of marketability abroad, the utility of such major systems is open to question....Their sheer size and visibility can...deter politically sensitive clients who are perfectly willing to buy less conspicuous arms or equipment."

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Re-exports have provided Israel's main means of selling major weapons systems. The systems offered for sale are largely surplus French or U.S. equipment from the IDF or captured Soviet systems. Egypt, for example, reportedly lost some \$1 billion worth of Soviet equipment in the Six Day War, much of which was simply captured by Israeli forces and later re-exported. 55

Israeli military service exports include aircraft and helicopter servicing arrangements, the training of local personnel in the maintenance and operation of weapons systems, officer training and counter-insurgency training (both of which can be carried out either in Israel or in the recipient country).

As discussed in Chapter Two, Israel offers a series of retrofit packages which are used to modernise existing weapons systems of recipient countries. These became an increasingly important defence sector export to financially pressed Third World countries in the 1980s.

The export of military components and technologies has been a further growth area for Israel during the 1980s. Military components include computers, optics, communications and microelectronics. Military technologies exported can provide the recipient country with the technological means to produce indigenous weapons. As was shown in Chapter Five on the Israeli-South African military relationship, a broad range of military technology is available from Israel for export.

#### Constraints on Israeli Arms Exports

While Israel has sought to achieve armaments independence -- both with regard to production and exports -- a series of conditions have served as a brake on the acceleration of military export sales.

Israel's overwhelming technical, financial and strategic dependence on the United States serves as a major constraint on freedom of maneuver in the arms export business. Washington has a powerful say over Israeli arms exports because the U.S. can forbid the export of Israeli military systems that contain key American components. The most striking example of Washington's

use of its veto on Israeli arms exports has been with regard to the Kfir fighter. The export of the Kfir, which uses a General Electric J-79 engine, was repeatedly blocked after the first foreign order for the fighter from Ecuador was vetoed by the newly installed Carter administration 1977. Israeli negotiations for sales of the Kfir to Mexico, Columbia and Venezuela were blocked by Washington until 1980, and public disclosure of Washington's approval for the delivery of up to 60 Kfirs to Taiwan caused such embarrassment in Taipei that the sale had to be canceled.<sup>56</sup> As a military export the Kfir has been a failure, in part because of periodic U.S. moves to block its sale. The Kfir assembly line has now been closed down and current sales are from existing stock. U.S. control over the export of the Kfir has impacted against Israel both in terms of lost revenue from export sales and in terms of reducing Israel's international standing as an independent arms supplier. This latter point may well be the more crucial, as one of the key selling points of Israel arms has been that deliveries are meant to be reliable and confidential with few questions asked.

United States approval was subsequently granted for Kfir exports to Columbia, but the scandal surrounding the sale of Israeli weapons to Columbia's cocaine cartel was seen by some Israelis as a U.S.-inspired move to drive Israel from the Columbian arms market. An unidentified Israeli army general, quoted in the Yedioth Ahronot newspaper said:

The Americans would be glad if Israel would have gone out of Columbia, because Israeli security industries are succeeding to sell much military equipment to Columbia, in place of American military equipment. My feeling is that somebody there is blowing up all the affairs of the Israeli involvement in order to fuck Israel....They are most angry because we are selling Israeli planes in Columbia which it buys instead of American planes.<sup>57</sup>

A second constraint on Israeli military sales has been Arab pressure on all countries -- in particular in the Third World -- to eschew links to Israel. Arab influence over the emerging states of Africa waxed following the 1967 War when increasing amounts of cheap oil from the Gulf states was seen as a means to prime the ailing African economies. The 1973 Arab-Israeli War led 29 of 32 African states to sever diplomatic ties with Jerusalem, with the Arab states promising to make up for any financial aid losses caused by the break.<sup>58</sup> The rise of the Arab-dominated Organisation of Petroleum Exporting Countries (OPEC) in the wake of the 1973 Arab-Israeli War meant the Arab world was better

provided to buy-off and/or intimidate other countries from doing business from Jerusalem. However, Arab influence over the African states waned during the 1980s. Arab aid never amounted to levels that were promised and the example of Egypt -- a leading Arab and African state -- establishing relations with Israel appears to have made the need for an African boycott seem less imperative. Nevertheless, the African boycott was applied just as Israeli arms exports were increasing in the 1970s and this meant that key a region of the Third World was largely closed to the initial Israeli military export drive.

A key problem which plagued Cold War expansion of Israeli military exports was that so many world regions and key groupings of states were closed to Israel. The Arab world, aside from limited sales to Morocco and Egypt, is for obvious reasons not a target for Israeli military exports. In the remainder of the Islamic world only Iran, and to a lesser degree Turkey and Indonesia have bought arms from Israel. South-East Asia offers limited possibilities for Israeli arms exports. Although China has been an important customer, countries like Taiwan, Singapore and South Korea are more likely to become significant arms producers themselves than customers of Israel. Eastern Europe, aside from rumours of some limited sales to Romania and former Yugoslavia remained off limits for Israeli military sales throughout the Cold War; not least due to U.S. sensitivities. Western Europe provides limited opportunities as most of the

major countries prefer to buy military equipment from their own national arms and electronics producers. Western European military imports tend to be in the areas of very advanced technology and the U.S. is usually the supplier. West Germany bought military equipment from Israel on a fairly regular basis, but the sales have usually been of basic items such as ammunition. The U.S.-Israel free trade agreement made the United States Israel's great hope for expanding future arms sales. Nevertheless, by the end of the 1980s, Israeli sales to the U.S. had been only a limited success. (U.S.-Israeli relations are discussed below.)

Another area of some promise for arms exports during the end of the 1980s were the black African states which comprised some of Israel's most important arms customers beginning in the 1960s through to 1973. After a hiatus of nearly ten years, the black African states began slowly re-establishing links with Israel in the mid-1980s. Military sales followed but given the continent's economic troubles the prospects for major Israeli defence contracts remain limited. The condition of the economy is also a reason for some pessimism regarding Israel's most important regional market for defence exports: Latin America.

The problem with African and Latin American markets does not appear to be selling arms but rather financing the sales and collecting the debts. Unlike its arms exporting competitors in the First, former Second, and sometimes even the Third World,

Israel's economic malaise in the 1980s left Jerusalem with reduced means to offer financing arrangements for weapons exports. A striking example of this problem is illustrated by the sale of Kfir fighters to Honduras which was to be financed with Honduran military aid from Washington. The arrangement had been approved by both the State Department and the Pentagon but commercial interests in the United States raised strong opposition to American aid being used to finance the aircraft sales of a competitor. American financing was withdrawn and the deal was canceled, apparently because Israel was not able to offer any alternative means of financing the sale. The U.S. aerospace concern, Northrop, subsequently sold Honduras refurbished F-5 fighters under a liberal financing arrangement.<sup>59</sup>

Increasingly, the only way for Israel to 'finance' sales to countries in the Third World is through barter sales. In 1983 Israel sold aircraft to Paraguay in exchange for meat and other products. More recently, Israel reached a \$100 million barter agreement with Mexico for oil and a \$350 million barter deal with Columbia for coal.<sup>60</sup> Barter appears to have come into favour in part because of the high level of losses through non-repayment of debt by developing countries. Reports in the Financial Times indicate that Israel experienced severe difficulties in obtaining repayment for its military exports during the 1980s and that debts of at least some \$300 million worth of arms exports are considered unrecoverable.<sup>61</sup>

In summing up the powerful competition faced by Israeli arms exports, a leader in the Jerusalem Post stated: "The major arms producers...are able to more or less corner the market leaving Israel little but the fringes."<sup>62</sup>

#### Israeli Arms Exports to Central and South America

In Central America, more than in any other area of the world, Israel has come to be a key regional supplier of weapons ranging from First World War surplus rifles to jet fighters. Israeli arms have been so aggressively marketed in the region that the Stockholm International Peace Research Institute (SIPRI) has condemned the Israeli government for encouraging border conflicts in the region by playing on fears of rival governments in order to make bigger sales.<sup>63</sup>

Zionist relations with states like Nicaragua and Guatemala predate the creation of the Israeli state. Nicaragua's Luis Somoza supplied the Haganah (the forerunner of the IDF) with passports and false end-user certificates for arms purchase in

Europe and Guatemala's ambassador to the United Nations, Jorg Garcia Granados, was an important advocate of the Zionist cause during the negotiations which led to the 1947 Partition Plan for Palestine.<sup>64</sup> During the 1950s and early 1960s, Latin America comprised the sole bloc of developing countries to support Israel in international forums such as the UN, and until 1980 as many as 12 Latin American states recognised Jerusalem rather than Tel Aviv as the Israeli capital. For these reasons, Israeli leaders tend to regard Latin American countries as traditional supporters which to some extent have been 'lost' in recent years due to increased Arab financial status and the improved political status of the PLO.<sup>65</sup>

The growth of Israeli arms sales to Latin America began in 1967 when the United States Congress limited American military sales and credits to Latin America to \$75 million (later raised to \$150 million). European and Israeli arms dealers were thus able to move into a region which hitherto had largely been an American arms sales preserve.<sup>66</sup> By 1977 Israel had become a key arms supplier to the Central American states of Guatemala, Honduras, El Salvador, and Nicaragua, supplying fighter, transport and trainer aircraft, missiles, artillery and small arms.

During the period following 1977, Israeli arms sales to Latin America further expanded, despite the Carter administration's ban on Israeli sales of the Kfir fighter to the region. The Carter administration and the American Congress

reduced U.S. arms sales to Latin America in general during the late 1970s. Somoza's Nicaragua, El Salvador and particularly Guatemala all suffered what, in effect, were military aid bans placed against them by Washington. Israel filled the military void left by the United States and supplied weapons, military technology and advisers to each of these countries. The Carter administration lifted its ban on Israeli sales of the Kfir to Latin America in October 1980, a move which boosted the reputation Israel had attempted to cultivate as a reliable arms supplier -- capable of successfully applying pressure on Washington when the need arose and distant enough from the region's tensions and rivalries so as to simply ignore them and sell weapons to any government (or organisation) with available funds.<sup>67</sup>

With the advent of the Reagan administration in 1981, Jerusalem also came to be increasingly used as a proxy for shipping military materiel to the region, in defiance of the American Congress. As Israeli Knesset member Gen. Matityahu Peled said: "In Central America, Israel is the 'dirty work contractor for the U.S. administration. Israel is acting as an accomplice and arm of the United States."<sup>68</sup>

The U.S. policy of using Israeli military exports as substitutes for American arms deliveries was publicly announced by Reagan administration officials in July 1982, when at Washington's request, Israel agreed to send weapons captured

from the PLO during the 1982 war in Lebanon to Honduras for delivery to the anti-Sandinista Contra forces.<sup>69</sup>

Initially, the Israeli government was concerned that the Reagan administration's emphasis on defence and its willingness to reinstitute military assistance to those regimes which had been barred from receiving arms under the Carter administration would reduce chances for continued expansion of Israeli military exports to Central America. The issue was raised during negotiations for the Memorandum of Understanding on Strategic Cooperation in 1981 between Israel and the United States. Proposals known as the Meridor Memorandum were put forward by Ya'akov Meridor, a minister without portfolio in the Begin cabinet. The Memorandum sought to outline the military sales relationships that Israel has developed with certain countries in Latin America, Africa and Asia since the 1970s and accord them with special recognition by U.S. government which would exempt them from interference or competition on the part of the U.S. Department of Defense or the American arms industry. The ideas set forth in the Meridor Memorandum were incorporated into the official Memorandum of Understanding on Strategic Cooperation between Israel and the United States which was signed on 30 November 1981.<sup>70</sup>

## Israeli arms recipients

To accurately document the sale and export of Israeli arms to any region of the world is extremely difficult due to the paucity of reliable information. The Israeli government is far more sensitive about public disclosure of its armaments exports than most other countries. This stems on the one hand from the use of military exports as a diplomatic and geo-political tool and sells arms to many countries which do not wish to be identified as doing business with Jerusalem. On the other hand, Israel sent much of its Cold War arms exports to countries with internationally unpopular or repressive governments with which Jerusalem did not wish to be publicly linked.

Aaron Klieman has drawn a composite of the typical buyer of Israeli military materiel: "...a non-Western country with a defense-conscious government, rightist in orientation, in which the military is the actual or proximate locus of power."<sup>71</sup> Clearly, international publicity of arms deliveries to such clients would not be conducive to Jerusalem's efforts to reduce Israeli diplomatic isolation.

It should also be pointed out that it is standard Israeli practice to use private arms dealers -- all of whom are accredited by Jerusalem -- when organising the export of military materiel to clients requiring discretion or who could be embarrassing

to Israel should the deal be made public. The private arms dealers function as what is known as a 'cut-out', i.e., a figure who can be held up as a private entrepreneur with no ties to Jerusalem, should an arms sale become public.<sup>72</sup>

### Latin America

Since the late 1970s Israel has had a significant arms export relationship with the less internationally acceptable governments and organisations in Latin America, including Somoza's Nicaragua, Argentina and Chile while under military rule, El Salvador, Guatemala, Honduras, the Nicaraguan Contras, and the Columbian cocaine mafia. Other important Latin American recipients of Israeli military exports have included Colombia and Ecuador.

Below is a summary of major Israeli arms transfers to Latin America. For more detailed information on the nature and date of these and other military sales to Latin America see Appendix 1.

Nicaragua - Israel's first military sales to Latin America comprised a series of small arms shipments to Nicaragua in the 1950s.<sup>73</sup> The major arms sales began following a special arms show

arranged for Anastasio Somoza Debayle in Managua in 1974 after which Nicaragua placed orders for Arava transport aircraft, Dabur patrol boats, Sherman tanks and tactical radios.<sup>74</sup> The Carter administration's announcement in November 1978 that it was suspending U.S. military and economic aid to Nicaragua led to an arms supply vacuum which was largely filled by Israel. By September 1978 open revolt against Somoza had spread to most of Nicaragua's cities. Military equipment sent by Israel between 1978 and the overthrow of Somoza in July 1979 included further combat armed Cessna aircraft and military transport aircraft, helicopters, missiles, light artillery, mortars, patrol vehicles, and plane loads of small arms and ammunition.<sup>75</sup> Some two weeks before the collapse of the Somoza regime Israeli arms shipments were halted at the request of the United States. A number of ships carrying arms destined for Nicaragua were ordered back to Israel from mid-sea and Somoza subsequently claimed in his memoirs that one ship which turned back only miles from the Nicaraguan coast

...carried among other military items, ten-thousand anti-tank and anti-personnel grenade rifles with ammunition...That precious cargo could have won the war for the anti-Communist forces of Nicaragua...Somewhere in Israel there

is a large consignment of arms and ammunition which could have saved Nicaragua.<sup>76</sup>

The level of Israeli support for the Somoza regime is one of the reasons that the Sandinista government had a cool relationship with Israel. Israel exported no further arms to Nicaragua after 1979 and in 1982 Managua broke diplomatic relations with Jerusalem.

Argentina - Argentina, by far Israel's largest customer in Latin America, is probably Jerusalem's second most important market in the world for arms sales after South Africa. The Stockholm International Peace Research Institute has estimated that Argentina took up to 30 per cent of Israel's total weapons exports during the 1970s.<sup>77</sup> It is estimated that Israel sold Argentina \$1 billion worth of arms during the period of military rule.<sup>78</sup>

Israeli military exports to the former Argentine military Junta have been especially controversial due to the Israeli decision to continue delivering weapons during the Falklands/Malvinas War in 1982. This brought Israel in direct conflict with its patron, the United States, after Washington backed London in the conflict.

As with Nicaragua, Argentina became a more important customer for Israeli military exports following the Carter administration's restrictions on military aid to the military

government in Buenos Aires. However, it was during the Falklands/Malvinas War that Israel proved itself as a key arms supplier. Some observers argue that during the War Israel's response to the Argentine military's critical shortage of defence materiel was so substantial that Israel became the first Third World arms manufacturer to act as the primary supplier of major weapons to a belligerent during a military conflict and thereby took a role which hitherto had been played by the major arms producers.<sup>79</sup> Argentina's substantial losses of military equipment, coupled with the humiliation of defeat, led to a major arms build-up in the years following Falklands/Malvinas War, and Israel, along with France and West Germany were among the major suppliers.<sup>80</sup> Since the late 1970s Israel has supplied Argentina with Nesher, Mirage 3, and Skyhawk fighter aircraft, a Boeing 707 equipped with Elint (radio-wave eavesdropping) systems, Gabriel missiles, coastal patrol boats, fire control systems and other general equipment. In addition, Israel has assisted Argentina in setting up production of the TAM tank, licensed production for an armoured anti-guerrilla warfare vehicle, and reportedly participated in the development of the Pampa trainer aircraft.<sup>81</sup>

Chile - The Carter administration's restriction on military assistance to authoritarian regimes in Latin America was also applied to Santiago. Chile bought a wide range of equipment from

Israel including Reshef patrol boats, missiles, and radar systems. In addition, the Israeli Nimda concern licensed production of the Israeli Shoet II armoured personnel carrier and Israel Aircraft Industry maintains the Chilean air force's Mirages and other planes.<sup>82</sup> The Chilean air force has also announced plans to buy 12 Kfir fighters which will reportedly be powered by ATAR 9K50 engines, made under an Israeli-South African military pact. The Kfir is normally powered by a U.S. General Electric J-79 engine and all exports are subject to U.S. approval.

El Salvador - Israeli military involvement in El Salvador began in 1972 when the Israeli Defense Ministry organised a youth development programme for the country. San Salvador provided Israel with its first major arms sale in Central America in 1973 when it ordered 18 Dassault Ouragan fighters, six Fouga Magister trainers and 25 Arava short take off and landing aircraft. In light of the tensions which had led to the 1969 'Soccer War' between El Salvador and Honduras, the announcement of the sale set off something of a regional race to acquire fighter aircraft. The refurbished Ouragan fighters were delivered to El Salvador in 1975 and were the first jet fighters to appear in the arsenal of a Central American country.<sup>83</sup>

El Salvador was a further victim of the Carter administration's cut-off of military aid to countries with governments deemed to be persistent human rights violators. Like

Guatemala, El Salvador preempted the American move by unilaterally severing military ties with Washington. This position of defiance was reportedly taken because the government in San Salvador knew that Israel was willing to supply arms withheld by the United States.<sup>84</sup> Between 1977 and the Reagan administration's resumption of military aid in 1981, El Salvador bought an estimated 80 per cent of its arms from Israel, including aircraft, napalm, rocket launchers, small arms and ammunition.<sup>85</sup> In addition, Israeli technicians began work on a computer telephone monitoring system for the El Salvadoran military in 1978.<sup>86</sup> Israel has also supplied military advisers who have trained the Salvadoran military in counter-insurgency tactics to fight the civil war.

El Salvador provides another example of the triangular relationship which existed between the United States, Israel and various countries in Central America during the Reagan administration through which the U.S. Congress was bypassed so as to supply military aid to unpopular governments and insurgency movements. In 1981, for example, Israel agreed to 'lend' \$21 million to the U.S. government from funds which had been already appropriated for use by Jerusalem. The money was transferred to El Salvador and Israel was "generously" repaid for the inconvenience during the next fiscal year.<sup>87</sup>

El Salvador is also one of the few countries which has moved

its embassy back to Jerusalem after having moved to Tel Aviv in 1980 to protest the enactment of the Jerusalem Law which formally placed all of Jerusalem under Israeli sovereignty and affirmed the city as Israel's capital. The move back to Jerusalem occurred in April 1984 at a time when the Salvadoran government was seeking increased military and economic aid from Israel.

Guatemala - The Zionist relationship with Guatemala, as in the case of Nicaragua, precedes the creation of the state of Israel. Although Israel provided Guatemala with an extensive technical assistance programme, the first Israeli arms exports appear to have been in 1974. The military relationship between the two countries grew dramatically after the Carter administration cut U.S. military aid to Guatemala. The relationship continued to grow under the Reagan administration which found it impossible to whitewash Guatemala's brutal treatment of its population to convince the U.S. Congress to restore military aid.

Guatemala received Arava transport aircraft (an armed military version), helicopters, armoured cars, mortars and large quantities of small arms. Israel also licensed Guatemalan production of the Galil rifle and armoured vehicles.<sup>88</sup>

As Jane Hunter points out, however, the real Israeli contribution to the Guatemalan military machine has not been weapons but rather the technology and counter-insurgency know-how.<sup>89</sup> Israel co-operated with Guatemala's feared G-2 police intelli-

gence service which is controlled by the army. Israel supplied the G-2 with two computer systems, one of which is reportedly used to maintain dossiers on journalists, students, politicians, and those suspected of having left-wing sympathies. In combination with weekly reports, the computer is reported to have been used to compile lists for Guatemalan death squads. A second computer system is used to monitor utilities use and to alert the military to any surges in water or electricity use which may indicate clandestine activity.<sup>90</sup> The Israeli Tadiran concern has designed and financed the Army's School of Transmissions and Electronics which instructs soldiers on encoding, radio jamming and monitoring.

Israel played a role in Guatemala's agricultural counter-insurgency programme from 1977 and scholarships were made available for Guatemalan officials to study co-operative agricultural schemes in Israel. In the period from 1978-79 Israeli experts trained some 1,000 Guatemalans in conjunction with a rural pacification plan initiated by then-president Lucas Garcia. Israel's Nahal programme (Fighting Pioneer Youth), which trains soldiers in agricultural techniques to establish and expand border settlements, served as a model for counterinsurgency strategy known as the 'Plan of Assistance to Conflict Areas' under the Rios Montt regime from 1982-83.<sup>91</sup>

By the end of the 1980s, however, it appeared that the

Israeli-Guatemalan relationship was ebbing. Guatemala began building relations with Egypt in 1988 and held negotiations with Jordan over the purchase of spare parts and equipment for its air force. There have been reports that Guatemala may purchase F-5 aircraft and helicopters from Saudi Arabia and OPEC and Arab capital are increasingly being directed toward projects in the country.<sup>92</sup>

Honduras - Honduras has a partially Israeli-supplied air force including Arava transports, Dassault Super Mystere B2 fighters, and a Westwind reconnaissance plane. The Super Mystere fighters, delivered in 1977, were refurbished with U.S. Pratt and Whitney engines and their transfer to Honduras without Washington's approval strained U.S.-Israeli relations. In addition, the Honduran government has bought Israeli RBY armoured cars, mortars and a large quantity of small arms (Galil rifles and Uzi submachine guns).<sup>93</sup> Honduran efforts to purchase the Kfir fighter have not come to fruition, in part due to opposition from Washington. Israel has supplied military assistance to paramilitary groups in Honduras similar to the Guatemalan and El Salvadoran civil defence patrols.<sup>94</sup>

Honduras also served as a key 'middleman' for arms shipments to the Contra forces in camps on the Honduran-Nicaraguan border during the 1980s. The most common means of clandestine shipment was for weapons to be billed as destined for the Honduran armed

forces and Israeli arms dealers reportedly shipped both Israeli and East European arms to the Contras in this manner. <sup>95</sup> Israel's relationship with the Contras is examined in greater detail below.

Columbia - Columbia has bought Arava transports, artillery, tanks, and Gabriel missiles. The Columbian government awarded Israel Aircraft Industries a contract to refurbish its squadron of Mirage 5s. <sup>96</sup>

In 1987 the American government approved the sale of 13 Israeli Kfirs with U.S. engines to Bogota, partly to reward Israel for the cancellation of the Lavi project. As Ignacio Klich has noted the deal also served U.S. interests:

In as much as Bogota had previously bought Mirages, a Kfir deal will serve US interests as well, not only by depriving France of a customer but also by shifting Columbia away from French to US technology. <sup>97</sup>

The Kfir deal, signed in October 1988, provides that part of the financing will be through Columbian coal exports to Israel. <sup>98</sup>

Ecuador - Israel's initial attempt to sell the Kfir fighter to Ecuador was rejected by the Carter administration. This veto was subsequently rescinded and Ecuador has since received at least 13 Kfirs with a reported option for 11 more. In 1977 Ecuador purchased 12 Super Mystere fighters in Israel's first barter arms for oil deal. Ecuador has also bought Arava transport aircraft, Barak anti-missile missiles, armoured personnel carriers, and various rockets, explosives and ammunition. <sup>99</sup>

Contra forces - Israel's military relationship with the anti-Sandinista forces of the Honduran-based FDN (Nicaraguan Democratic Front) and the Costa Rican-based ARDE (Democratic Revolutionary Alliance) is complex matter, further complicated by the scandal surrounding the Iran-Contra affair in the United States. The beginning of Israel's relationship with the Contra forces may go back as far as their creation in 1979.<sup>100</sup>

Israel's links with the Contras reportedly stemmed from CIA difficulties in acquiring 'untraceable' weapons. The appearance of Contra forces on American television with U.S. arms caused considerable embarrassment in Washington during the early 1980s. The Reagan administration therefore requested that Israel sell arms to the Contras from its stock of Soviet weapons. Israeli shipments of Soviet arms, captured from the PLO in Lebanon, to the Contra forces appear to have begun in earnest in 1983 following the visit of Defence Minister Ariel Sharon to Honduras in

December 1982. Among the weapons sent to the Contras were Soviet AK-47 and SKS assault rifles and SA-7 surface to air missiles.<sup>101</sup>

The break between the United States and Argentina over the Falklands/Malvinas War was one cause of the apparent expansion of Israel's role from merely supplying arms to sending military advisers. The Reagan administration had arranged for veterans of Argentina's 'dirty war' to serve as military trainers for Contra forces, but this arrangement was terminated when Washington sided with Britain during the 1982 War. By 1983 some 50 Israeli specialists in guerrilla and psychological warfare were reportedly stationed in El Salvador and Honduras.<sup>102</sup> The advisers were recruited as mercenaries, one of whom told journalists that the Israeli Defense Ministry was 'aware' that they were working with the Contras and that Israeli Defence Forces manuals and catalogues were used as teaching material.<sup>103</sup>

In early 1984 the U.S. Congress moved to cut funds to the Contras. As American aid for the Contra forces ran out, Israeli support became crucial. Expanded military assistance from Jerusalem was arranged and by 1985 both Reagan administration officials and members of Congress admitted that Israel was sending larger shipments of small arms and more advisers to the Contras.<sup>104</sup>

During the 1985-86 period, Israel sent at least six shiploads of Eastern European and Soviet weapons to the Contras

(including the shipments which Somoza had paid for, but had subsequently been withheld due to pressure from the Carter administration). In addition, some of the 400 tonnes of weapons supplied to the Contras by the 'private' network established by Lt. Col. Oliver North of the U.S. National Security Staff, were bought from Israel. It was also during this period that the U.S. and Israeli started shipping arms to Iran via an arrangement between the White House and the Israeli government under which some of the inflated profits from the sales to Tehran went to the Contras in what became known as the Iran-Contra scandal.<sup>105</sup>

Columbian cocaine cartel - A series of arms and military training deals involving Israeli Defence Forces officers with members of the Columbian cocaine cartel were exposed in 1989.

A documentary by the U.S. television network NBC showed Israelis training Columbians, purported to be drug cartel assassins, in the use of automatic weapons and assault techniques.<sup>106</sup> The Israeli instructors were later linked to the Hod Hahanit military consulting firm headed by Lt.-Col. (res.) Yair Klein and Lt.-Col. (res.) Amazia Shu'ali. Israeli Defence Ministry officials said that Hod Hahanit had operated in Columbia without the necessary permits to export military hardware and technology and that they knew nothing of the firm's activities. However, The Los Angeles Times said the Israeli Foreign Ministry had repeatedly informed the government on the activity of Israelis in Colum-

bia "leaving open the possibility that the Defense Ministry was aware of Klein's work but did nothing about it."<sup>107</sup> A subsequent report in The Observer said that the Israeli Defence Ministry had indeed issued a permit for Hod Hahanit to operate in Columbia.<sup>108</sup>

According to a report in the Israeli daily Al Hamishmar, Klein was not only president of the Hod Hahanit at the time the scandal broke, but also a senior Israeli officer in charge of the War Room of the Israeli Chief of Staff during a national emergency. Although Klein would have technically been in charge of maps and data in the War Room, he would also have determined which officers on duty would have been allowed to enter the War Room during a crisis.<sup>109</sup>

Columbian police reported that Klein instructed death squads working for major cocaine dealers and that some of Klein's 'students' were responsible for the assassination of Columbian presidential candidate Luis Carlos Galan in 1989.<sup>110</sup>

Prior to Galan's assassination some 100 Uzi submachine guns and 400 Galil assault rifles were sent to Gonzalo Rodriguez Gacha, who was one of the top three leaders of Columbia's Medellin drug cartel before being killed by Columbian police in December 1989. The weapons were shipped through Antigua by a company headed by Israeli Brig.-Gen. (res.) Pinchas Shacher. Thames television's This Week identified Shacher as a Mossad agent and an undercover representative of Israel Military Industries (IMI)

who had been part of a network of Miami, Florida-based arms dealers supplying weapons to Latin American since 1982.<sup>111</sup> One of the Galil rifles used in the assassination of Galan was subsequently traced to the shipment reportedly arranged by the Mossad's Shacher.<sup>112</sup>

Israeli military exports to Africa, Asia, the Middle East and the West

Among the many countries that have bought military equipment from Israel five states stand out as particularly important clients for Jerusalem: South Africa, China, Iran, Taiwan and Ethiopia. The Israeli-South African relationship was discussed in Chapter Five. (For more detailed information on the nature and dates of these and other sales to Africa, Asia, the Middle East and the West see Appendices 2, 3 and 4.)

China - Although Israel and China did not have diplomatic relations during the Cold War, estimates of the value of Israeli military and technology exports to China during the 1980s run in the billions of dollars. A report in The Washington Post said Israeli arms sales to China were worth almost \$3 billion during the 1980s.<sup>113</sup>

According to Morton S. Miller, author of the U.S. Arms Control and Disarmament Agency's report on world military expenditures and arms transfers and formerly senior arms transfer analyst for the State Department's Bureau of Intelligence and Research: "The Israelis are involved in most of the weapons modification programs in China".<sup>114</sup> Gerald Segal says that China's interest is in Israeli skills to assist the Chinese military modernisation programme and the establishment of modern arms production lines.<sup>115</sup> As a great deal of China's military equipment is based on 1950s Soviet technology, the Chinese military has a particular interest in Israel's capabilities in refurbishing and modernising Soviet weapons systems.

Chinese representatives expressed interest in Israeli weapons systems as early as 1975 when the Kfir fighter was displayed for the first time at the Paris Air Show. Further contacts were reportedly developed at a defence exhibition in Switzerland in 1978.<sup>116</sup> The Israeli military relationship with China appears to have begun in earnest during 1979 when the Israeli arms dealer, Shaul Eisenberg, took a group of Israeli arms experts to China in his private plane.<sup>117</sup>

The bulk of Israel's military sales to China have reportedly been components or military technology. Israeli technicians were sent to China in the early 1980s to assist in a modernisation programme for China's T-59/69 main battle tanks and heavy artil-

lery. It is not clear if all Chinese tanks received the same retrofit package but it appears that in most cases they are fitted with new fire control systems manufactured by Israel's Elbit, night-sight scope systems, laser range-finders, and a 105 mm cannon which is an Israeli version of the British L7 tank gun.<sup>118</sup> The total number of tanks to be modernised remains unclear. Some sources report that in 1985 Israel concluded a multi-million dollar agreement with Beijing to modernise all 9,000 of China's main battle tanks.<sup>119</sup>

A further reported area of military co-operation between Israel and China is missile technology. In April 1988 The Sunday Times, citing Western intelligence sources, reported that Israel had agreed to supply China with Israeli-developed missile warheads and armour-piercing devices. The agreement was said to have been signed with Norinco -- China's biggest arms concern with over a million employees -- and Israel Military Industries.<sup>120</sup> Agreement was reportedly reached on a

new concept of trajectory-corrected missiles  
of unspecified designation, laser-guided, armour-  
piercing warheads, and shells for 155mm, 152mm,  
130mm and 122mm calibre heavy artillery.<sup>121</sup>

The report was subsequently denied by Israeli Defence Minister Yitzak Rabin.<sup>122</sup>

The Washington Post reported in May 1988 that Israeli experts had helped China upgrade the guidance system of CSS-2 missile and had assisted in converting the missile to carry conventional rather than only nuclear warheads.<sup>123</sup> To the consternation of Israel, the Chinese government subsequently sold the CSS-2, or East Wind as it is known, to Saudi Arabia.

In a further area of co-operation, Israel is said to be assisting the Chinese fighter aircraft programme and has reportedly sold China the radar system originally designed for the now canceled Lavi fighter. China is said to have favoured the Lavi radar because it was designed to counter the threat of Soviet military technology, particularly surface-to-air missiles and allow aircraft to survive in areas protected by dense anti-aircraft systems and electronic warfare measures.<sup>124</sup> It has also been rumoured that teams of Israeli technicians are working at China's military aviation centre at Chengdu and Western military experts have noted similarities between photos of the prototype of a new Chinese fighter and the Lavi.<sup>125</sup>

Iran - The bulk of Iran's pre-revolution arms were bought from the United States. Although Israel's role in Iran under the Shah was relatively modest, the fact that Iran's military was standardised to the same American equipment which comprised Israel's arsenal meant the Jewish state possessed a special ability to

meet Iran's military needs following the cessation of U.S. military exports to Tehran.<sup>126</sup>

The Israeli military relationship with Iran has its roots in the Shah's build-up of his country's armed forces and police/intelligence apparatus in the 1970s. Israel sold small arms to the Shah's Iran and reportedly played a significant role in the building of the Iranian intelligence forces (SAVAK). In addition, Israel was able to expand training and maintenance contracts with the Iranian military. In 1978, for example, the U.S. Defence Department learned from satellite photographs that Iranian F-4s were engaged in training exercises in Israel. The most important joint Israeli-Iranian endeavour was a collaborative project to build a surface-to-surface missile tactical ballistic missile. Known as 'Operation Flower' this project (discussed in Chapter Two) was terminated in the wake of the Iranian revolution.<sup>127</sup>

Israeli diplomats fled Iran in 1979 during the revolution after their trade mission was occupied by the PLO.<sup>128</sup> But by October 1980, the second month of the Iran-Iraq War, the Begin government had already agreed to sell Tehran several hundred thousand dollars worth of spare tyres for F-4 fighter aircraft.<sup>129</sup> Following the release of the U.S. hostages from the American embassy in Tehran in 1981, Israel reportedly sold Iran some \$12 million worth of refurbished jet engines, aircraft tyres, spare parts for US M-48 tanks, and ammunition.<sup>130</sup> Thus,

within a hiatus of just over eighteen months, Israel had begun supplying arms to the revolutionary regime in Tehran and would, as the Financial Times said, continue to provide "the badly demoralised and purged Iranian armed forces with frequent injections of badly needed spare parts and munitions"<sup>131</sup> through at least 1986-87 and the breaking of the Iran-Contra scandal.

What were Israeli interests in selling arms to a revolutionary Iran whose leaders repeatedly preached that the path to Jerusalem led through Baghdad? Three separate studies -- two of them by academics (Peretz Kidron and Aaron Klieman) and one by a journalist (Ze'ev Schiff) -- have arrived at varying answers to this question.

Kidron argues that in selling arms to Khomeini's Iran, Israel had two broad objectives in view: The direct objective - Tehran, and the oblique objective - Washington. Under the direct objective of Tehran, Kidron lists four grounds for the sale:<sup>132</sup>

- 1) The most immediate objective of the arms sales to Iran was financial profit. Israel's need for hard currency, the vast surplus stocks of arms in Israel's arsenals, the large Israeli arms industry starved for local orders, and the hundreds of (semi-) private arms dealers insured that any customer, even those as vehemently anti-Israel as the Khomeini regime in Iran,

would be welcome.

2) That Israeli interests would be best served by a limited Iranian victory. Shi'ite fundamentalism would gain impetus from such a victory but such an outcome would have been an important setback for a leading Arab country.

3) That Israeli military aid might ensure the safety of Iran's estimated 30,000 Jews.

4) That through Israeli military aid Iran could ultimately be steered back into the Western camp. This conception drew on the strategy of Israel's first prime minister, David Ben Gurion, who sought to build relations with the non-Arab states in the region, namely, Iran, Turkey and Ethiopia

Kidron says that the oblique objective of sales to Iran came to be enhanced Israeli influence in Washington. The turnaround in which Israel shifted from selling arms to Iran without Washington's consent to arming Iran with active U.S. collusion appears to have occurred at the end of the first Reagan administration in 1984. The rationale for arms sales to Iran and the entire Iran-Contra operation under this 'oblique' rubric is somewhat more complex. Kidron argues that its multiple goals were:

...extricating the American hostages from Lebanon, renewing US influence in Tehran, and channeling tens of millions of dollars to Reagan's beloved Contras at a time when he was frustrated by his inability to bypass the Congressional ban on direct aid....it would prove that Israel is indispensable to the United States....Inculcating that conviction in the American political establishment was Israel's prime purpose - far exceeding and immediate profit or advantage - in pursuing the Iran-Contra venture.<sup>133</sup>

Aaron Klieman views Israeli arms sales to revolutionary Iran from a traditional power-politics ('realist') perspective. He argues that from a systemic point of view one must distinguish between "Iran the geopolitical fact and its regime" <sup>134</sup> and that within the old Cold War global context Iran was strategically vital in order to prevent Soviet southward expansion and breakthrough to the Gulf. From a regional perspective Iran is useful to Israel due to the centuries of Persian-Arab animosities and the split in the Islamic world which serves to deflect Arab attention away from Israel. Klieman argues it was far better for Israel to arm Iran rather than leaving Tehran to seek arms from

anti-Western or anti-Zionist suppliers.<sup>135</sup>

Ze'ev Schiff, military commentator for the newspaper Ha'aretz argues that Israeli arms sales to Iran were motivated largely by self-serving economic interests rather than more complex strategic/political goals and that strategic 'interests' merely served as an excuse for the business. Schiff says that Israeli arms sale to Iran were "guided by a ravenous hunger for profit rather than by strategic considerations".<sup>136</sup>

The level and content of Israeli arms exports to Iran during the 1980-87 period is difficult to judge with any precision. Indeed, we know more about the major sale which did not go through (a 'sting' operation by United States Customs officials based on a \$2.5 billion 'sale' of arms mostly from Israel) than about the host of sales which actually were made. Among the systems reported sold during this period were TOW anti-tank missiles, spare parts for F-4, F-5 and F-14 aircraft, Sparrow, Sidewinder, and Hawk missiles, Gabriel missiles, tanks, jeeps, various ammunition, radar equipment, field telephones, and chemicals used as charges and primers.<sup>137</sup> In the above-mentioned 'sting' sale, set up by U.S. Customs officers, Iran was to receive five C-130E Hercules transport aircraft, 18 F-4 aircraft, 46 Skyhawk fighter-bombers, 13 F-5 fighters, 50 long-range howitzers, and a large assortment of anti-tank and air-to-air missiles. Had such a sale gone through it would have been by far Iran's biggest arms purchase since the fall of the Shah.<sup>138</sup>

Taiwan - Relative to China and Iran, Israel's military exports and interests in Taiwan are better documented. Israel has been selling military materiel to Taiwan since the mid-1970s and has seen its share of the Taiwan market grow as Western countries have increasingly eschewed military sales to Taipei in order to improve relations with China. The U.S. embargoed the sale of sensitive military electronic equipment to Taiwan in the mid-1970s and later refused to sell Taipei F-4 fighter aircraft. In 1983 the Swiss government refused to grant two Swiss companies permission to deliver fifty tanks and air defence systems to Taiwan. In that same year the Dutch government denied export permits for six conventional submarines ordered by Taipei.<sup>139</sup>

Klieman argues that as a result, Taiwan has become a logical candidate for intensified military trade and co-operation with Israel. Taiwan has manufactured the Dvora class patrol boat under Israeli license since 1979 and the Gabriel missile since 1977.<sup>140</sup> Taiwan is currently in the process of testing a new fighter aircraft for indigenous production. Although there is no evidence that Israel has supplied components or technology for the project, the Taiwanese defence ministry has indicated that both imported technology and weapons will be required for the aircraft.

One potential hindrance to Israeli-Taiwanese relations is

Taipei's close relationship with Saudi Arabia. The Saudis supply Taiwan with oil and are one of the less than two dozen countries still maintaining full diplomatic relations with Taiwan. In 1977, when the U.S. government gave public approval for an Israeli sale of Kfir fighters to Taiwan, the government in Taipei, with an eye to Riyadh, immediately denied it had any intention of buying Israeli aircraft.<sup>141</sup>

Ethiopia - As part of Israel's so-called "Peripheral Strategy" to build relations with non-Arab and non-Muslim states and groups in the Middle East, an Israeli consulate was opened in Ethiopia in 1956. The relationship rapidly came to be based on military exchange -- in 1960 Prime Minister David Ben-Gurion publicly said the Israeli Army was involved in re-organising and training the Ethiopian Army. Also in 1960, and on two subsequent occasions, the Israelis helped Emperor Haile Salassie put down military coup attempts. As a reward, the Israeli consulate in Addis Ababa was upgraded to an embassy and became a key intelligence gathering bureau of the Mossad.

Selassie broke relations with Israel during the 1973 Arab-Israeli War and the Marxist officers who overthrew him in 1974 initially showed no interest in renewing links to Jerusalem.

Meanwhile, in 1973, Israeli religious authorities declared the Ethiopian Falashas to be Jews who had to be saved from assimilation and in 1975 the Israeli Interior Ministry announced that

Falashas had the right of return to Israel. Under Prime Minister Menachem Begin, Israel made a series of agreements under which arms were delivered to the government of Mengistu Haile Meriam in exchange for ignoring the illegal emigration of Ethiopian Jews.

Few details are known of the precise weapons systems delivered to Mengistu's forces. In the 1980s Israel supplied cluster bombs, remotely piloted drones and small arms and reportedly trained Ethiopian pilots. Despite the fact that Israeli arms deliveries continued until shortly before the fall of Mengistu in 1991, the new government in Addis Ababa appears intent on retaining links to Jerusalem.<sup>142</sup>

### South African Arms Exports

Armcor's overseas sales are extremely difficult to trace. This is partly because of overall secrecy, partly because of sales via intermediaries in which buyers prefer not to know the origin of the arms they are receiving; and, partly because much South African military equipment can be sold for what it is: copies

foreign weapons systems. This means that much of what is exported is never recognised as being South African.

On the severe paucity of information on South African arms exports Signe Landgren has written:

The field of South Africa's arms exports was until 1982 completely protected from insight. No information whatsoever on weapons or customers was ever provided by the responsible authorities; nor were comprehensive figures revealed as to the value of military exports, except very rarely.... This is still the basic state of affairs today, although Armscor with its plunge into the arms export market in 1982 had to reveal one hitherto secret subject -- namely the individual weapons it wanted to sell on the international market.<sup>143</sup>

The overall volume of South African arms exports is therefore impossible to measure with any accuracy. During the 1970s large quantities of arms were delivered to Rhodesia -- the only country besides South Africa to have a mandatory arms embargo declared against it by the United Nations. The termination of white minority rule in 1980 meant the end of this important weapons market for Armscor. Arms sales declined dramatically and

in 1982 the head of Armscor, P.G. Marias said that annual arms exports had only reached \$9 million.<sup>144</sup> Since then, few figures regarding total arms exports have been made public in South Africa. A 1988 report in Jane's Defence Weekly, citing Armscor's executive general manager, J. van Vuuren, said that Armscor's exported arms to 23 countries in 1987 with a total value of \$927 million.<sup>145</sup>

#### South African arms exports: The economic rationale

South Africa actively sought to boost arms exports due to economic concerns during the 1980s. The export drive gained urgency following layoffs of Armscor personnel and reductions in South African defence spending.

In 1982, Armscor was instructed by the South African government -- via an amendment to the country's Armaments Production Act -- to 'consider' and 'administer' all applications submitted by private sector arms manufacturers for marketing and export permits with regard to armaments.<sup>146</sup> In plain English this meant Armscor was to assist private arms producers in their export drive.

The reasoning behind the push for increasing arms exports at

this time is clear enough: The South African economy was stagnating and the South African military was less financially able -- or willing -- to buy the major proportion of domestically produced arms. Defence funds were needed for arms research and development and for acquisition of advanced foreign systems which could not be produced in South Africa.

Beginning in 1983, a series of Armscor plants were closed down or mothballed. The closure of the Impala trainer/light attack aircraft assembly line is one key example. The reason for this particular closure was simply that with 239 Impalas in its inventory, the South African Air Force did not require any further deliveries of the aircraft and there existed no export market for this outdated aircraft.

Furthermore, South African military industries were not producing at full capacity. Armscor chairman, Marais admitted some factories were producing goods at only about 70 percent of capacity.<sup>147</sup>

The most obvious economic rationale for South African arms exports is that foreign orders for arms would reduce the amount of time that defence sector factories remain idle and also would contribute to an improvement in the country's balance of payments.<sup>148</sup> Indeed, in the mid-1980s, South African economists argued that one way to combat the country's economic difficulties would be to increase arms exports by 50 percent.<sup>149</sup>

South African arms exports: The political-security-diplomatic rationale

South African arms exports can reasonably hope to influence political positions in two types of countries. First, those countries which are actual recipients of South African arms. Second, countries with an interest in the global arms trade, but with no interest in buying arms from South Africa.<sup>150</sup>

South Africa can attempt to build up a strong supplier-client relationship with another country and then demand improved political relations or less public criticism as a quid pro quo for intensified military co-operation or more advanced weapons systems. Even without overt pressure, there is a natural tendency for arms recipients to try to maintain good relations with an arms supplier. South Africa could also follow the Israeli example and try develop links with the military elites in countries buying arms via South African military-technical experts sent to receiver countries as instructors for the imported weapons systems and associated tactics.<sup>151</sup>

South Africa can also use its arms export capacity to influence countries with global interests, such as the United States. Washington has particular geographic areas of interest, such as

southern Africa and Latin America where South Africa has emerged as an arms supplier. In such regions, Pretoria could attempt to establish coordinated relationship with extra-regional powers by supplying or withholding arms from states according to the wishes of the extra-regional power. South Africa could thus use arms exports to gain diplomatic points with the U.S.<sup>152</sup>

#### Constraints on South Africa arms exports

There are a number of circumstantial factors which hindered South African arms exports during the Cold War and it is useful to examine them in some detail. First, there is the problem of down-grading equipment. In some respects Armscor 'over-builds' in order to meet the particular demands of the SADF. The trouble is that few Third World countries -- South Africa's only customers -- need, say, armoured cars that are mine-proof or weapons systems with night sights given the considerable added cost. The higher prices can deter customers and in many cases Armscor must go through the expense of down-grading equipment and then on top of that charge a lower price for the system.

This ties in to the second problem which is Armscor's relative inability to tailor weapon systems for the export market. This stems partly from the limited size of South Africa's arms industry infrastructure and partly from demands of the SADF for

particular specifications on equipment produced. Competitive prices may be possible if Armscor merely lengthens production runs for systems ordered by the SADF but this is less likely to be possible if Armscor designs a system which has no guaranteed market in South Africa. For Armscor to design more for the export market would entail expensive plant conversions and reconversions. The SADF plays a key role in production decisions and therefore, Armscor is unable to function like France which can build slightly sub-NATO standard equipment expressly for export.

A third difficulty faced by South African arms exports in the 1980s was Pretoria's relative lack of means to finance major arms purchases by less wealthy developing countries. The major industrial powers are generally able to offer more attractive financing terms, co-production opportunities and a variety of other inducements to push through a particularly difficult sale, but South Africa could offer few such packages. The only alternative to cash is countertrade, and Armscor has managed to strike a number of agreements based on arms for oil with Iran,<sup>153</sup> Iraq and Oman.

The fourth major difficulty for Armscor's exports in the 1980s was that the structure of the international arms market worked to South Africa's disadvantage. There were simply not very many good potential markets for Pretoria's military exports:

-In the Middle East most of the weapons Armscor produces are second-rate given the qualitative level of the region's armed forces. In addition there is the political problem of Arab-African solidarity which in some cases deters Arab states wary about buying from South Africa. With regard to Israel, despite the cordial relationship between Tel Aviv and Pretoria, Armscor is effectively cut out of the Israeli market for qualitative reasons; because Israel can and indeed often must buy from the United States (due to tied American military assistance); and, finally, because of preference given to Israel's domestic defence sector.

-In Latin America, much of the market is already under the control of Brazil or other regional producers. The 'outsiders' who are well-entrenched include the United States and Israel. South Africa's sales to the region are estimated at only \$15-20 million annually.<sup>154</sup> This is despite the fact that Chile is the only country in the world which allows Armscor to exhibit military equipment at its annual international arms fair.

-In the Asian market, South Africa faces many regional competitors: India, Taiwan, Singapore and South Korea all have growing arms industries. In addition, the recent period of relative peace in the region has somewhat diminished the demand for arms.

-Finally, there is the African market for arms. This ought to be Armscor's best chance for military exports, but for obvious reasons, Armscor was mostly unable to do business in the region during the Cold War. In French West Africa, the former metropole maintained its domination of the market and in the remainder of the continent Black Africa had little desire to conduct business with South Africa.

In summary, a region-by-region breakdown would seem to indicate that South Africa's arms export market in the 1980s were bleak indeed.

A fifth reason for Armscor's export difficulties was South Africa's pariah status during the 1970s and 80s. Few countries wished to be tarred by association with Pretoria, particularly over something like weapons. As Armscor's sales endeavours grew, so did attempts to stem the export of arms from South Africa. A non-mandatory UN resolution (558), which called for a ban on arms imports from South Africa, was approved by both the General Assembly and the Security Council in December 1984.

A sixth reason for South African arms export difficulties is of a more general nature. The 1980s have witnessed considerable growth in the number of arms exporting countries and sales began

taking place in what was increasingly a buyer's market.

In conclusion, it may indeed be asked: What are the real advantages of buying from South Africa as opposed to buying from other Third World arms manufacturers? The answer would seem to be that there are few advantages other than the fact that some of what Armscor sells has been tested in actual combat conditions.

These six points mitigating against South African arms exports are why Pretoria's claims to having increased annual arms exports from less than \$10 million in 1982 to over \$900 million in 1987 must be treated with caution.

#### South African arms for export

The difficulties outlined above and the hardening of sentiment against Apartheid during the 1980s have no doubt increased Armscor's export difficulties. Nevertheless, a strong marketing drive continued through the end of the end of the Cold War. Jane's Defence Weekly described Armscor's presence at Chile's international arms fair (FIDA) in March 1986 as heralding a "massive marketing drive".<sup>155</sup> It was there that Armscor unveiled the Alpha XH1 light attack helicopter. Other new equipment exhibited included a small gas turbine scaled for remotely-piloted-vehicles and sea-skimming missiles; helicopter mountings for machine guns; 250 kilogram cluster bombs; the SS77 light

machine gun; the AS 80 artillery fire-control system, and several new versions of the Ratel and Eland armoured vehicles.<sup>156</sup>

Although information on South Africa's arms exports is limited, it appears that Pretoria has not had any regular large scale purchasers of its military equipment. Instead, South Africa appears to have made the bulk of its military sales through ad hoc deals which do not entail post-delivery links between the buyer and seller.

Only three countries are documented as having bought weapons from Armscor on a regular large-scale basis: Rhodesia, Chile and Iraq.

Arms exports to Rhodesia during the 1960s and 70s included helicopters, transport aircraft, armoured cars and small arms. Such sales ended with the termination of white minority rule in 1980.

Chile has bought South Africa's Kukri air-to-air missile and the Crotale/Cactus surface-to-air missile. In addition, Pretoria provided \$13 million in construction aid for Chile's naval ship-yards. However, future sales to Chile are uncertain, given the new democratic government in Santiago.

Sales of the G5/G6 howitzer to Iraq (and Iran) were reported during the Iran-Iraq War. In December 1990, Israel and Saudi Arabia reportedly bought out South Africa's stock of G-5s, reportedly in order to prevent Baghdad from acquiring any further

G-5s. But Iraq is said to have bought South Africa's entire 1990 production run of 155mm shells for the G5. The U.S. government reportedly signed an agreement to buy the entire 1991 production of G5 shells to prevent them from reaching Baghdad.<sup>157</sup>

According to a Financial Times report, South Africa re-exported U.S. ballistic missile technology, illegally obtained from the American concern International Signal Control between 1984 and 1988 to Iraq. A U.S. official quoted in the report said: "Do you remember watching the anti-aircraft bursts from Baghdad on CNN that first night of the Allied bombing in January? That was some of the stuff which got to Iraq through...shipments to South Africa."<sup>158</sup>

South Africa is reported to have sold arms to various Yugoslav republics during the civil war in 1991.<sup>159</sup>

A listing of all reported South African arms exports is included in Appendix 6.

#### Yugoslavian Arms and Military Exports

There is considerable disagreement regarding the overall level of Yugoslavia's arms exports. This stems partly from the serious deficit of information on the Yugoslav arms trade; even in com-

parison with other developing arms exporting countries. As Brzoska and Ohlson have stressed:

Yugoslavian arms exports are difficult to assess as there is very little information available. Information from various sources is most contradictory, even allowing for the large margins to be expected in the secretive business of arms supply.<sup>160</sup>

In part the confusion is generated by the Yugoslavian Defence Ministry which consistently gives higher figures for arms exports in its annual reports to the Federal Parliament than are published by the U.S. government or the Stockholm International Peace Research Institute (SIPRI). (This is the opposite extreme of Israel and South Africa, whose respective governments report only a small fraction of arms exports.)

According to official figures from Belgrade, total Yugoslav arms exports were \$1 billion in 1981, \$1.7 billion in 1982, \$2.4 billion in 1983, \$2.5 billion in 1984, and \$2.2 billion in 1985.<sup>161</sup> Figures supplied by the U.S. Arms Control and Disarmament Agency, although they include deliveries of small arms, military vehicles, ammunition, light artillery, spare parts, and machinery for the production of armaments, state that annual Yugoslav arms exports have grown from some \$30 million in the

early 1970s to over \$400 million in the early 1980s.<sup>162</sup> A SIPRI study found that Yugoslav arms exports during the period 1978-88 were worth some \$4.7 billion, making Belgrade the eleventh biggest arms exporter for this period.<sup>163</sup>

But other SIPRI statistics show Yugoslavia to be exporting fewer arms with total exports running at just under \$50 million a year since the late 1970s.<sup>164</sup> Brzoska and Ohlson argue the official Yugoslav figures are implausible because: 1) they are not reconcilable with Yugoslav foreign trade statistics; 2) because they imply a much wider spread of Yugoslav arms than can actually be detected; and, 3) because the figures contradict other official figures about arms production in Yugoslavia. They further note that if the share of exports of total production does not exceed one-third, then total exports cannot be higher than a maximum of \$400 million, given Yugoslav military expenditures of some \$2.5 billion in the early 1980s.

Brzoska and Ohlson may be correct to question official Yugoslav arms exports figures for the 1980s of more than \$2 billion annually. However, the SIPRI figures of around \$50 million for annual arms exports are probably a considerable underestimate. Why so? A number of points need to be examined. First, while researching this dissertation I have found that SIPRI appears to have underestimated arms transfers with regard to all three case studies. This is to be expected as SIPRI sets rigorous standards required to confirm any arms deal before it

can be included in the institute's Yearbook. Furthermore, SIPRI utilizes only sources which are open to the public. A final point concerning SIPRI results is that only 'major' weapons are covered in the trade data. SIPRI does not attempt to account for transfers of small arms, ammunition, machinery for arms production, military clothing etc.<sup>165</sup>

A second factor which may lead to underestimates of Yugoslav military exports is the extreme difficulty of assessing the export levels of military components, sub-assemblies, technology packages, arms manufacture components, and military services (*i.e.*, training and upgrading of aircraft and military vehicles). Brozoska and Ohlson touch on this point when they say that such a levels of Yugoslav arms export cannot be detected. Yet this is precisely the problem of the sorts of exports listed above. Yugoslav sources have stressed that in addition to arms and military equipment, military engineering and services are also an important export.<sup>166</sup>

A third factor, which may also contributes to low estimates of Yugoslav defence exports, is the level of Yugoslav re-export of arms originating in other countries. Brzoska and Ohlson mention of this phenomenon but then go on to state that even if allowance is made for extensive re-export the official Yugoslav figures still seem inflated. It is unclear if they reject that Yugoslavia is involved in large-scale arms re-export business and

remain by the SIPRI estimate of some \$50 million of annual arms exports, or if they concede that Yugoslavia's yearly arms exports are actually higher. Clearcut evidence is difficult to obtain, but there have been numerous reports that Yugoslavia served as a conduit for the re-export of arms from both the East and the West. Iran appears to have been an important recipient of such re-exported arms and technology. Yugoslavia is believed to have provided a vital clearinghouse for supplies from Eastern Europe, including East German ZSU anti-aircraft guns.<sup>167</sup> American rocket guidance systems, manufactured under license in West Germany, were reportedly re-exported from Yugoslavia to Iran under a contract "worth hundreds of millions of dollars".<sup>168</sup>

A final point to consider is Brzoska and Ohlson's interpretation of official Yugoslav statistics. Here the authors say that the officially stated level of arms exports is inflated since it contradicts Yugoslav trade statistics and because it would contradict official Yugoslav figures for arms production. This raises a number of questions. First, are arms manufactured for export -- and Yugoslavia does manufacture arms which are only for export<sup>169</sup> -- included in the official figures for arms production? Second, statistics in such areas of manufacture are in any case often suspect; particularly from the former state socialist countries. To accept one set of official trade statistics and then reject another requires more verification than the authors provide.<sup>170</sup> Furthermore, this would seem to contradict

the methodology which the authors set forth in Appendix 10 of their work where they rightly assert that "...foreign trade statistics do not reveal much about the arms trade..." 171

### Arms exports: the political-security-diplomatic rationale

The first justification that Yugoslav officials made for Belgrade's policy of increasing arms exports was the country's leading role in the Nonaligned Movement. Yugoslavia exported arms as a means of supporting mainly developing countries attempting to follow a nonaligned policy and as a means of encouraging developing countries to achieve independence from superpower or former colonial arms suppliers.

Most Cold War Yugoslav arms exports went to developing countries. More specifically, Belgrade exported to developing countries involved in local conflicts or arms races and to countries which had not developed the capacity to produce more sophisticated weapons.<sup>172</sup> Indeed, the most important buyers of Yugoslav arms in recent years have been Iran, Iraq, and Libya.

There appear to have been two important advantages in buying arms from Yugoslavia. The first was that buyers dealt with a fellow non-aligned country which could be expected to be a more reliable supplier than, say, the United States has been with its

Arab clients. In addition, although Yugoslav arms do not have added diplomatic distinction of having been supplied by a major power, Belgrade was not in a position to apply political or economic pressure on most of its clients.

A second advantage -- albeit one which was of increasingly reduced importance during the 1980s given Yugoslavia's worsening economic situation -- was that Belgrade was able to offer liberal financing or barter agreements to foreign arms buyers. This was an important point which set Yugoslavia apart from other arms manufacturers in the developing world.

An example of the export financing system which appears to have prevailed through mid-1987 was that used for Yugoslavia's shipbuilding industry. The buyers would pay some 20 per cent of the price before taking delivery: 5 per cent at the contract signing, 5 per cent at the keel laying, 5 per cent at the launch, and 5 per cent on delivery. The remainder would be financed by commercial banks, with 80 per cent of this commercial loan financed by Jugomes, the Yugoslav Bank for International Cooperation.<sup>173</sup> But Jugomes resources to support exports were increasingly limited in the 1980s. Major companies such as the 3rd May Shipyard and Energoprojekt, Yugoslavia's leading consulting and contracting concern, lost foreign orders due to the country's growing inability to provide financing.<sup>174</sup>

Countertrade remained an important means of financing foreign orders. However, deals offered under countertrade cannot

compete with companies from developed countries which offer soft loans mixed with commercial loans, and can even finance local costs.

### Arms exports: the economic rationale

Yugoslavia attempted to maintain a broad-based arms industry as an aspect of its security policy. But as shown in Chapters Four and Seven, it proved impossible for Belgrade to achieve anything near full independence of foreign armaments. Thus, arms exports were seen as an important means to maintain a large arms industry. Exports were viewed as a means to reduce unit costs by allowing longer production runs, and to generate foreign exchange.

Nichol points out that the Yugoslav government regarded arms exports in general as a means to reduce the country's balance of payments deficit. Article 45 of the 1979 'Law on Economic and Other Relationships in the Production and Transportation of Armaments and other Military Equipment' states that the Federal Executive Council "will establish...measures and mechanisms for regular and supplementary stimulation of exports of products for special services and other forms of economic relations."<sup>175</sup>

A second 1979 federal law regulating Yugoslavia's arms

industries directly set forth that the increase of arms exports was the official aim of the government. Article 23 of the law stated that the export of arms are for defensive purposes (i.e., that exports are to go to countries of the nonaligned movement). Article 25 set forth that foreign trade in arms may be conducted by 'organisations of associated labour' (i.e., Yugoslavia's self-managed industries), provided the Federal Secretariat of National Defence approves the sales.<sup>176</sup>

#### The nature of Yugoslav arms exports

Little is known about former Yugoslavia's military exports and assistance. In addition to training and technical support Yugoslav military assistance also involved the building of arms industries and other military production sites. But there are few documented examples of such Yugoslav military exports.<sup>177</sup>

The rugged simplicity of Yugoslav-manufactured arms is a reason often cited for their export success. Developing countries require simple and rugged military systems, designed at least partially, for partisan and mountain warfare. Artillery which can be easily broken down for transport and aircraft which require only a meadow for takeoff or landing are cheaper and often more useful to developing countries than more advanced systems.

#### Yugoslavia's arms export clients

Belgrade has military cooperation agreements with Indonesia, Romania, Egypt, and Zambia. These agreements formalise military trade arrangements and allow to military assistance programmes including defence-related construction projects, training and technical support.

Arms sales to Indonesia began after the Bandung conference in 1955. In 1977 it was announced that Yugoslavia and Indonesia had signed a cooperation agreement under which Belgrade would upgrade Indonesian defence sector industries. Yugoslavia provided Indonesia with frigates, patrol boats, landing craft, and various aircraft.

The key element of the agreement with Romania is the joint Orao fighter project, discussed in Chapter Four. Other the Orao project, few detail are known of the nature of Yugoslav exports to Bucharest.

Yugoslavia provided Zambia with Galeb and Jastreb trainer aircraft since 1971. Little is known about the nature of the military agreement with Zambia other than the fact that it was reaffirmed in 1982 when a Yugoslav delegation visited Lusaka.

Libya bought Yugoslav Galeb aircraft, fast attack boats, submarines, and air-defence technology since the mid-1970s. But little is known about the Joint Committee for Economic and Scientific Cooperation which Belgrade established with Tripoli, other

than that it held and annual meeting.

Yugoslavia's relationship with Egypt date back to 1953 when Belgrade began building links with the revolutionary government of General Naguib and Colonel Nasser.<sup>178</sup> Duncan Wilson notes that arms were a key diplomatic tool in building ties with Egypt: "Again it was the supply of arms which led to closer diplomatic links."<sup>179</sup> A joint military-technical committee, which met annually, was established between Belgrade and Cairo. Following the 1973 Arab-Israeli War, when the Soviet Union was slow to re-supply Egypt with military equipment, Cairo imported several hundred Soviet-made tanks from Yugoslavia.<sup>180</sup> In the mid-1970s, as President Anwar Sadat attempted to break Egypt's dependence on Soviet arms, Egyptian military ties to Yugoslavia again became important. The Egyptian army suffered from an acute lack of spare parts for Soviet equipment and after India refused to sell Cairo the necessary spares for MiG-21 and MiG-23 aircraft, Sadat made a special trip to Yugoslavia, which had just begun producing spares for the MiG-21. However, the level of assistance Egypt subsequently received from Yugoslavia is not known.<sup>181</sup>

In addition, various naval vessels have been sold to countries as diverse as Burma, Ethiopia, Hungary, and Vietnam. Miniature submarines have been bought by Sweden and the Soviet Union. Howitzers and anti-aircraft guns have been sold to Cyprus and Zimbabwe. For a listing of reported Yugoslav arms exports see Appendix 8.

## Conclusion

Israel, South Africa and Yugoslavia became important Third World arms exporters during the final two decades of the Cold War primarily for economic and diplomatic reasons.

Israel appears to have sold arms as a diplomatic tool to break out of international isolation and to build links with countries which had large Jewish populations. From an economic standpoint, Jerusalem viewed arms sales as an increasingly important industrial export during the 1970s and 80s.

South Africa also tried to use arms sales as part of a diplomatic effort to escape its international pariah status during the Cold War; albeit with far less success than Israel. South Africa's economic downturn in the 1980s led to increased economic incentives for arms exports.

Yugoslavia sought to bolster the Nonaligned Movement through arms sales, but also appears to have sold increasing amounts of arms on purely economic grounds during the country's worsening economic situation in the 1980s.

Total arms export volumes from all three countries remains a state secret, but Israel was clearly the largest exporter with annual average sales in the 1980s probably around \$1 billion. South Africa and Yugoslavia probably had average annual arms export sales of at least several hundred million dollars during

this period.

The relevance of these high arms export figures for this dissertation is found in the paradox set forth in the introduction. Namely that all three countries became important Third World arms exporters during the 1970s and 80s, despite the fact that they were becoming militarily more dependent than ever on the industrialised countries for military technology and major 'off the shelf' weapons systems.

Continued military dependency on the industrialised countries did not prevent Israel, for example, from defying the West with continued arms deliveries to Argentina during the Falklands/Malvinas War. It appears that as more countries become arms or military technology exporters at the close of the twentieth century, military dependency will become a less dangerous liability for Third World countries (regardless of whether or not they are arms sellers themselves) than it was in the first three decades of the Cold War.

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## Chapter Seven

Continued arms import dependency: Israeli, South African and Yugoslav weapons, military technology and nuclear imports in the 1970s and 80s

The preceding chapters illustrated achievements of the case study countries regarding development of respective domestic arms manufacturing sectors and level and role of arms and military exports. This chapter will assess Israel, South Africa, and Yugoslavia's continued level of dependence on foreign weapons imports. I will show that despite billions of dollars invested in respective defence industrial sectors and a few spectacular weapons manufacturing achievements, the armed forces of the three countries remain dependent on foreign sources for the same key weapons systems which were sources of foreign dependency in the 1950s and 60s.

The fighter aircraft of Israel, South Africa and Yugoslavia are a classic, but by no means the only example of this point. In the late 1950s and early 60s Israel relied on imported French Mirage IIIs as frontline aircraft. In the 1990s imported American F-15s and F-16s form the backbone of the Israeli Airforce.

South Africa also bought French Mirages as key element in of its air force beginning in the early 1960s. With the arms embargo, Pretoria was been unable to buy a new generation of fighters from abroad and had to make do with upgrading existing planes

with Israeli Kfir fighter technology. Manufacturing an indigenous fighter remains out of South African technological and financial reach.

Yugoslavia began importing Soviet MiG-21s in the early 1960s. Despite production of a variety of fighter aircraft, Belgrade began importing Soviet MiG-29s in 1988 as front-line planes for the air force.

The continued dependency of the three case study countries on foreign fighter aircraft is mirrored with regard to numerous other advanced weapon systems which will be outlined below.

Dependence on major weapons systems remains but limited independence possible

Although the case study countries remained heavily dependent on the industrialised powers for major weapons imports through the end of the Cold War, it should be pointed out that absolute military independence is impossible to achieve -- even for a superpower like the United States.

As Gerald Steinberg has noted, studies which simply dismiss the possibility of developing countries achieving military independence through their defence sectors are superficial. Steinberg says:

The assumption that complete independence or dependence are the only choices is not supported a careful examination....the relationships between arms supplies and dependence are fungible; they do not form a complete and inseparable "whole" at one pole or the other.<sup>1</sup>

What Israel, South Africa and Yugoslavia achieved by 1990 via their respective defence industry sectors was an enhanced short and medium-term independence with regard to non-major weapon systems (i.e., not with regard to fighter aircraft, tanks or naval vessels) and spare parts.

Israeli defence industries may now be in a position to maintain supplies during a short war so as to prevent the country from falling into a situation as during and after the 1973 Arab-Israeli War in which the United States was able to exert pressure on Jerusalem through control of resupply of arms and spares. In the case of South Africa, domestic defence production has allowed the country to evade the UN arms embargo with regard to less advanced weapons. But this is a short and medium term success -- unless sanctions are dropped, Pretoria will have to import advanced systems like submarines, fighter aircraft and helicopters

should South African security doctrine still require such systems. Yugoslavia's dispersal of arms and munitions factories was also meant as a short and medium term declaration of independence during the Cold War: Like Israel, Belgrade developed the means to produce basic weapons and spares and sought to show it would be able to keep producing military materiel during at least the initial stages of a war.

The respective defence sectors thus achieved a limited extension of arms supply independence for the three case study countries. (Whether this limited extension has been worth the high cost of developing a large defence sector is another question entirely, and beyond the realm of this dissertation.)

But such limited levels of independent arms production fall far short of what was envisaged by policy-makers who chose development of costly domestic arms industries as a remedy against past and future arms embargoes in the case study countries over the past decades. I have therefore, as stressed in the introduction to this dissertation, chosen a relatively high level of indigenous content in arms production as a yardstick in assessing the success or failure of arms manufacture in Israel, South Africa and Yugoslavia.

The hard fact remains that all three countries were highly dependent on foreign sources for major weapons systems at the end of the Cold War. Let us now examine the continued dependency of Israel, South Africa and Yugoslavia on imported military systems

in greater detail, starting with the special features of the Israeli case.

### Israeli Military Imports

Israeli military-industrial and technological dependency on the industrialised Western countries has been broadly examined in Chapter Two on Israel's defence industry.

The Israel section of this chapter, with Appendix 5, will document Israel's major arms imports beginning in the late 1960s -- the start of the major growth period for country's arms industries -- and will briefly survey Israel's acquisition of military technology through covert means from both Europe and the United States.<sup>2</sup> I will then examine Jerusalem's special relationship with the United States and Israeli financial and technological dependency on Washington for military projects. The Israel section will conclude with a survey of Israeli foreign dependency for its civil and military nuclear programme.

## Military imports

The paradox of Israel is that at precisely the time domestic production of military systems radically increased -- 1968-1975 -- Jerusalem was in tandem becoming more heavily dependent than ever before on outside sources for major weapons systems and for the means to finance its armed forces. This was partly because in the wake of the 1967 War, Israel increasingly came to demand first echelon weapons systems -- particularly aircraft -- as part of its doctrine to counter superior Arab numbers with superior technology and tactics. It was also during this period that the costs of major weapons systems with advanced technology began their upward spiral which has continued to this day: The estimated price of well over \$500 million for a single American Stealth B-2 bomber is only the most recent, if somewhat extreme, example.

It is ironic that in 1968, the year Israel embarked on the development the Kfir fighter in a bid to reduce dependency on foreign arms, the Johnson administration approved the sale of advanced F-4 Phantom fighter aircraft to the Israeli air force. Likewise in 1975, the year the Kfir entered service, the Ford administration signed a memorandum of agreement to supply Israel with the advanced F-16 fighter. Both of these deals are indicative of the speed at which Israeli military demand began outstripping Israeli military manufacturing capacities even during the military sector's period of most heated growth.

This period also witnessed the beginning of Israel's major dependency on Washington for military and financial aid. At the beginning of Israel's race to develop an indigenous arms manufacturing sector, U.S. military aid rose to a then high of \$85 million in 1969. In 1974, as an increasing number of Israeli military industries were coming on stream, U.S. military aid to Jerusalem reached nearly \$2.5 billion.<sup>3</sup>

These figures are only the financial side of Israel's growing dependency during this period. As will be shown below, Israel's imports of key major weapons systems have remained largely unchanged in the past 20 years, despite the huge growth of the country's defence industry sector.

A series of factors combine to place contemporary Israel in a position of dependency on foreign sources for the supply of its armed forces near to that of 1967. These include:

-the rapid development in world military technology which leave Israel, and other developing arms producers, ever further behind;

-reliance on a military doctrine which stresses technological superiority to overcome potentially massive numerical enemy superiority;

-a weak economy with limited means to finance the country's armed

forces in their required size, let alone costs associated with the research, development and production of major weapons systems;

-limited results in resolving the Arab-Israeli conflict through diplomacy which could lead to a reduction of the Israeli Defence Force's requirements for military materiel to levels which could be sustained by truly indigenous arms production.

Israeli dependency on foreign arms has been greatly reduced with regard to smaller and less sophisticated systems since 1967. However, with regard to major systems -- apart from missiles -- it must be conceded that little has changed between 1967 and 1989. To cite the most obvious example for this argument: In 1967 Israel was dependent on the import of French Mirage aircraft to form the backbone of its air force. In 1989, with the cancellation of the Lavi fighter Israel will remain dependent on American F-16 and F-15 aircraft to form the key element of its air force through the end of the century. The difference today being that the F-16 are fitted with some Israeli avionics and software upon delivery whereas the Mirages were largely bought 'off the shelf'. As Andrew Pierre has concluded in his study The Global Politics of Arms Sales:

...Israel has found out, self-sufficiency is illusionary. The growth in its exports (of arms) has been more than matched by a growth in its imports of sophisticated arms. <sup>4</sup>

The argument made by Brzoska and Ohlson that Israel's imports of major arms have decreased since the mid-1970s remains something of an overstatement,<sup>5</sup> for as shown in Chapter Two, most of the 'indigenous' major Israeli military systems require key foreign components in their manufacture.

At the end of Cold War the International Institute for Strategic Studies's (IISS) Military Balance dramatically illustrates Israel's continued preponderant reliance on foreign-manufactured major weapon systems in the early 1990s.

Of Israel's 3,850 main battle tanks (MBT) some 1,080 are British Centurions, 1,300 are U.S. M-60 A1/A3s, 561 are U.S. M-48s, and 365 are captured Soviet T-62s and T-54/55s. The Israeli element of the MBT force consists of only 550 Merkava I/IIIs.<sup>6</sup>

Out of a total of 523 front line fighter, ground attack and interceptor aircraft, 50 are U.S. F-15s, 145 are U.S. F-16s, 113 are U.S. F-4Es, and 121 are U.S. A-4H/N Skyhawks. The Israeli element comprises 95 Kfir C2/C7 aircraft. As Israel does not manufacture helicopters the air force's 163 helicopters are all

of U.S. or French manufacture.<sup>7</sup>

Israel's navy, long the least developed arm of the Israeli Defence Forces, has -- at least presently -- a higher proportion of indigenously manufactured craft. Out of 28 fast patrol craft only 3 are of foreign manufacture. However, all rely on the U.S. Harpoon missile as their primary anti-ship missile system. Israel's 3 aging submarines were manufactured by the Vickers yard in the United Kingdom.<sup>8</sup> Their replacements will be built in Germany. The Sa'ar 5 missile boat, a key component of the navy's upgrading programme, will be built in the United States. Thus, it would appear that as the Israeli navy is developed to meet the high standards set by the army and air force, the possibilities for indigenous production of its major weapons systems decline.

Despite the scale of its military sector, Israel also finds it necessary to import a huge variety of more basic military equipment the sale of which remains subject to approval of respective foreign governments. These smaller items are, like military components and technology transfer, far more difficult to document. Two recent examples of such less elaborate equipment will suffice here: In 1989 the British government refused to approve a sale of gas masks to Israel on the ground that they could be used 'to develop an offensive capability'.<sup>9</sup> Also in 1989 the U.S. General Accounting Office (the investigative arm of the U.S. Congress) published a report saying it saw no grounds for withholding U.S. exports of tear gas to Israel.<sup>10</sup>

It is impossible to provide a fully comprehensive listing of all major Israeli arms imports since the late 1960s, partly because of the level of secrecy surrounding such transfers and partly due to the sheer volume of such transfers given that military aid from Washington has been at levels well over \$1 billion a year since the mid-1970s. But a listing of key major systems is possible: For further details of such Israeli weapons imports from 1967 see Appendix 5.

This heavy continued dependence on American weapons meant Israeli-built arms systems played a negligible role in Jerusalem's armed conflicts from late 1960s to the early 1990s. Beginning with the Mirage aircraft which played a key role in the 1967 War, on to the American F-15s and F-16s used in the 1981 bombing of Iraq's Osirak nuclear plant, to the cluster bombs used in the 1982 invasion of Lebanon and on to the Patriot missile systems sent by the U.S. to guard Israel from Scud missiles in the 1991 Gulf War, Jerusalem remained dependent on foreign weapons for actual combat situations throughout the Cold War and beyond.

## Dependence on covertly acquired military technology

As with South Africa, an important area of endeavour for the Israeli diplomatic and intelligence communities is obtaining military technologies either covertly or overtly. Israel has been able to obtain most required military technology from France and the United States, either through military exchange agreements on a state-state level or through co-operation agreements between Israeli defence sector concerns and those abroad. In other cases, however, Israel has found it necessary to obtain military technology through covert means. Such operations involving the theft of military technology from foreign states or concerns have a long history in Israel. Aside from reported illegal imports of uranium, which will be discussed below, Israel's most impressive illegal acquisition of foreign technology was the purchase of the plans for the Mirage 5 aircraft and the Atar 9C jet engine from an employee of SNECMA's licensee, Sulzer Brothers in Switzerland. Some of the recent cases of Israeli industrial espionage include the reported illegal acquisition of cluster bomb technology,<sup>11</sup> the illegal import of technology for the manufacture of chrome-plating tank cannon barrels,<sup>12</sup> nuclear weapons 'trigger technology, and missile guidance systems<sup>13</sup> all from the United States. Dependence on American technology and industrial espionage in the United States will be discussed below.

## Domestic production facilities arms imports

An interesting point on which to conclude this section is the curious role domestic Israeli arms production appears to play in facilitating Israeli arms imports. Eitan Berglas argues that an aspect of domestic military production, which is no less important than the actual manufacture of weapons, is the fact that once it is clear to foreign suppliers that Israel can produce specific advanced systems locally, foreign governments are generally more ready to export similar systems. Berglas cites air-to-air missiles and electronic countermeasures as two examples of this phenomenon.<sup>14</sup>

## Israel's Special Relationship with the United States

"The magnitude of U.S. arms transfers to Israel is astonishing not so much in volume, which is remarkable in itself, but even more in the quality of arms transferred."<sup>15</sup>

While the previous chapters have shown that the United States supplies Israel with substantial military equipment, technology and finances, it is useful to briefly outline the historical development of these ties, and to document the numerous bilateral agreements under which they are regulated.

Although the United States under the Truman administration was the first country to recognise Israel in 1948, relations between the two countries did not assume their present form of heavy Israeli dependence on U.S. military supplies and financial assistance until the early 1970s and the strategic relationship was not codified until the Reagan administration. Presidents Truman and Eisenhower distanced the U.S. from Israel, Richard Nixon was the first American president to visit Israel, Jimmy Carter took care to avoid calling Israel an 'ally', while Ronald Reagan called Israel 'a major strategic asset' <sup>16</sup>

Although United States military aid to Israel was minimal prior to 1966, American economic aid began in 1949 with a \$100 million loan from the Export-Import Bank. In 1952 Washington initiated a programme of economic grants to assist Israel in absorbing refugees and to finance commodity imports. Under the Food For Peace programme (PL 480) some \$635 million worth of food was sent to Israel between 1952 and 1973.<sup>17</sup> Despite the absence of direct U.S. military aid to Israel during this period, Washington still interceded indirectly on behalf of the Jewish state by encouraging France to supply arms to Israel following the 1955

Czech arms deal with Egypt. <sup>18</sup>

These relatively modest levels of U.S. aid were radically altered in the early 1970s. Combined U.S. economic and military aid to Israel increased from \$71.1 million in 1970 to \$600.8 million in 1971. Resupply of arms and military materiel after the 1973 Arab-Israeli War led to the 1974 aid package total of some \$2.5 billion and in 1979, the year of the Camp David accords, the total U.S. military and economic aid reached \$4.81 billion. In the early 1980s the yearly figure was between \$2.2 and \$2.5 billion and since 1987 it has been over \$3 billion.<sup>19</sup>

United States military and economic aid to Israel since 1948 thus totals well over \$60 billion. This means that in inflation adjusted dollars Israel has received more aid than was received by all Western Europe under the Marshall Plan. And this is despite the fact that Israel's population of 4.3 million is barely one and a half per cent that of post-War Western Europe.<sup>20</sup> (It should also be noted that Israel receives \$1 billion yearly in private donations from American Jews and a further \$1 billion in U.S. bank credits.) The CIA reports that from this total sum Israel expects Washington to fund 50 per cent of its defence budget.<sup>21</sup>

The financial and military aid relationship between Israel and the United States has a number of unique characteristics not found in Washington's other bilateral aid relationships:

First, is the fact that since 1985 all U.S. aid has been given in the form of outright grants rather than repayable loans. Most other U.S. aid recipients receive loans.

Second, that economic grants are paid in cash for 'general budgetary support' instead of being of disbursed for specific development projects which is the usual procedure. The Israeli government may thus spend the grants in any way it chooses.

Third, military grants are paid on a 'cash flow' basis meaning that these funds may be committed by the Israeli government to projects before they are appropriated by the U.S. Congress. This means that Congress is obliged to appropriate the funds in order to meet the long-term contracts that Israel signs with American military suppliers.

Fourth, Israel is exempt from the 'buy American' rules which are customarily attached to FMS military grants. Israel is allowed to spend up to \$300 million per year on purchases from its domestic arms industry and on military research and development projects. The precedent for using FMS grants for development of Israel's arms industries was established in 1977 when the U.S. granted permission for \$107 million to be used for initial production of the Merkava tank.

Fifth, there is no resident U.S. Agency for International Development (U.S. AID) mission in Israel. The normal procedure for the disbursement of American economic assistance is for the U.S. AID mission to prepare and recommend an annual assistance

programme for Washington to review. In the case of Israel the Israeli Ministry of Finance prepares an annual report on 'Requirements for U.S. Aid', which is then presented to the administration in Washington by the Israeli finance minister.<sup>22</sup>

The U.S. Strategic Defence Initiative or 'Star Wars' programme has also proven to be a lucrative source of research and development capital for Israel. Indeed, by 1989 Israel was the largest foreign participant in the Strategic Initiative programme with total contracts awarded to Israeli firms valued at \$165 million.<sup>23</sup>

A further agreement between Washington and Jerusalem with major economic potential for Jerusalem is the Israeli - U.S. Free Trade Agreement of March 1985, Washington's first such agreement with a foreign country. Under the Agreement all tariffs between the two countries will be eliminated by 1995.

In sum, the financial aspects of Israel's relationship with the United States have played a vital role in allowing the economically weak Jewish state to exist militarily well beyond its means. American financial support since the early 1970s allowed Israel to maintain its armed forces at their qualitative and quantitative levels and provided much of the required capital for Israel's defence industries. Israel's chronic and massive financial dependency on the United States is perhaps best captured in the title of Robert Gibson's useful investigative report in The

Los Angeles Times: 'Israel an economic ward of the U.S.' 24

But financial aid is only one part of Israel's relationship with Washington. A second, and equally vital facet of Israel's import dependency on the United States is the area of military technology transfer. Israel has been permitted perhaps the most unrestricted access of any country in the world to American military technology. This is partly due to the great mobility of scientists and engineers between the U.S. and Israel, but more fundamentally because of Israeli acquisition of American military technical data packages under a series of bilateral agreements with Washington.

The means through which Israel obtains U.S. defence technology vary widely. At least four broad channels which serve as military technology conveyor belts from the United States to Israel have been identified by McLaurin:

-First, the sales of advanced weapons systems to Israel. This often involves technology transfer, in part because Israeli military engineers are very sophisticated in analysing imported systems and partly because such sales generally involve extensive training of Israeli operators, logistics and maintenance personnel.

-Second, are military technology data transfers. The U.S.-Israeli accords governing such transfers are examined below.

Because Israeli scientists are relatively advanced and are aided by scientific and technical consuls at all of Israel's U.S. diplomatic installations, they are able to monitor U.S. defence sector developments and are capable of ordering key components rather than complete systems. This sometimes helps circumvent military export controls.

-Third, is technical training in defence or defence applicable fields. McLaurin notes that military education/training exchanges between the U.S. and Israel are "extensive". Less well documented are the numbers Israelis who study defence related subjects in the United States -- Washington's Privacy Act prohibits dissemination of such information.

-Fourth, are corporate relationships, which were discussed in Chapter Two.<sup>25</sup>

American foreign policy, surprisingly, appears to have been designed since 1967 to not only make Israel a regional military power, but also to build up the country's arms industry. According to the uncensored version of a draft report prepared by the U.S. General Accounting Office in 1983 entitled U.S. Assistance to the State of Israel :

Following the 1967 Six Day War, France placed a military embargo on Israel and it was thus spurred to become more military independent and to invest heavily into its defense industries. Since that time, Israel has received U.S. financial and technical support to help achieve own arms production capability. (emphasis added)<sup>26</sup>

The report goes on to note that "Israel, more than any other FMS (Foreign Military Sales) recipient country, has been provided with a higher level of military technologies having export potential" and that "This could adversely impact upon the U.S. economy and can affect U.S. ability to control proliferation of these technologies".<sup>27</sup>

A series of agreements have formalised the flow of technological information with military applications from the United States to Israel since 1970: <sup>28</sup>

1970 - The Master Defence Development Data Exchange Agreement established the terms and conditions for the exchange of technical data on a range of military systems. These have included: tank systems, rocket and missile systems, air defence systems, artillery systems, electronic warfare, infantry weapons, and defence against chemical agents.

1971 - Agreement for Israeli production of American military equipment.

1973 - Weapons Systems Evaluation Group established to collect data on the performance of opposing Soviet and Western weapons systems used during the 1973 Arab-Israeli War.

1979 - Memorandum of Agreement on Principles Governing Co-operation in Research and Development, Scientist and Engineer Exchange, and Procurement and Logistics Support of Selected Defence Equipment (MOA). The MOA has two annexes: Annex A seeks to expand the existing data exchange programme from the 1970 Master Defence Agreement. Annex B provides a list of some 560 military goods and services for which Israeli firms can submit offers to tender to the U.S. Department of Defense (DOD) without the application of 'Buy American' restrictions which normally require the DOD to purchase American or NATO produced military equipment.

1981 - Defence Trade Initiative to develop and enhance Israel's defence production and technological base.

1981 - The Defence Trade Initiative was incorporated in the Memorandum of Understanding on Strategic Co-operation (MOU),

signed on November 30. The MOU provided for American purchases of up to \$200 million worth of Israeli military materiel annually to stimulate Israel's defence sector. The MOU was suspended after Israel annexed the Golan Heights in December 1981 but the spirit and most of activities of the Defence Trade Initiative were implemented under the 1979 MOA.

1983 - The 1981 MOU was reactivated and expanded under a further Memorandum of Understanding on Strategic Co-operation. The 1983 MOU established a joint American-Israeli committee to co-ordinate military planning, exercises, intelligence sharing, the stockpiling of arms and military supplies in Israel, provided American funding for Israeli assistance programmes in the Developing countries, and offered more generous terms for U.S. economic and military aid to Israel.

1984 - Further revision and expansion of the 1979 Memorandum of Agreement on co-operation in research and development, production, procurement, and logistic support between respective U.S. and Israeli defence sectors. A committee was established to prepare annexes, as required in the future, on any of the subjects covered in the 1979 MOA.

1986 - Memorandum of Understanding to regulate Israeli and U.S. co-operation on the Strategic Defence Initiative.

1986 - U.S. Congress approves the Nunn and Quayle Amendments to the National Defence Authorisation Act for the 1987 fiscal year governing co-operative military research and development with major non-NATO allies. The Nunn amendment allocates \$40 million for this purpose and the Quayle amendment names Israel as qualifying for these funds and sets forth conditions for a joint U.S.-Israeli anti-tactical ballistic missile programme.

1987 - Memorandum of Understanding Concerning the Principles Governing Mutual Co-operation in Research and Development, Scientist and Engineer Exchange, Procurement and Logistic Support of Defense Equipment was signed in December 1987. This MOU superseded and expanded the 1979 MOU and effectively granted Israel the same status as NATO allies in joint research and development projects. In addition, Israeli defence sector firms are granted the right to compete for a wider range of defence projects.<sup>29</sup>

1988 - On 21 April, the fortieth anniversary of Israel's independence (by the Jewish calendar), the U.S. and Israel signed a new Memorandum of Agreement which "essentially institutionalized all the existing relationships in political, security and economic cooperation".<sup>30</sup>

Intelligence and covert acquisition of military technology in the U.S.

"...it seems that even the CIA believes that apart from the odd questionable exercise, the Mossad, except for liaison, simply does operative (sic) actively in the United States itself.

Well, they're wrong."

-Victor Ostrovsky, former Mossad agent <sup>31</sup>

The preceding pages have shown that Israel has a series of major formalised conveyor belts supplying substantial volumes of American military technology and U.S. government funding to Israel's defence sector. Nevertheless, Israel also utilises its special relationship with the United States gather military technology and other intelligence information by covert means.

Striking evidence of Israeli reliance on foreign military technology was revealed by a CIA report on Israeli intelligence priorities, released by Iranian students who occupied the U.S. embassy in Tehran in 1979. The top Israeli priority, according to the report, is intelligence on Arab military capabilities,

second is collection of information on secret U.S. policy or decisions concerning Israel, and third is the "collection of scientific intelligence in the U.S. and other developed countries".<sup>32</sup>

The Pollard spy case which rocked U.S.-Israeli relations in 1986 was not, as the Israeli government maintained, an unauthorised operation and a deviation from normal Israeli policy in the U.S. In most cases, it has simply not been necessary for Israel to mount such complex undercover operations in the United States given the enormous amount of information supplied by an unofficial network of unpaid officials who are sympathetic to Israel, in the Pentagon, the State Department, National Security Council, the CIA, and in Congress. As Charles Babcock wrote in the Washington Post:

...for decades, the Israelis have targeted and been able to learn virtually every secret about US foreign policy in the Middle East, according to a secret 1979 CIA report on the Israeli intelligence services and recent interviews with two dozen current or former US intelligence officials.<sup>33</sup>

One of those interviewed for Babcock's article, Robert G. Neu-

mann, the first US ambassador to Saudi Arabia under the Reagan administration, reported that sensitive cables which he sent to Washington were sometimes leaked before the receiving assistant secretary could read them. Neumann is quoted as saying: "The government is honeycombed with people who do that. They aren't paid spies, but the line between that and espionage is thin."<sup>34</sup>

Such activity on behalf of Israel appears to be tolerated by the United States. A 'retired senior intelligence official' quoted in the Washington Post report stated:

There is no question that one administration after another handled Israeli espionage differently from other countries...Political decisions were made to have U.S. counterintelligence officials look the other way.<sup>35</sup>

In his book on the Israeli intelligence service, former Mossad agent Victor Ostrovsky writes that Israel operates a special top-secret division of the Mossad in the United States.

Called Al, Hebrew for 'on top' or 'above', its primary task is to gather information about the Arab world and PLO. But Al is also involved in military-industrial espionage.

Ostrovsky alleges that one of Al's recent achievements was the theft of research material from leading U.S. aircraft manufacturers to help Israel secure a \$25.8 million contract to

supply the U.S. Marine Corps with unmanned Mazlat Pioneer 1 drones. Mazlat, a subsidiary of the Tadiran concern, won the contract after outbidding U.S. firms in a 1985 tender

In reality, Al stole the research. Israel had been working on a drone, but was not nearly far enough advanced to enter this competition. When you don't have to include research recovery costs in your bid it makes a substantial difference.<sup>36</sup>

Israeli nuclear systems and materials: higher technology imports

A full analysis and description of the development of Israel's nuclear research and nuclear weapons programme lies beyond the scope of this dissertation. Nuclear affairs comprise the most secret sector of Israeli defence production and hence the information deficit is particularly pronounced. Nevertheless, some aspects of the Israeli nuclear programme have been pieced together via nuclear materiel transport records, court records, inside

sources, and a series of leaks (both real and orchestrated), the most spectacular of which was the Sunday Times story on Israel's Negev Nuclear Research Centre at Dimona, based on accounts given by a former employee of the centre, Mordechai Vanunu.<sup>37</sup> This section will be limited to an attempt to document Israeli imports of nuclear technology and materials and thereby illustrate that Jerusalem's dependency on foreign sources in the nuclear sector mirror those in other areas of defence production.

Israel received its first nuclear reactor from the United States under the Eisenhower administration's Atoms for Peace programme. The Nahal Soreq research reactor, which went critical in 1960, was small enough that it precluded the production of militarily significant quantities of plutonium. The United States retained the right to regularly inspect the entire site and in 1964 this right was transferred to the International Atomic Energy Agency (IAEA).<sup>38</sup>

In 1957 France made a secret agreement with Israel to build a nuclear reactor and a chemical plant for the production of plutonium from the reactor's spent fuel. In addition, France's high commissioner for atomic energy from 1951-1970, Professor Francis Perrin, said (in a 1986 interview) that for two years in the late 1950s France and Israel worked closely together on developing an atomic bomb.<sup>39</sup> According to Perrin, the level of French co-operation with Israel was kept secret because of agreements with the United States which allowed French scientists

connected with nuclear weapons work in Canada during the Second World War to return to France and apply their expertise to the French nuclear programme on the condition that the nuclear secrets be kept. <sup>40</sup> A further reason for secrecy appears to have been fear that Washington would end the limited volume of nuclear materiel exports to France. (Between 1956 and 1960 France imported 36.5 tonnes of heavy water from the U.S.) <sup>41</sup> Israel's heavy water reactor at Dimona came on stream in 1963 and the plutonium reprocessing plant is estimated to have begun functioning in 1966. <sup>42</sup>

Part of the reason for French aid to Israel was that Paris also benefited from the co-operation. Technology developed by Israeli scientists to produce heavy water was given to French officials, and a heavy-water plant was subsequently built at Toulouse. But in 1959, President de Gaulle decided to end nuclear cooperation with Israel. However, the contract for French construction of the reactor and plutonium plant at Dimona was honoured and Israel's reactor came into operation in 1964.<sup>43</sup>

Gary Milhollin argues that Israel's collaboration with France gave the Jewish state three of the five ingredients it needed to produce nuclear weapons: a small research reactor, a plutonium extraction plant, and nuclear weapons design information.<sup>44</sup> The two ingredients which remained -- natural uranium and heavy water -- were acquired by Israel from foreign sources

(although Israel has been able to obtain some uranium from indigenous phosphate deposits).

Sources of uranium have included Argentina, South Africa, Belgium, and reportedly French-controlled mines in Niger, the Central African Republic and Gabon.<sup>45</sup> Israel managed to evade export controls on uranium through illegal diversion of uranium shipments organised by the Mossad. In one case a shipment of 200 metric tonnes of Belgian uranium was diverted at sea, in what came to be known as the 'Plumbat affair'. In other cases French and British lorry shipments of uranium were reportedly hijacked.<sup>46</sup> Israel also reportedly acquired over 100 kilos of enriched uranium from the Nuclear Materials and Equipment Corporation (NUMEC) of the United States<sup>47</sup> and in 1984 bought 40 tonnes of enriched British uranium and evaded IAEA approval via Luxembourg.<sup>48</sup>

Supplies of heavy water (a rare isotope of water that is needed to cool and control certain types of nuclear reactors) proved more difficult to obtain. Although Israel was able to produce small amounts of heavy water through an indigenous process, far greater amounts were needed for the Dimona plant. In the early 1960s only the United States and Norway exported heavy water, and both restricted exports for so-called peaceful purposes.<sup>49</sup> Israel subsequently bought 21 tonnes of heavy water from Norway and 3.9 tonnes from the United States.<sup>50</sup>

Citing Pierre Péans work, Les deux bombes, Milhollin ac-

knowledges that Israel may also have received heavy water from France during the 1960s which France had bought from the United States between 1956 and 1960 for its own nuclear programme. Barnaby argues that imports of heavy water may have been the crucial element in increasing the power output of the Dimona reactor which allowed Israel's nuclear weapons programme to be speeded up. By 1970, France had imported 200 tonnes of heavy water from the United States and was producing 26 tonnes a year at the Toulouse plant. "France therefore could have supplied Israel with the heavy water it needed to boost Dimona's power from 70 up to 150 (megawatts)."<sup>51</sup>

The Norwegian heavy water has proven politically troublesome for Israel since the disclosures of former Dimona technician, Mordechai Vanunu, in 1986 that Israel had manufactured nuclear weapons. Under the agreement signed with Norway in 1959, Israel not only pledged to use the heavy water for peaceful purposes but also agreed to give Norway the right to periodically inspect the water to guarantee its peaceful use. Norway inspected the heavy water once in 1961. When the Norwegian government -- under pressure from the national press and members of parliament -- finally called for a second inspection Israel refused to grant International Atomic Energy Agency (IAEA) inspectors unlimited access to all of the heavy water on the ground that it did trust the IAEA to be objective. After a months of difficult negotia-

tions between the Israeli and Norwegian governments an agreement was signed in the summer of 1988 under which Norway would be able to inspect the nine tonnes of water which Israel claimed were all that remained of the shipment. However, in the spring of 1989 the agreement was scrapped after criticism from Norwegian parliamentarians and the IAEA, which refuses to conduct inspections unless all nuclear facilities in a country are open for inspection.<sup>52</sup> Since heavy water reactors normally lose 0.5 per cent of their water per year Israel would have to produce some 18.5 tonnes of water to satisfy the IAEA inspectors and then open the reactor's plutonium to inspection to honour the pledge for peaceful use.<sup>53</sup>

Heavy water, therefore, would appear to remain a particular area of dependency in Israel's nuclear programme.

Although no hard figures are available, the consensus is that Israel has produced up to 300 nuclear weapons<sup>54</sup> Jerusalem's apparent breaking of the 'peaceful use' agreements with nuclear materiel suppliers and refusal to sign the 1968 nuclear Non-Proliferation Treaty have disrupted the Israeli nuclear programme in that most countries are now cautious about the export of heavy water or other nuclear technology to Israel. Israeli plans to build a 250 megawatt heavy water reactor to generate electricity have run into difficulties after possible exporters of the \$1-2 billion system insisted that Israel first ratify the Non-Proliferation Treaty.<sup>55</sup> More ominously for the Israeli nuclear pro-

gramme, the United States, which has long been lax about U.S. nuclear technology transfer to Israel,<sup>56</sup> appears to have taken a much harder line under the Bush administration, effectively changing Israel's status from that of a so-called 'threshold country' to being placed on the U.S. 'nuclear danger list'. Beginning in January 1989 the U.S. government introduced new restrictions on Israeli scientists visiting the American nuclear weapons laboratories at Los Alamos in New Mexico and Livermore in California which require them to go through the same security checks as scientists from developing countries. In some cases scientists from the Soviet Union and China have been allowed into areas of the laboratories closed to the Israelis.<sup>57</sup>

In concluding this section two additional points made by the former French high commissioner for nuclear energy, Professor Perrin, are worth noting. First, with regard to France's passing on American nuclear secrets to Israel Perrin asserted: "We considered we could give the secrets to Israel provided that they kept it to themselves." As shown in Chapter Five on the Israeli-South African relationship, these were secrets that Jerusalem apparently was not been able to hold.

Second, with regard to the Israeli motives for developing nuclear weapons Perrin stated:

We thought that the Israeli bomb was aimed at

the Americans, not to launch it against America but to say 'if you don't help us in a critical situation we will require you to help us, otherwise we will use our nuclear bombs'.<sup>58</sup>

In other words, the Israeli nuclear arsenal was intended as a tool through which necessary arms imports or other concessions were to be obtained from the United States.<sup>59</sup> As noted above, Israel's conventional arms industries also appear to have been partly aimed at securing imports of advanced weapons systems from foreign sources.

#### Israel's defence sector: dependent despite unique privileges

Given the overall volume of American financial transfers to Israel, the regular supply of U.S. military technology for Israel's defence sector and Washington's toleration of Israeli intelligence gathering activities in the U.S., it would seem difficult to overstate Israel's military dependency on the United States at the close of the Cold War. Indeed, some might argue that the Israeli relationship with the United States is without

precedent in the modern history of state-state relations.

During the final two decades of the Cold War, Washington became the center of gravity for Jerusalem's heavy military dependency on the United States which covers arms, weapons technology and financial aid. The Reagan administration's killing of the Lavi fighter by cutting U.S. aid for the project in 1987 and the Bush administration's refusal in 1992 to support \$10 billion in loan guarantees Israel unless Jerusalem stops building settlements in the Occupied Territories, unequivocally demonstrate who controls the relationship.

If there is a major lesson to be learned from the development of the Israeli defence sector and Jerusalem's relations with the United States it can only be that no Third World country will ever be able to develop a truly indigenous, independent and advanced defence sector vis-a-vis the major industrial states. Israel, with the advantage of a highly educated and motivated population, has been given all the means through which this should have been possible by Washington. The result at the beginning of the 1990s is that Israel is, and will remain, reliant on foreign sources for nearly all its major weapons systems, key technology imports and capital for the development of major systems.

## South African military imports

South Africa's Cold War imports of arms and technology were radically higher than government officials in Pretoria ever conceded. Admission of the country's dependency on arms imports would have been highly damaging in a number of ways. First, it would have implicated the countries violating the mandatory UN arms embargo by supplying weapons to Pretoria -- and few political leaders except perhaps Chile's Pinochet and Bavaria's Franz-Joseph Strauss wished to be publicly associated with apartheid South Africa.<sup>60</sup>

Second, such an admission would have exposed Armscor's claims to be leading South Africa to arms production self-sufficiency as the fiction they were and are. This claim was a significant aspect of domestic propaganda promising the survival of the white South African system during the 1970s and 80s. More fundamentally, arms production self-sufficiency has long been the basis of Armscor's claim for its right to exist as South Africa's largest state corporation.

The fiction that Armscor is producing 95 per cent of South Africa's defence needs has been widely accepted<sup>61</sup> and appears to

have been maintained partly to protect the state arms producer from domestic criticism. Armscor was in an increasingly beleaguered position due to South Africa's economic downturn during the 1980s. Reduced procurements by the South African military and the havoc wrought by an enforced rationalisation of the defence sector narrowed the scope of South African arms manufactures. In addition there were claims that Armscor has been basically mismanaged due to the soft relationship it has with Pretoria and many in South Africa who wanted to see Armscor split up or privatised.

Armscor does, of course, meet part of its mandate which is to supply the South African Defence Forces 'through whatever means necessary' with all arms and materiel. But this is achieved far more through devising means to evade the UN embargo and import operational weapon systems along with key components and technology to upgrade or manufacture new systems. Such means are effective -- in the short term -- but hardly as glamorous as the idea that Afrikaner ingenuity allowed the construction of indigenous helicopters, missiles and fighters to replace those embargoed.

Many countries sold arms, components or military technology to South Africa after the 1977 mandatory UN embargo. Israel has clearly been Pretoria's largest single supplier since 1977, followed probably by France. Israeli-South African military

relations were examined in Chapter Five and French-South African military cooperation is discussed below. In addition, companies in the United States, Italy, West Germany and Taiwan continued military and defence technology exports to South Africa during the 1980s. In the area of small arms and explosives South Africa reportedly received supplies from eastern European countries.

#### Arms import avenues

There are three basic channels for the transfer of arms, components and technology to South Africa. First are the so-called 'gray area' sales. These involve the delivery of equipment with potential dual civilian / military use such as passenger or cargo aircraft, helicopters, communications systems, computers and so forth.<sup>62</sup> Such sales are accepted by the 1977 UN arms embargo resolution and the interpretation has been left up to the country supplying the goods. In practice this has meant that 'enforcement' of the embargo has been used by some countries in a carrot or stick approach to Pretoria.<sup>63</sup> The United States made dual-use sales an element of the constructive engagement policy under the Reagan administration. Some \$556 million worth of aircraft and spare parts were sold to South Africa in Fiscal Years 1980-82 alone by companies such as Bell, Raytheon, Avco and Goodyear.<sup>64</sup>

Second are illegal corporate sales to South Africa. Such sales are carried out in outright defiance of the UN embargo and

risk punishment if detected.<sup>65</sup> The means employed include establishing 'front' companies, the production of forged end-user certificates, the use of third countries and fraudulent exports by private dealers who merely sell their services for the highest profit. In addition, there are countries which have simply not bothered to take serious steps to enforce the embargo -- either through pure neglect or with the premeditated intention of allowing continued arms sales to Pretoria.

This leads to the third means of transfer of embargoed weapons and technology to South Africa which is conducted quite simply by countries which choose to ignore the embargo. Obviously there are elements of such official decision in the two other means described above, but a substantial proportion of arms and technology transfers to South Africa are made in no greater secrecy than other more normal transfers. A striking example can be seen in U.S. arms sales to South Africa under the Reagan administration. Through disclosures obtained from the American State Department under the Freedom of Information Act, it can be documented that 29 separate export licenses were issued during Fiscal years 1981-83 explicitly for military goods purchased by South Africa worth \$28.3 million.<sup>66</sup> A more recent case of outright government approval is the (West) German sale of blueprints for the Drakensberg naval supply ship which entered service in mid-1987, and for the U-209 submarine which according

to some sources is under construction in South Africa. A parliamentary investigation into this affair has been underway in Germany for several years, and it appears that high ranking government officials in Bonn approved this important technology transfer after the sale of the actual submarines from the Howaldtswerke-Deutsche Werft-AG was vetoed.<sup>67</sup>

#### Foreign technology inputs for defence sector industries

As Signe Landgren has stressed, South Africa's arms industry "...owes its very existence to the access to foreign technology."<sup>68</sup> The precise foreign inputs into the various sectors of Pretoria's defence industries were examined detail in Chapter Three and are illustrated in Appendix 15 but it is useful here to briefly review how Western military know-how laid the foundations for South Africa's entire range of military industries:

-The South African aircraft industry has been built on technology, components and aircraft from Italy, France, the UK, the USA, and Israel.

-The military vehicle industry has relied on know-how and designs from France, West Germany, Japan, the USA, and Canada.

-The rocket and missile industry has been heavily dependent on technological infusions from West Germany, Israel and France.

-The nuclear industry has imported entire reactors and other technology from France, West Germany, the USA, and the UK.

-The naval industry has copied designs and used technology from Israel and West Germany.

-The small arms industry has obtained numerous licences for domestic production of weapons from Belgium, the UK, the USA, Israel, and France.

-The electronics industry has openly been supplied with technology by numerous countries since the 1977 UN arms embargo. Major suppliers include the UK, the USA, France, Israel, West Germany, Austria, and the Netherlands.<sup>69</sup>

From the above summary it can be seen that South Africa has enjoyed considerable success in evading United Nations sanctions on arms and military technology imports. It should be noted that the UN embargoes were undertaken to put political pressure on South Africa and that they lack any mechanism for international

enforcement -- unlike the relatively strict COCOM military embargo operated by the U.S. against the former Soviet Union and former East Bloc.<sup>70</sup>

Major weapons systems are imports

Despite the fact that South Africa has obtained considerable foreign assistance in building up defence sector industries, most of the South African Defence Force's major weapons systems at the close of the Cold War were of foreign manufacture.

The only element the SADF's triad of forces in which South African-manufactured weapons systems play any serious role is the army. The army's 250 main battle tanks are British Centurians which have been refitted and are now designated Olifant. The army's heaviest guns -- the 155mm towed G-5 and motorised G-6 -- are manufactured in South Africa as is the Valkiri 127mm multiple rocket launcher. The army relies on a range of domestically produced armoured vehicles for transport in the bush. A total of 4,600 Eland, Ratel, Buffel, Casspir and Wolf armoured vehicles have been produced in South Africa for the SADF. The army's surface-to-air missile, the Cactus (Crotale) are of French manufacture.<sup>71</sup> It must be stressed that all of the army's systems listed above as domestically manufactured have substantial inputs of foreign components and/or technology, as shown in Chapter Three.

The South African air force is almost entirely foreign manufactured. The air force's 43 Mirage F-1s and 30 Mirage 3s are of French manufacture. The 13 Cheetah fighters are Mirages upgraded with Israeli Kfir technology. Pretoria's 207 aging Impala aircraft were domestically manufactured under Italian licence. The air force's 4 electronic warfare aircraft are U.S.-manufactured Boeing 707s and the transport aircraft are American C-130s, C-160s, or elderly Viscounts, C-47s and DC-4s. Despite recent claims of advances in the manufacture of helicopters, all of the air force's 157 helicopters are French Aérospatiale Alouette IIIs or Pumas. Missiles deployed by the air force include the French R-530 and R-550 Magic, the U.S. AIM-9 Sidewinder, and the domestically produced Kukri V-3.<sup>72</sup>

The South African navy is also overwhelmingly comprised of foreign-built systems. The force's three submarines are French Daphnes. The navy's nine missile patrol boats are Israeli Reshefs, some of which were domestically manufactured under licence. The navy's seven mine warfare ships are all of UK manufacture.<sup>73</sup> The recently unveiled Drakensberg supply ship was built with plans obtained from West Germany while the Tafelsberg armed helicopter carrier is an upgrading of a naval replenishment vessel.

## France: A long-term military supplier of South Africa

France has been supplying South Africa with advanced weapons and military technology for over 30 years. Nuclear and missile research cooperation began in the late 1950s. In the early 1960s Paris began delivering Mirage 3 fighters and Alouette helicopters to the South African Air Force. In the 1970s F1 fighters, submarines and a variety of missile systems were sold to Pretoria. In the 1980s French nuclear power stations came on stream in South Africa. Between 1981 and 1986, according to an investigative report in the French daily Le Quotidien de Paris, South Africa received technical assistance from Aerospatiale for its new light attack helicopter, the Alpha XH-1.<sup>74</sup>

France abstained from voting on the 1963 voluntary UN arms embargo, but in 1964 said it would stop selling Pretoria weapons which could be used to put down internal unrest. Thus began what has become the consistent French policy of evading successive UN arms embargoes on South Africa. The first Mirage fighter deal in 1961 and the growth of other French arms exports to South Africa during the 1960s reflected President Charles de Gaulle's determination to secure new markets for the French armaments industry.

In 1970, after direct appeal to President Georges Pompidou

by leaders of the Organisation of African Unity (OAU), Paris promised to stop the sale of helicopters and armoured cars to South Africa. Significantly, aircraft were not included in the pledge and two years later it was announced that Mirage F1s would be built in South Africa under licence. The promised embargo on helicopters was liberally interpreted and France continued to deliver helicopters to South Africa during the early 1970s.<sup>75</sup>

In 1975 President Valery Giscard d'Estaing pledged to expand the embargo to include equipment for South Africa's army and air force; but not naval equipment. French adherence to his embargo was re-emphasised by Giscard at the end of an official visit to Mali in 1977 and Paris promised French authorities would take special measures to prevent arms deliveries from slipping through the official net.<sup>76</sup>

The promise appears to have only been partly fulfilled. The French government apparently canceled the 1971 agreement under which South Africa was to have manufactured the Mirage F1. Pretoria's Atlas Aircraft Industry had not advanced far enough in the project to be able to continue after French assistance was cut in 1977 and the South African Mirage project was probably killed by Giscard's revamped sanctions.

Nevertheless, it was reported that Pretoria accepted Paris' new anti-apartheid line after having received private assurances the French aid would continue for the South African arms indus-

try. A report in the International Herald Tribune said:

Sources here (Paris) said that South Africa had been carefully prepared for Mr. Giscard d'Estaing's announcement. According to these informants, South Africa knew that every care would be taken to cushion the repercussion on its military capacity. That was South Africa's price, the sources said, for not retaliating by reducing its non-military imports from France, currently worth more than US\$ 235 million and growing.<sup>77</sup>

As off-the-shelf military exports to South Africa became more difficult for Paris in the mid-1970s, a new export market grew in importance: nuclear technology. France sold South Africa two nuclear power plants in 1976. The Koeberg I reactor became operational in 1983 with Koeberg II following two years later.<sup>78</sup> As evidence of French policy consistency, it is interesting to note that the construction of the second reactor was begun two months after the election as president of the socialist Francois Mitterrand in 1981.<sup>79</sup>

The beginning of Mitterrand's presidency was also marked by the sale of enriched uranium and small arms to Pretoria. The motivation for each of these sales seems to have been different.

The enriched uranium was sold in a highly circuitous manner through Switzerland and the rationale given by an anonymous finance ministry spokesman in Paris was that given France's delicate economic situation, trade would be conducted with any country that was solvent.<sup>80</sup> Whereas the sales of weapons and ammunition in 1981-82 appear to have been approved by the Mitterrand government only after Pretoria threatened to cancel a major civilian export order with France.<sup>81</sup>

In the most recent reported French military transaction with South Africa, at least five senior engineers of the Aerospatiale helicopter division reportedly worked in South Africa on the development of the Alpha XH1 light attack helicopter during the 1980s. An official from the South African state arms industry, Armscor, acknowledged that the prototype could not have been built without foreign assistance.<sup>82</sup> However French involvement in the project is flatly denied by Aerospatiale. A spokesman for the company's helicopter division denied the report saying: "This is an old story and it is absolutely false."<sup>83</sup>

The economic rationale was a primary ground for French arms exports since the Second World War. In the past twenty-five years France has sold as much military equipment to Pretoria as is politically possible. The fact that France had a trade deficit with South Africa for most of the 1980s (in 1984 it was Ffr 1.6 billion) appears to have created an even greater imperative

to push arms exports among French officials. When criticisms over French arms sales have grown too strong, Paris has always been willing to make concessions in order to preserve broader global interests. During the 1980s French military exports to South Africa were shifted away from finished weapon systems to technology and components, both of which are far more difficult to trace.

**Nuclear imports: South Africa's nuclear weapons capability and nuclear industry**

A full analysis of the South African nuclear programme lies beyond the scope of this dissertation. In the following pages I will attempt to outline two points. First, the evidence pointing to South African nuclear weapons development, and second, the extreme dependency of Pretoria's nuclear programme on foreign sources.

Like the country's arms industries, South Africa's nuclear industry is almost entirely based on foreign technology. The Western technology delivered to Pretoria in the past decades is not merely that needed for the 'peaceful' use of nuclear

power. As Landgren has noted:

What has been delivered to South Africa from the West is not a nuclear bomb but definitely the capacity and know-how to produce such a bomb.<sup>84</sup>

Confirmation of this fact came in 1988 when South Africa's veteran foreign minister, R.F. Botha, boasted that South Africa had the capability to manufacture nuclear weapons.<sup>85</sup>

CIA documents obtained under the U.S. Freedom of Information Act in September 1990 confirm that South Africa has had a dedicated nuclear weapons programme since at least the mid-1970s and may have been able to produce nuclear weapons as early as the end of 1979. In a document dated December 1979, the CIA states that Jacobus de Viliers, the former chief of South Africa's nuclear energy programme, "had been directly involved in (nuclear weapons design work at the Pelindaba nuclear research center before his promotion to President of the AEB (Atomic Energy Board) in July 1979." The same document notes that "until recently South Africa lacked the relevant technology and fissile material" but estimates that South Africa "has by this time acquired sufficient fissile material for the fabrication of several nuclear devices."<sup>86</sup>

The first evidence of a South African nuclear weapons programme appeared in August 1977, when a Soviet satellite photographed what appeared to be a nuclear weapons test site in South Africa's Kalahari Desert. Western governments were informed of the site by Moscow and a U.S. satellite confirmed the Soviet finding. Under pressure from Washington, Moscow, and other Western governments, South Africa halted work on the site.

More evidence of nuclear weapons testing was provided by a U.S. Vela satellite, which on 22 September 1979 observed a double flash of light normally caused by a nuclear explosion in a remote area of the South Atlantic. An initial study by the Carter administration concluded that the flash was not caused by a nuclear explosion but rather by "zoo events", i.e., an unexplainable natural phenomenon. But the Carter administration findings appear to have been a whitewash. President Carter apparently feared a diplomatic row with Pretoria over nuclear weapons would scupper the negotiations over Rhodesia, and that with U.S. elections approaching he preferred to avoid a public dispute over the affair with Israel, which was suspected of participating in the test.<sup>87</sup>

A number of independent U.S. reports confirm that there was indeed a nuclear test in the South Atlantic on the night of September 22. A classified U.S. Defense Intelligence Agency report concluded that the Vela satellite -- designed to monitor nuclear weapons testing -- had indeed recorded a small nuclear

explosion, as did a study by the U.S. Navy's Research Laboratory (NRL).<sup>88</sup> American scientists operating a radio telescope in Puerto Rico detected ripple moving through the ionosphere coming from the direction and at the right velocity to have been from a nuclear explosion in the South Atlantic. The CIA established that a secret South African naval exercise had been conducted at the same time and in the same area as the explosion.<sup>89</sup>

On 15 December 1980 a U.S. Vela satellite detected three further double flashes over same area of the South Atlantic.

A 1985 U.S. Congressional report, based on 500 pages of previously classified NRL documents, concluded that a nuclear weapon had been conducted in 1979 and that a joint South African-Israeli nuclear programme exists.<sup>90</sup> This latter finding is corroborated by CIA documents released in 1990 which stated:

Israelis have not only participated in certain South African nuclear research activities over the last few years, but they have also offered and transferred various sorts of advanced non-nuclear weapons technology to South Africa.<sup>91</sup>

While the 1979 flashes of light appear to have been confirmed by a variety of sources as originating from a small nuclear explosion, the country responsible for the test remains open

to question. A number of reports, including one on the American television network CBS, based on a book written by two Israeli journalists which the Israeli government suppressed, said the test had been carried out by Israel in cooperation with the South African government. A book by two Israeli security studies academics and a former Israeli Air Force officer suggests that Israel and South Africa "are managing to develop a neutron bomb."<sup>92</sup> (Israeli-South African nuclear cooperation has been examined in Chapter Five.)

The question as to whether South Africa possesses nuclear weapons must therefore remain open. But as one South African political scientist noted in the early 1980s, it is generally accepted in international circles that Pretoria "has the ability to either manufacture nuclear weapons or rapidly to convert its nuclear stockpile to military purposes."<sup>93</sup>

#### South Africa: A nuclear importer

Although South Africa is a major world producer of uranium, nearly all of the country's nuclear technology has been supplied from foreign sources.

Pretoria's first research reactor, the 20 megawatt Safari-1

reactor, was supplied by Allis Chalmers of the United States under the 'Atoms for Peace' programme. Safari-1 became operational in 1965. Between 1962 and 1976, the U.S. supplied 104 kg. of enriched uranium needed by Safari-1. The Safari-2 research reactor (or Pelinduna-Zero, as it is known) began operation in 1967. Pretoria claims Safari-2 is an indigenous reactor, but most sources discount that South Africa could have built an indigenous nuclear reactor in the 1960s. Some reports say that the reactor was built by West Germany's Krupp concern. Safari-1 was shut down in order to free funds to uranium enrichment research which became a South African government priority.<sup>94</sup>

South Africa received its low-enriched uranium nuclear power reactors, Koeberg I and II, from Framatome of France. (The reactors were designed by the U.S. Westinghouse concern.) Koeberg 1 began operation in March 1984 and Koeberg 2 came on stream in July 1985. Koeberg I and II receive uranium fuel rods from the Belgian-French Eurofuel concern under a contract that lasts until 1994. It is estimated that 82 percent of the entire Koeberg project was financed by a consortium of French banks, headed by the state-owned Credit Lyonnais. Equipment for the Koeberg plants came from Alstrom of France, Hitachi, Mitsubishi, and Toshiba of Japan, and Combustion Engineering and Babcock & Wilcox of the USA.<sup>95</sup> The two Koeberg reactors could produce 400 kg plutonium per year, which would be the equivalent to one Naga-

saki-size atomic bomb per week.<sup>96</sup>

The first uranium enrichment research plant began operation at Valindaba in 1975. A semi-commercial plant employing stationary-wall centrifuge jet nozzle system entered production in 1987. West Germany transferred a considerable amount of uranium enrichment technology to South Africa, and the STEAG concern reportedly passed on much of the know-how for the Valindaba plant. A number of West German firms also supplied equipment for Valindaba.<sup>97</sup> Estimates of the amount of enriched uranium that the Valindaba plant produces annually range from 50-300 kg.

**South Africa: embargo prevents dependency on single country**

Although South African-produced weapons including the G-5 howitzer and various armoured vehicles which appear to have played a role in the SADF's military operations during the 1970s and 80s, Pretoria's exercise of air and sea power remained largely dependent on foreign-built arms through the end of the Cold War. Indeed, lack of replacements for the air force's Mirage fighters seems to have caused military planners to hold back these frontline aircraft from conflicts on repeated occasions.

South African manufactured arms proved adequate for ground-based army forces, counter-insurgency and policing throughout the

Cold War. However even in meeting these more limited demands, Armscor's inability to produce helicopters meant the vital air element for military's counter-insurgency forces could only be supplied from foreign sources.

But in supplying strategic weapons, Armscor was unable to meet the needs of South Africa's army, navy and air force through domestic production during the Cold War. In the 1980s, South African regional military superiority was steadily eroded by advanced weapons imports by the frontline states and only the end of the Cold War prevented Pretoria from becoming caught up in a high-paced an arms race.

The UN arms embargo prevented South Africa from becoming dependent on a single arms supplier, simply because few countries were willing to ship weapons to South Africa on a regular basis. Pretoria remained dependent on a number of foreign weapons and military suppliers from the 1960s to the end of the 1990s including Israel, France, (West) Germany and the United States. Thus the center of gravity for Pretoria's foreign weapons dependency was more dispersed than that of Israel and Yugoslavia. South Africa had nothing like Israel's financial dependence on the United States nor Yugoslavia's preponderate dependence a single source of arms (Moscow).

Should it remain necessary, Pretoria will undoubtedly continue to find ways to evade UN sanctions. Nevertheless major

weapons systems remain an area of acute foreign dependency for South Africa. 'Indigenous' production of major systems has to date been little more than upgrading of obsolete tanks, fighters and ships and the assembly of a small number of major systems based on foreign technology and components. Despite Armcor's rhetoric, South Africa remains dependent on imports for tanks, submarines, long-range maritime patrol aircraft, heavy artillery, radar and communications equipment and computers.<sup>98</sup>

This, however, is a vulnerability which will probably never be exploited. The expanding number of world arms producers -- in particular the newly industrialising countries -- along with the relative contraction of international demand for advanced weapons systems and the economic pressure on new arms producers to increase exports, have created a market made for the arms buyer. Should the UN arms embargo remain in place despite the de Klerk reforms, the South African military will undoubtedly be able to procure weapons it needs for the 1990s from foreign sources.

#### Yugoslavia's Arms Imports

It is difficult to calculate what percentage of Yugoslavia's Cold War defence materiel requirements were met by direct imports. Official Yugoslav sources put the figure at an optimistically low

5-25 percent.<sup>99</sup> Some Western sources claim that Yugoslavia maintained a long-standing rule that domestic arms production should always exceed arms imports by a 3:1 ratio.<sup>100</sup> However Adam Roberts estimated that Yugoslav manufactures in the mid-1970s met perhaps 55 per cent of all military needs leaving the remaining 45 per cent to imports.<sup>101</sup>

Yet these necessarily broad estimates tell us very little about the real nature and implications of Belgrade's arms imports through 1990. This study concludes that Yugoslavia -- like Israel and South Africa -- remained dependent on foreign suppliers, particularly the former Soviet Union, for its most advanced weapon systems. The delivery of Soviet MiG-29 air defence fighters to the Yugoslav Air Force in the late 1980s<sup>102</sup> was merely the most recent example of a military high-tech foreign dependency which began in 1945.

Two broad categories of weapons were imported by Yugoslavia. First, those of such advanced nature that they could not be manufactured in Yugoslavia. Second, are those systems which were required in such small numbers<sup>103</sup> that they are imported to save research and development costs and the high costs of short production runs.

Belgrade's main arms suppliers were the Soviet Union from 1945-48; the United States from 1951-57; and from 1959 through the Yugoslav break-up in 1991, the (former) Soviet Union. The

U.S. continued to supply spare parts worth some \$500,000 a year after 1961 <sup>104</sup> and under the Carter administration supplied a number of off-the-shelf systems. In addition, France and the United Kingdom were important source of weapons, particularly as Belgrade attempted to diversify its suppliers.

During the 1945-48 period Yugoslavia received a variety of ex-Soviet equipment including Tanks, artillery systems, tank-repair shops, and communications equipment. The poor quality and high price of Soviet weapons was one of Tito's important complaints regarding Moscow in the 1945-48 period.<sup>105</sup> The party newspaper Borba wrote scathingly of the Soviet military equipment in December 1950:

Besides the exorbitant price, our soldiers and officers have discovered that the equipment...was not new but reconditioned and simply given a new coat of paint. <sup>106</sup>

Following the 1948 break with the Cominform countries, the first large-scale American and Western arms shipments reached Yugoslavia in 1951. <sup>107</sup> Included were tanks, armoured personnel carriers, artillery, fighter and bomber aircraft, corvettes, minesweepers and destroyers.<sup>108</sup>

Arms imports from the Soviet Union and East Bloc were fully resumed in 1962. During the 1960s Belgrade bought fighter aircraft, helicopters, surface-to-air missiles, radar systems and other communications equipment. In the years following 1964, the ground forces were extensively modernised with Soviet tanks, anti-tank guns, missiles, armoured personnel carriers and other equipment. The navy received missile and torpedo boats. During this period Yugoslavia continued to buy avionics, electronic equipment, spare parts, and other military components from France, the United States, the United Kingdom, and Italy.<sup>109</sup> American arms sales to Yugoslavia began increasing under the Ford administration in 1975 and increased further during the Carter administration. Discussions concerning a more formalised supply of U.S. arms began in 1975 and by 1978 a series of agreements had been concluded for increased arms sales to Belgrade. Military sales agreements continued to expand under the Reagan administration with some \$34 million approved in January and February 1982 alone.<sup>110</sup>

Most major weapons systems are imports

As is the case with Israel and South Africa, Yugoslavia's advanced weapons systems at the end of the Cold War in 1990 were

imports or manufactured under foreign licence.

The Yugoslav army relied on Soviet tanks for conventional frontline defence. Some 1,150 T-54/5 and T-72/4 Soviet main battle tanks formed the operational Yugoslav tank force. An additional 700 T-34s and M-4s are were in storage. The T-72/74 (designated M-84) was manufactured under licence in Yugoslavia since the since the early 1980s. Levels of production remain a state secret, thus the total number of T-72/74s assembled in Yugoslavia is not known. Anti-tank guided weapons were all Soviet-made and included the AT-3 Sagger, the AT-4 Spigot and the AT-5 Spandrel.<sup>111</sup>

Yugoslavia's relatively low-tech navy was partly comprised of vessels of indigenous manufacture; but as shown in Chapter Four, most indigenous production was based on Soviet technology. Submarines and ships up to the size of corvettes were produced domestically. Nevertheless, as is true for all three case study countries, the largest, most advanced systems were imports. In the case of the Yugoslav navy, the most powerful and advanced systems were Soviet Koni class frigates, two of which were imported during the early 1980s. A series of other Soviet and French naval vessels imported over the past three decades included French Le Fouguex class corvettes, Soviet Osa 1 class fast attack missile boats, Soviet Shershen class fast attack torpedo boats, and Soviet Vokov Klanc class minehunters.<sup>112</sup>

The Yugoslav air force's most advanced fighters were 16

Soviet MiG-29s. The air force also had 140 MiG-21s to complement domestically manufactured Orao, Galeb and Jastreb fighter ground attack aircraft. The Yugoslavia's 70 assault helicopters were Soviet Mi-8s, and the 120 Gazela attack helicopters were of joint French-Yugoslav manufacture -- with Paris in the senior position. Anti-submarine helicopters were exclusively Soviet Ka-25s and 28s. All military transport aircraft were imports including Soviet Anotov An-12s, An-26s, and Yak-40s, Canadian CL-215s, French Falcon 50s, and Learjet 25s.<sup>113</sup>

Yugoslavia: Dependent on arms from Moscow

Like South Africa, Yugoslavia appears to have only succeeded in meeting the basic lower technology needs of its ground forces through domestic arms production. Belgrade's dependency on foreign sources for major weapons systems continued throughout the Cold War to the 1991 break-up of the Yugoslav federation.

Following a brief hiatus in the late 1940s and early 50s, Yugoslavia reverted to dependence on the former Soviet union for advanced weapons systems. Through licencing agreements for production of the T-72 tank to direct sales of the MiG-29 fighter, Moscow was the controlling center of gravity for Yugoslav arms

import dependency in the final two decades of the Cold War.

Unlike Israel or South Africa, Yugoslavia's armed forces were never battle tested during the Cold War. Caught between the heavily armed East and West blocs, Yugoslav forces were highly deficient from a qualitative standpoint when compared to those of NATO or the former Warsaw Pact. The East-West conflict also reduced the potential efficacy of domestic Yugoslav military production. Whereas Israeli and South African-produced arms bolstered these two countries' respective regional military superiority to at least a limited degree, Yugoslav arms production failed in this task, in part because of the very high standards met by armed forces of the two blocs in central Europe.

## Conclusion

A dictionary definition of 'dependent': "depending on someone or something else for aid, support etc."<sup>114</sup> simply but accurately describes the reliance of Israel, South Africa and Yugoslavia on foreign weapons and military technology imports throughout the Cold War.

The continued acquisition of advanced foreign fighter air-

craft, or aircraft technology, at the end of the Cold War is a mirror image of the same weapons dependency which in the 1950s and 60s spurred development of respective defence industrial sectors. Despite the investment of billions of dollars in prestige aircraft and other major projects, the three case study countries were unable to produce the frontline fighters or the range of other major systems required by respective armed forces. In the 1990s and beyond, all three states -- or successor states -- will remain dependent on foreign sources for military systems such as aircraft, helicopters, large naval vessels and tanks as well as a wide variety of other military equipment.

By the end of the Cold War Israel had become even more dependent on foreign (American) weapons, military technology and financial aid than in the 1950s and 60s. During the early period of statehood Jerusalem imported similar weapons but was at least able to pay the bill without annual multi-billion dollar grants from Washington.

South Africa failed in its bid to produce key weapons embargoed by the United Nations and remained a Cold War arms importer, dependent on military technology and components to upgrade existing aircraft and helicopters and on any other weapons which slipped through the embargo net. Major systems such as aircraft, naval vessels and tanks were, for the most part, too big to be sold to Pretoria without attracting international notice. As a

result of the failure of domestic arms production and this limited success of the UN embargo, South Africa has had no known regular source for major weapons since 1977 other than Israel, as described in Chapter Five.

Yugoslavia briefly broke away from arms imports dependency on Moscow during the 1950s, but by the 1960s Belgrade was again dependent on the Soviet Union for imports of major weapons systems. Sales of advanced fighter aircraft and naval vessels to the former Yugoslav federation by the former Soviet Union in the late 1980s confirm Belgrade's foreign arms dependency through the end of the Cold War.

The continued dependency of Israel, South Africa and Yugoslavia on imports of "off the shelf" major weapons systems in the post-Cold War era dramatically illustrates the failure of respective domestic arms production sectors to provide replacements for the very embargoed weapons systems which triggered the creation of defence industries in the first place.

The relevance, for this dissertation, of arms imports for all three countries at the end of the 1980s is as evidence that despite decades of work and billions of dollars invested, none of the three case study countries were able to produce anything near the range of advanced systems required by their respective armed forces.

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**Part Four -- Conclusion**

## Chapter Eight

### Conclusion

During the 1970s and 80s Israel, South Africa and Yugoslavia built up sophisticated weapons manufacturing capabilities and produced everything from small arms to fighter aircraft and rockets. There are naturally great qualitative differences in the systems produced by the three: Israel is a far more sophisticated arms-maker than South Africa or former Yugoslavia.

Israel, South Africa and Yugoslavia initiated development of large-scale military industries mainly as a response to the uncertainty of foreign arms supplies during the Cold War. As shown in the case study chapters, all three countries were subjected to repeated arms embargoes and the desire to reduce dependency on foreign sources for weapons was a key reason for the creation of respective domestic defence industry sectors.

Israel experienced a series of arms embargoes beginning in 1948 with the creation of the Jewish state. Although domestic arms production began in the 1950s, the French embargo imposed during and after the 1967 War appears to have been the watershed event which spurred Israel to broaden and deepen domestic military production.

South Africa has been the world's most embargoed country in terms of weapons since 1945. A voluntary UN arms embargo resolution on Pretoria in 1963 was followed up with a mandatory resolu-

tion in 1977. In 1984 the UN passed a voluntary resolution banning countries from importing arms from South Africa. Pretoria began a concerted defence industrial sector build-up in the 1960s.

Yugoslavia was subjected to an arms embargo by the Soviet Union following its 1948 break with Moscow and the East Bloc. Domestic arms production capabilities were expanded in the 1950s and accelerated after the 1968 Warsaw Pact invasion of Czechoslovakia.

#### The military-industrial complex in the Third World

But if embargoes led to the initial decision to develop domestic arms industries, other combined military, economic and political interests -- broadly conforming with the military-industrial complex phenomenon -- appear to have played an important role in the expansion of respective defence sectors and winning commission of major defence projects in all three countries during the 1970s and 80s.

In Israel the role of military-industrial complex interests in defence production decisions is especially distinct with regard to military and civilian aircraft projects. The Arava

transport aircraft and Westwind jet appear to have been initiated as a make-work projects at the behest of the Israeli aviation industry. The explosive growth of the Lavi fighter project -- prior to its 1987 cancellation -- also serves as a near textbook case of MIC interests influencing defence production.

In South Africa a tight web of military, economic and security-oriented political interests consolidated their hold on political power during the 1970s and 80s. The rise of the powerful State Security Council (SSC) under the militarily well-connected P.W. Botha gave the army an unprecedented role in running the Apartheid state. Meanwhile, the state arms producer, Armscor, was able to bring together a South African ruling class of business, scientific, military and government officials on its board of directors and came to play an important role in setting arms manufacturing policy. Both the SSC and Armscor conform with definitions of elements comprising the military-industrial complex phenomenon provided in Chapter One.

Former Yugoslavia's military played a far greater political role than did the respective armed forces of the two other case study countries. Little analysis of the military-industrial complex is available on Yugoslavia, but the influential military and aviation industry lobby successfully wielded enormous pressure to win approval for the \$2 billion Novi Avion fighter project despite the country's growing economic crisis in the 1980s.

## Military dependency perpetuated: arms production in Israel, South Africa and Yugoslavia

A key conclusion of this thesis is that all three case study countries clearly failed to achieve true military independence through the development of respective defence industry sectors. As shown in the previous chapters, Israeli, South Africa and Yugoslavia did not succeed in producing major weapons systems without reliance on foreign sources for key components like engines, avionics or weaponry (tank guns and missiles for aircraft and ships).

Even in Israel, where know-how existed in the local scientific community for aspects of projects such as the Lavi fighter, the most sophisticated components of the Lavi -- a staggering 50 percent of the aircraft -- would have been manufactured in the United States or under U.S. licence. As such, the Lavi would have truly been a joint Israeli-U.S. production. But the Lavi's price was simply too high for Jerusalem and financial constraints forced the project's cancellation.

Almost all of South Africa's domestically-built weapons were

based on foreign technology. The 'new' weapons systems unveiled during the 1980s, such as the Cheetah fighter and various helicopter prototypes, were merely existing South African systems upgraded with foreign technology and components.

Former Yugoslavia's military industries remained heavily dependent on foreign technology and components throughout the Cold War. The Orao fighter aircraft -- the most advanced plane produced by the Yugoslav defence sector -- required a foreign engine and numerous other key components. Most major Yugoslav weapon systems are licence-produced or merely copies of systems produced by the industrialised countries.

In the post-Cold War 1990s all three countries -- or successor states -- remain heavily dependent on foreign technology or licences for the development of new weapons systems. As a result of this continued dependency, Israel, South Africa and former Yugoslavia seem certain to continue their long history of begging, buying or stealing defence technology from the industrialised countries.

Same reliance on weapons imports in the 1990s as in the 1960s

But reliance on military technology imports for defence industries is less than half the military dependency story for Israel, South Africa and Yugoslavia in the 1990s. Despite decades of

work and billions of dollars invested, none of the case study countries was able to produce the advanced weapons systems required by respective military forces. Fighter and transport aircraft, helicopters, tanks, advanced naval vessels and submarines continue to be purchased from foreign suppliers. These weapons comprise the very same key systems which the industrialised countries withheld from Israel, South Africa and Yugoslavia from the late 1940s through the 1970s, thus sparking the drive for domestic arms production to reduce foreign military dependency in the first place.

During the 1990s Israel will rely on deliveries of U.S. fighter aircraft and helicopters, American-built naval vessels, and German-built submarines. Despite the success of the Merkava tank project only a small proportion of Israel's tank forces are comprised of Merkavas.

South Africa continues to rely on French-built fighter aircraft and helicopters and submarines (all of which have gone through a series of upgrades). Israel has been a vital conduit for, among other things, South African acquisitions of transport and reconnaissance aircraft since the 1977 UN arms embargo.

Prior to its break-up in 1991, Yugoslavia relied on Soviet weapons systems for all frontline defences. Key imports from the former Soviet Union in the late 1980s included MiG-29 fighters, tanks and naval vessels.

### Third World arms trade interdependency

A further important conclusion of this thesis is that despite the continued military dependency of Israel, South Africa and Yugoslavia all three countries were all able to become important Third World arms exporters during the last two decades of the Cold War. Military exports from the case study countries have mainly been to other developing countries, given that arms sales to the industrialised countries were largely precluded on qualitative and/or political grounds. Weapons exports from the case study countries played a significant role in the nascent phenomenon of Third World military interdependence during the 1970s and 80s.

Israel, South Africa and Yugoslavia all became significant arms and defence technology exporters beginning in the 1970s. The main justifications for military exports were economic and diplomatic. Leaders of all three countries viewed arms exports as a means to recoup the heavy financial cost of domestic defence industries and as means to further respective diplomatic initiatives. Although in overall export volume these countries are no match for the industrialised arms exporters, they comprise an important part of the Third World arms exporters club which has steadily eroded the old post-1945 oligopoly of the industrialised

arms sellers.

During the 1970s and 80s, Israel was able to defy the industrialised arms exporters by becoming the single most important conduit for arms and defence technology to South Africa following the 1977 mandatory United Nations arms embargo. Israel supplied South Africa with missiles, patrol boats, helicopters, fighter aircraft modernisation packages and reconnaissance aircraft. Again in 1982 during the Falklands / Malvinas War, Israel supplied Argentina with weapons in open defiance of the Western industrial arms producers. The Israeli phenomenon of the 1970s and 80s serves as a preview of the twenty-first century in which Third World arms producers will play a growing role in the proliferation of arms, military technology and nuclear technology.

South Africa and Yugoslavia, although smaller arms exporters than Israel, also have emerged as significant Third World arms suppliers. Pretoria was the single most important supplier to neighboring Rhodesia in the 1970s and subsequently supplied large amounts of arms to pro-Western counter-revolutionary movements in Angola and Mozambique. During the 1980s and early 1990s South Africa attracted considerable international attention for its arms and military technology sales to Iraq.

Yugoslavia used arms exports as means to give teeth to the Cold War doctrine of Nonalignment and supplied large amounts of weapons to a number of less internationally accepted Third World countries, including Iran, Iraq and Libya.

Military interdependency among developing states appears set to grow in the next decades as new arms producers move to fill the positions held by the former industrial suppliers. Markets for Third World arms producers come in part from other developing countries which often cannot afford or do not need state-of-the-art weapons systems produced by the industrialised countries. As a result, major Third World arms suppliers have the chance to play a growing role in supplying basic weaponry to fellow Third World countries.

Third World military interdependence may also be stimulated on political grounds. Attempts by industrialised powers to use arms sales as a diplomatic or sanctions tool aimed at the developing countries, may be thwarted by a military interdependent Third World in which states like Israel fill gaps created by, say, President Jimmy Carter's human rights arms cutoffs in Central America or the UN arms embargo on South Africa.

The post-Cold War world: Whither Third World military industries

The military-industrial and domestic political developments in all three countries in the late 1980s and early 90s illustrate

the overall misadventure of the bid to reduce dependency on outside sources of arms, military technology and capital via the high-cost development of an arms manufacturing sector. On the one hand, all three countries failed in their attempt to reduce dependency on the industrialised countries through manufacture of indigenous advanced weapons systems. On the other hand, the significant expansion of short and middle term military independence <sup>1</sup> -- achieved through the defence sector build-up -- counted for little in resolving each country's internal crisis.

In this respect, despite some seemingly impressive achievements, Israeli, South African and Yugoslav defence production -- an integral part of national security policy -- appears to have been a failure. Why so?

First, in terms of the failure or cancellation of major advanced weapons projects, like Israel's Lavi fighter, all three countries provide examples of why Third World arms producers remain condemned to produce, at best, second echelon indigenous weapon systems. All more advanced systems depend too heavily on imported technology, components, or capital.

Second, despite the importance accorded the defence industrial sector build-up in the three case study countries, domestically produced arms have played little or no role in military conflict or in resolving societal crises: Israeli-built weapons -- with the possible exception of nuclear weapons -- have not played a decisive role in any of the Jewish state's wars since

1948. And Israel's nuclear-armed missiles -- arguably the most notable Third World arms production achievement -- are impotent against Palestinian unrest in Israel and the Occupied Territories.

South African arms played an ancillary role in military operations against neighboring states in the 1970s and 80s. But domestic arms production was neither able to preserve the apartheid society, nor restore order in a post-apartheid society.

Indigenous Yugoslav arms production played a minor role in supplying weapons which would have been effective against a concerted attack or intervention by Warsaw Pact or NATO forces during the Cold War. Domestic arms production capacity did nothing to prevent the slide into civil war.

For the three case study countries, domestic arms production was viewed as a Cold War policy to reduce foreign military dependence in part to pursue internationally unpopular or independent domestic and foreign policies. Although broader policy questions are beyond the scope of this dissertation, it should be noted that in achieving these ends domestic arms production policy proved a failure, when de-coupled from internal political reforms.

## Cold War arms production rationale vanishes

But more fundamentally, the heavy costs of domestic arms production were borne as a kind of 'declaration of independence' which underlined the importance of Israel and South Africa as potential Cold War proxies of the West and Yugoslavia's Cold War policy of Nonalignment.

Israeli arms production guaranteed Jerusalem the right to serve as the Reagan administration's weapons supplier in Central America during the 1980s. Existence of the country's domestic arms sector -- along with legions of 'private' Israeli arms dealers -- meant Israel could independently supply the Nicaraguan Contra forces and right-wing governments in the region which had been blocked from receiving American arms by the United States Congress.

In a similar fashion, South Africa was able to use domestically produced arms to independently supply anti-Communist forces in Angola and Mozambique during the 1980s, thus allowing the Reagan administration to again bypass a congressional law prohibiting the U.S. government from supplying Angolan counter-revolutionary forces with weapons. Domestic arms production also helped Pretoria maintain a facade of independence when launching military operations against the Angolan government and Cuban support forces at the behest of the West.

Arms production was a key element of Yugoslavia's attempt to

'opt-out' of the Cold War through a policy of Nonalignment. In theory, Nonalignment prescribed that Belgrade should not be dependent on either military bloc for weapons. The domestic manufacture of arms was thus the cornerstone of Belgrade's Cold War policy of Nonalignment.

But the end of the Cold War, eroded or erased the demand for proxy arms transfers and the need for Nonalignment. The ending of the Cold War is a major discontinuity in the calculus justifying the costs of a large domestic arms manufacturing sector in the case study countries for the 1990s. The regional security situation of each of the case study states -- or successor states -- is a continuity on which continuation of arms production may be justified in the post-Cold War world.

While none of the case study countries -- or successor countries -- can be expected to fully dismantle their respective defence industrial sector, a series of post-Cold War factors may pave the way for some reductions in Third World defence production. This is especially true for Israel, South Africa and former Yugoslavia, which initiated defence production for political reasons and probably less true regarding arms producers like Brazil which built up defence industry sectors more for economic reasons. Post-Cold War considerations possibly encouraging reduced Third World arms production include the following:

1) The pointed lesson provided by the 1987 cancellation of the Lavi fighter as a warning to Third World arms producers on the limits of both technology and capital in domestic arms production.

2) The disappearance of Cold War justifications for arms production, including a sharp decline use of proxy arms supply, and the decline of the concept of Nonalignment through the elimination of a bipolar world.

3) The flooding of world arms markets with weapons no longer needed in post-Cold War Europe.

4) A reduction in ideologically-based arms racing -- as once fueled by Moscow and Washington -- such as which took place between Israel and the Arab states from the mid-1950s to the end of the 1980s.

5) The breaking of the old northern industrial states' arms supply oligopoly through Third World production, which has created a far greater number of arms suppliers, thus reducing the chances of implementing a successful arms embargo.

6) An enhanced realization, particularly in light of the post-Cold War Communist collapse, of the equal importance of economic

power, to classical military power, in the calculus of a state's international influence.

This final point may well be the key to reduced Third World arms production in the 1990s and beyond. Future Third World arms projects will be subject to far more ruthless economic -- rather than ideological -- scrutiny. The damning criticism of Israel's Lavi fighter project raised by the Israeli state comptroller will serve as a blunt lesson of the importance for reining in arms development projects run financially wild. Advanced fighter aircraft may still be manufactured in the Third World, but not under a regime which dictates reinventing the wheel to match available state-of-the-art technology. With the Lavi cancellation in mind, aircraft and other major projects will only be undertaken with the assistance of major international weapons or aviation manufacturers, with key components imported or built under foreign licence.

The necessity for future international arms manufacturing cooperation means Third World defence production has made a complete circle since it first began in the 1950s. The international technological interdependency -- required for advanced arms production -- has finally demolished the myth that domestic arms production can create true national military independence. Yet it was belief in this very myth of independence which prompt-

ed the genesis of the arms production in Israel, South Africa and Yugoslavia in the Cold War era.

In the 1990s and beyond, Third World arms producers will endeavour to intertwine their respective military industries with the industrial countries' defence sectors from which they so long struggled to achieve independence.

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**Part Five -- Appendices and Bibliography**

## Appendices: An introduction

The following appendices document arms exports from, and imports to, Israel, South Africa and Yugoslavia. The appendices, which comprise a vital part of this dissertation, are based on an extremely wide variety of sources including arms trade yearbooks, weapons trade journals, newspapers and academic sources (as footnoted at the end of each appendix).

Arms exports and imports were treated as state secrets by all three countries during the Cold War; thus the information in the appendices cannot claim to be absolutely correct. I have omitted entries of export or import transactions which appear open to doubt and have included brief explanatory notes in the appendices for transactions where available documentation appeared incomplete or to explain details of a particular acquisition or sale.

APPENDIX 1 - Israeli Arms Exports to Latin America

<u>Country</u>	<u>Weapons/Service Received</u>	<u>Quantity</u>	<u>Year</u>
1) Argentina	Dassault Mirage-5 fighters	26	1978
	Nesher fighters (designated Dagger)	28	1982- 83
	Mirage-3C fighters	?	1981
	(Conflicting information; possibly confused with 28 Nesher fighters.)		
	A-4E Skyhawk fighter/ bomber	24?	1982- 83
	Boeing 707 equipped with Elint system	1	1985
	Shoet MK-2 armoured personnel carrier (Delivery unconfirmed; may be contract for licensed production)	10	1984?
	Dabur patrol boats	2-4	?
	Gabriel ship-to- ship missiles	25+	1975- 86
	Various bombs, rockets and small arms	-	-
2) Bolivia	Arava transport aircraft	6	1976
3) Brazil	Bell UH-1D Iroquois helicopter	8	1982
4) Chile	Reshef class fast patrol	2?	1979?
	Shafrir anti-aircraft missiles	150	1977?
	Radar systems	?	?
	Shoet 2 armoured personnel carrier (licenced production in Chile)	?	?

	Maintenance of Chilean air force aircraft by IAI	-	?
	Kfir fighters (ordered in 1988)	12	-
	Retrofit package for Mirage fighters	?	1984
5) Columbia	Kfir-C2 fighter/bomber	12	1982
	Gabriel missiles	?	?
	Arava transport aircraft	3	1980
	Rocket propelled grenades, small arms and ammunition	200 tonnes	1986
	Tanks	?	?
	Field artillery	?	?
6) Costa Rica	Small arms and police and anti-terrorist training	-	-
7) Dominican Republic	Uzi 9mm submachine guns	?	?
8) Ecuador	Kfir-C2 fighter/bomber	13	1983?
	Super Mystere fighters	12	1977
	Barak anti-missile missiles	?	?
	Arava transport aircraft	10	1975-76
	Armoured personnel carriers	?	?
	Various ammunition, rockets and explosives	-	-
9) El Salvador	Arava transport aircraft	17	1974-77
	Fouga Magister trainer aircraft	6	?

	Dassault MD450 Ouragan fighters	18	1975
	Mystere B-2 bombers	4?	1981?
	80mm rocket launchers	200	?
	Uzi 9mm submachine guns	200	?
	Napalm	?	1984
	Ammunition and spare parts	-	-
10) Guatemala	Arava transport aircraft	10-17	1977-78
	Asimo helicopters	5	?
	RBY MK armoured cars	10	?
	Training and computers for G-2 police intelligence	-	-
	Galil 5.56mm assault rifles	15,000	?
	Licensed production of the Galil and M16 rifle at Israeli-built factory	-	-
	Field kitchens	4	?
11) Haiti	Uzi 9mm submachine guns	600	?
	106mm guns	?	?
12) Honduras	Dassault Super Mystere B2 4 fighters	18	1977-78
	Fast patrol boats (unspecified manufacture)	5	1980
	Arava transport aircraft	3	1976
	Westwind reconnaissance airplane	1	?
	RBY MK armoured cars	14	?
	106mm MK mortars	?	?

	Galil assault rifles and Uzi submachine guns	?	?
	Westwind aircraft (Seascan maritime patrol version)	2	?
13) Mexico	Arava transport aircraft	10	1978
14) Nicaragua	Arava transport aircraft	5-14	1974- 77
	Helicopters	?	before July 1979
	Patrol boats	?	before July 1979
	Anti-aircraft missiles	?	before July 1979
	Surface-to-surface missiles	?	before July 1979
	Uzi 9mm submachine guns	?	before July 1979
	Rifles, mortars, and ammunition	?	before July 1979
15) Panama	Westwind airplane (Seascan maritime patrol version)	1	1975
16) Paraguay	Arava transport aircraft	6	1977
17) Peru	Helicopters	12	1987?
	Armoured vehicles	72	1987?
	Patrol boats	?	1987?
	Small arms and ammunition	?	?
	Parachutes	?	?
	Radio equipment	?	?
	Counter-insurgency training	-	through 1989

18) Venezuela Arava transport aircraft 3 1980

<u>Non-State military organisations</u>	<u>Weapons/Service Received</u>	<u>Quantity</u>	<u>Year</u>
1) FDN (Fuerza Democrática Nicaraguense/ Nicaraguan Deomocratic Front) Honduran based anti-Sandinista movement	AK-47 rifles	2000	1983
	artillery pieces, mortars mines, hand grenades, ammunition, and military advisers	?	1982- 86
2) ARDE (Alianza Revolucionaria Democrática/ Democratic Revolutionary Alliance) Costa Rican based anti-Sandinista movement led by Eden Pastora	AK-47 rifles	500	1983- 85
	military advisers		
3) Columbian Drug cartel	Galil assault rifles	400	1989
	Uzi sub-machine guns	100	1989
4) Peruvian drug producers	Galil assault rifles, sniper rifles, flak jackets, ammunition, grenades, communications and night-vision equipment (Reported by Shmu'el Rosenblum, <u>Hadashot</u> , 3 September 1989.)	Total value \$15 million	1987- 89

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Sources: SIPRI Yearbooks, 1968-69, 1969-70, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985; Penny Lernoux, 'Who's Who of dictators' obtain arms from Israel', National Catholic Reporter (USA), 25 December 1981, Vol. 18, No. 9; Penny Lernoux, 'Israeli arms sales "imperil vital Latin friendships"', National Catholic Reporter, 18 December 1981, Vol. 18, No. 8; Philip Taubman, 'Israel said to aid Latin American aims of US', The New York Times, 21 July 1983; Philip Taubman, 'Nicaragua rebels reported to have new flow of arms',

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APPENDIX 2 - Israeli Arms Exports to Africa, Asia, and the Middle East

<u>Country</u>	<u>Weapons/Service Received</u>	<u>Quantity</u>	<u>Year</u>
1) Benin/ Dahomey	Small arms and/or military training	-	?
2) Cameroon	Small arms and military training	-	Since 1983
3) Central African Republic	Small arms and/or military training	-	?
4) Chad	Small arms	-	1983- ?
5) China	Components and technicians for modernisation of T-59/69 tanks	?	1986- ?
	Missile technology	-	1987?
	Lavi components and technicians for China's fighter programme	-	1987- ?
6) Ciskei (South African 'homeland')	Mooney 201 (M-20 J) aircraft training	6	1984
7) Egypt	Heavy machine gun ammunition (Sale was disguised by being routed through the UK but false papers were discovered by British customs officials.)	1 million rounds	1989
8) Ethiopia	Small arms and military training	-	prior to 1977
	Pioneer and Scout remotely piloted drones	?	1989
	Arms and military training (It is claimed by Eritrean People's Liberation Front that Israel supplied \$83 million worth of arms to	-	1985-present?

Ethiopia in 1988; that there are military advisers in Ethiopia and that Ethiopian pilots are being trained in Israel. A Sunday Times report said 200 Israeli soldiers and technicians were training soldiers and repairing military equipment in Ethiopia in 1989 and that Jerusalem had offered Soviet weapons in exchange for the emigration of Ethiopian Jews. A 1990 U.S. Congressional staff report citing Pentagon sources said Israel supplied Ethiopia with 100 cluster bombs in 1989 and that Jerusalem was "probably" providing sophisticated technology to the country's air force including surveillance cameras and nose cones for MiG fighters, along with light arms and ammunition.)

9) Gabon	Small arms	-	?
10) Ghana	Training of secret service by Mossad	-	?
11) Indonesia	A-4E Skyhawk fighter/ground attack aircraft	16	1980
	Small arms	-	?
12) Iran	Spare parts and tyres for F-4 Phantom fighters		1981-86
	Refurbished jet engines, spare parts for M-48 tanks, ammunition	-	1981-
	Advisers for Iranian intelligence services	-	before 1979
	Unspecified arms and spares	-	1989
13) Ivory Coast	Small arms and/or military training	-	?
14) Kenya	Gabriel 2 ship-to-ship missile	16	1981-84
	Surface-to-air missiles	?	1988
15) Lebanon	Dabur gun-boats (Sold to Bashir Gemayal's	5	1988

	Phalangists.)		
16) Lesotho	Military vehicles and training	?	1989-90
17) Liberia	Arava transport aircraft	6?	1984
	Security and intelligence assistance (to the Doe regime)	-	?
18) Malaysia	Gabriel ship-to-ship missiles	?	?
19) Mauritania	Small arms and/or military	?	?
20) Morocco	AMX tanks	?	?
	Armoured personnel carriers	?	?
21) Nepal	Small arms	-	?
22) Nigeria	Small arms and/or military training	-	?
23) Papua New Guinea	Arava transport aircraft	3	1984-85
24) Rhodesia	Bell helicopters	11	1978
25) Saudi Arabia	Reserve fuel tanks for F-16 fighters	?	1981
26) Senegal	Small arms and/or military training	-	?
27) Sierra Leone	Small arms and/or military	-	?
28) Singapore	Gabriel ship-to-ship missile	?	?
	M-68 howitzers	?	1977
29) Somalia	Small arms and/or military training	-	?
30) South Korea	Small arms	-	?
	Tear gas spray guns	230	1989
	Water cannons	?	1989

31)	Sri Lanka	Military and intelligence training	-	1984
		Dvora fast patrol boats	6	?
32)	Taiwan	Shafrir anti-aircraft missile	?	?
		Dvora class fast attack boats; manufactured under licence. Taiwanese designation: Hai Ou class	34?	Since 1979
		Gabriel 2 ship-to-ship missile; manufactured under licence. Taiwanese designation: Hsiung Feng	72?	Since 1977
33)	Tanzania	Small arms and/or military training	-	?
34)	Thailand	Arava transport aircraft	1	1980
		Gabriel 2 ship-to-ship missile	15	1976-77
		Artillery and small arms	?	1976-77
35)	Togo	Small arms and/or military training	-	?
36)	Turkey	Upgrading of F-4 Phantom fighters and artillery	(Unconfirmed to date)	
37)	Swaziland	Arava transport aircraft	1	1979
38)	Uganda	Commodore 1123 and 1121B aircraft	2	1971
		Fouga Magister trainers	24	1964-68
		Training of secret service by Mossad	-	?
		707 cargo aircraft	1	1975
39)	Zaire	Small arms and artillery	?	?

Training of secret service - ?  
by Mossad

<u>Non-State military organisations</u>	<u>Weapons/Service Received</u>	<u>Quantity</u>	<u>Year</u>
1) Kurdish Rebels in Iraq under Gen. Mustafa Barzani	Small arms and military training (based in Iran the Israelis operated in Iraq)	?	1966-75
2) Renamo / MNR (Mozambique National Resistance Movement)	Military instruction (limited evidence)	-	1986
3) National Front for the Salvation of Libya (led by Abdoulgassim Khalifa Haftar, mainly based in Chad)	Military training (limited evidence)	-	1987-89
4) Uganda People's Front (led by Peter Otai)	Military training/small arms (evidence limited to reports in Ugandan newspapers)	-	1987?
5) FNLA and Unita (Angola)	Soviet Grail missiles (US sent Israel Redeye missiles in exchange for Israeli shipment of Grail missiles to the FNLA and Unita. All Grail missiles were reportedly defective.)	50	1975-76
	120mm shells	1000	1975-76
6) Tamil separatist forces	Military training in Israel	-	?

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Sources: SIPRI Yearbooks, 1968-69, 1969-70, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985; 'Israel aided Iraqi Kurds up to '75, Begin reports', New York Times, 30 September 1980; Andrew Whitley, 'Israelis strengthen

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the Middle East, 1968-1987 (London: Faber and Faber, 1988), p. 197; SIPRI, The Arms Trade with the Third World (Stockholm: Almquist and Wiskell, 1971), p. 652; Victor Ostrovsky, By Way of Deception, The Making and Unmaking of Mossad Officer (New York: St. Martin's, 1990), pp. 123-30, 315; Romesh Fernando, 'What the Israelis are doing ', Island International (Sri Lanka), 2 November 1988; 'Kenya pledges to help Israel in Africa', Jerusalem Post, 27 August 1989; Israel's Lesotho role highlighted in mystery Maseru pamphlet', SouthScan, 28 June 1989, p. 187; 'Singapore buys Israeli', Armies and Weapons, March/April 1977; Peter Godwin, 'Israel and Ethiopia in gun deal', The Sunday Times, 10 December 1989; 'Local arms reportedly provided to Ethiopia', JN1612175589 Kuwait Al-Ra'y Al-Amm in Arabic, 14 December 1989, pp. 1, 24, in FBIS Near East and South Asia, 19 December 1989, p. 31; Anne Ponger, 'Israel liefert dem Iran Waffen gegen Oel', Sueddeutsche Zeitung 20 December 1989; Larry Cohler, 'House memo charges Israel arms Ethiopian regime', Washington Jewish Week, 12 July 1990; Signe Landgren, Embargo Disimplemented, South Africa's Military Industry (Oxford: OUP for SIPRI, 1989), p. 74; Andrew and Leslie Cockburn, Dangerous Liaisons, The Inside Story of the U.S.-Israeli Covert Relationship (New York: Harpers, 1991), p. 118, 194.

Plus various issues of: Financial Times; Defense and Foreign Affairs Daily; The Times; The International Herald Tribune; The Daily Telegraph; Military Technology.

APPENDIX 3 - Israeli Arms Exports to the Industrialised Countries

<u>Country</u>	<u>Weapons/Service Received</u>	<u>Quantity/</u>	<u>Year</u> <u>or value</u>
1) Federal Republic of Germany	'Smart' shells, 155mm shells and other munitions	300 mill. DM	1987
	Uzi submachine guns, grenade throwers, ammunition, uniforms, tyres	-	1957-65?
2) Greece	Small arms	-	?
3) Switzerland	Scout remotely piloted vehicle system	1	1985
4) USA	Radio transmitters for US Army (Initial order worth some \$22 million is part of competition leading up to invitation to tender some \$300 million to the Israeli producer Tadiran.)	550	1988
	Mazlat Pioneer remotely piloted vehicle (RPV). (Of the 36 drones delivered to the US Navy by July 1988, 12 had crashed.)	72 ordered, \$1.4 million per RPV	1985-88
	Plough/bulldozer system for US Army BMY Counter Obstacle Vehicle supplied by Israeli Military Industries	300	1987-?
	Portable mine neutralisation system for US Marine Corps	?	1987-?
1989-	Aircraft electronic system control sets; supplied by Elta Electronics to the US Navy	5 ordered with option for 114 additional sets	?

Tank fire control simulators; supplied by Elbit Electronics to the US Army	16	1989- ?
Kfir-C1 fighters (On loan under a \$70 million maintenance contract from Israel Aircraft Industries to simulate MiG-21s in air combat training.)	12	1985- ?
Overhaul of F-4 aircraft and spares	\$1.7 mill.	1979- 82
105mm guns and ammunition (for evaluation)	6	1979 82?
B-300 assault weapon (for US Marine Corps)	\$11 mill.	1982
AN/VRC-12 radios	\$39 mill.	1979- 82
Spare parts for tanks	\$3-5 mill.	1979- 82
Conformal tanks for F-15 aircraft	?	1979- 82
Offset sale as part of the Israeli purchase of the F-16: General Dynamics of the US has agreed to buy at least \$800 million worth of military and civilian goods from Israel Aircraft Industries, Tadiran, and Elbit.	\$800 mill.	?

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Sources: David Marsh and Andrew Whitley, 'W. Germany buys 100m (sterling) Israeli arms', Financial Times, 3 December 1987; Ya'acov Friedler, 'Arms deal will alleviate Soltam's headache', Jerusalem Post, 3 December 1987; Yossi Melman, 'Swiss army buys Israeli scout MRPVs', Janes's Defence Weekly, 30 March 1985; Judy Maltz and Kenneth Kaplan, 'Tadiran yet to land big US Army order', Jerusalem Post, 9 June 1988; Mark Thompson, 'Contract bypassed US rules, probe targets deal for Israeli drones', San Jose (California) Mercury News, 24 July 1988; Michael Collins Dunn, 'Israel: New priorities for a new era', Defense and Foreign Affairs, July 1988; 'US Navy awards Elta \$4.5 million contract', Defense News, 30 January 1989; Judith Maltz, 'US Army order for

Israeli defence group', (tank simulators) Financial Times, 24 November 1989; Andrew Whitley, 'Israelis win \$20m US Army order', Financial Times, 6 November 1987; Lily Gardner Feldman, The Special Relationship Between West Germany and Israel (London: George, Allen and Unwin, 1984), p. 126; Stockholm International Peace Research Institute, SIPRI Yearbooks, 1980, 1981, 1982, 1983, 1984, 1985, 1986; US General Accounting Office, US Assistance to the State of Israel (uncensored draft report), p. 40.

APPENDIX 4 - Israeli Arms Exports to South Africa

<u>Weapons/Service Received</u>	<u>Quantity</u>	<u>Year</u>
1) Kfir fighter modernisation package for Mirage 3 fighters	?	From 1986
2) Reshef class fast patrol boats (Nine additional Reshefs being built under license in South Africa)	3	1978
3) Gabriel 2 ship-to-ship missile  (The Gabriel 2 is produced under license in South Africa under the designation 'Scorpion'.)	At least 108 missiles ordered. No. delivered to date not known.	
4) Dvora class fast patrol boats	6	?
5) Scout and Mastiff remotely vehicles	?	?
6) Uzi submachine gun and Galil assault rifle manufactured under license. Galil designated R-4.	-	?
7) Small arms, night sights, microwave detection systems, electronic systems, electronic fences, barbed wire, anti-personnel mines	?	?
8) J-79 aircraft engines	?	1980s
9) Centurian tanks	32	1962
10) M-113A1 armoured personnel carriers	400	1980s
11) 106mm recoilless rifle	?	1980s

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Sources: See footnotes for Chapter Five.

APPENDIX 5 - Major Israeli Arms Imports Since 1967\*

<u>Supplier</u>	<u>Weapons/Services Received</u>	<u>Quantity/value</u>	<u>Year</u>
1) USA	A-4 Skyhawk fighter	100	(Ordered in 1966; first A-5s delivered late 1967 or early 1968)

NB: The total number of A-4 aircraft that Israel has received from the US is difficult to calculate. The total in this table is 283 for the period 1967-89, while the IISS total in the Military Balance 1988-1989 is 121. It should be noted that Israel has sold some 40 A-4s to Argentina and Indonesia. It is not known how many A-4s have been removed from active service or lost.

	M-48 main battle tank	440	1968-73
	F-4 Phantom fighter	93	1969-71 (ordered late 1967; first F-4s delivered in 1969)
	Bell 205 UH-1D/AB 205 helicopter	17	?
	Sikorsky S-65 CH-53A/D helicopter	33	(beginning in 1969)
	M-101-A1 105mm towed howitzer	90?	1969-71
	M-107 175mm self- propelled gun	200?	1968-73
	M-110 203mm self- propelled howitzers	60?	1968-71
	AGM-12B Bullpup air-to surface missile	760?	1969-76
	AIM-7C Sparrow air-to- missile	2034?	1969-87

AGM-45A Shrike air-to-radar missile	1000?	1970-78
M-113-A1 armoured personnel carrier	100?	1970-71
M-60 main battle tank	1375?	1970-85
Bell 212/UH-1N helicopter	40	(beginning in 1971?)
M-60 tanks	200	(beginning in June 1970)
175mm artillery systems	?	(beginning in June 1970)
F-4 Phantom fighters	85	1972-73
A-4 Skyhawk fighters	24	(beginning in June 1970)
RF-4E Phantom reconnaissance aircraft	18	1971-78
Stratofreighter transport aircraft	3	1971-73
AIM-9D air-to-air missile	2336?	1972-73
AGM-65A air-to-surface missile	1160?	1973-82
Queen Air B-80	32?	1974-75
Lockheed Hercules C-130E/H transport aircraft	24?	1971-78
Lockheed Hercules KC-130H inflight refueling aircraft	2	1976-77
F-4 Phantom fighters	45	1974-75

NB: The total number of F-4 Phantom fighters listed in this table is 223. This figure and the dates of delivery are taken from Michael Brzoska and Thomas Ohlson, Arms Transfers to the

Third World, p. 196. It has proven difficult to determine how many F-4s have been withdrawn from active service or have been lost. The IISS in The Military Balance 1988-1989 reports that there are 113 F-4s at present in the Israeli Air Force.

A-4 Skyhawk fighters	82	(beginning in February 1972)
TA-4H Skyhawk trainer aircraft	25	1972-73
Bell JetRanger 206A helicopter	64	(beginning in 1972)
LSM type landing craft/minelayer	3	1972
AN/PPS-15 surveillance radar	20?	1973
MIN-72A landmobile surface-to-air-missile	288?	1973-74
A-4 Skyhawk fighters	24	(between 1973 and 1975)
M-730 armoured anti-aircraft vehicle (armed with missiles)	24?	1973-74
BGM-71A TOW anti-tank missile	3740?	1973-82
MIM-23B Hawk landmobile surface-to-air-missile	400?	1973-84
J-79 jet engines for use in the Kfir fighter (NB: same engine as used in F-4)	?	(from 1973)
Airlift of arms during 1973 Arab-Israeli War including 53 replacement A-4 fighter aircraft	\$825 million	1973
FIM-43A Redeye portable surface-to-air missile	500?	1975

Grumman Mohawk OV-1D electronic counter- measures aircraft	2	1975
Bell 209 Huey Cobra AH-1G, AH-1S helicopter	40	1975-85

NB: According to Michael Brzoska and Thomas Ohlson in Arms Transfers to the Third World, p. 196, Israel has bought a total of 46 Bell 209s. The figure of 40 Bell 209s in active service comes from the IISS in The Military Balance 1988-1989, p. 104.

Boeing 707-320C transport aircraft	13?	1975-83
Dabur class fast patrol (prior to licensed production in Israel)	12	1975-76
Lance surface-to-air missile system (possible local production of warhead)	110?	1976
AIM-9J anti-aircraft missile	300?	1976-79
FGM-77A Dragon anti-tank missile	7000	1977-81
M-109-A1 155mm self propelled howitzer	100?	1977-78
M-728 armoured engineering vehicle	15?	1977-78
Hughes Defender 500MD attack helicopter	40	(from 1980)
F-15 fighters (armed with Sparrow and Sidewinder air-to air missiles)	25	(from 1976)
Grumman Hawkeye E-2C early warning surveillance aircraft	4	1977-78
M-113-A1 armoured personnel carriers	700?	1977-79

RGM-84A-L ship-to-ship missile launcher	23?	1979-85
RGM-84A Harpoon ship-to- ship missile	144?	1979-84
F-15 fighters	35?	(from 1980)
F-16 fighters	75	(from 1980)
F-16 C/D fighters, Block 40 version	60	(from December 1988)

NB: Total number of F-16 fighters in this table is 135. The IISS in The Military Balance 1988-1989 puts the total at 145.

AIM-9L anti-aircraft- missile	800	1980-86
Flagstaff Mk. 2 hydrofoil boats	2	1977?
Construction of military airfields in the Negev as part of the 1978 Egypt- Israeli peace treaty	2	(from 1978; costs of \$800- 1 billion met by the USA)
Air-to-air missiles, surface-to-air missiles, tanks, armoured personnel carriers, and an early warning system for the southern Negev region of Israel	?	(extra US aid as as compensation to Israel for signing peace treaty with Egypt from 1978)
I-Hawk surface-to-air missile system	6?	1980-84
M-88-A1 armoured recovery vehicle	25?	1981-82
M-113-A2 armoured vehicle	800?	1981-82
M-548 armoured personnel carrier	56?	1981-82

	M-109-A1 self-propelled howitzers	200?	1982-83
	Super King Air transport aircraft (equipped for battlefield surveillance)	4?	1983
	SA-366 helicopters	2	1985
	AS-365N helicopters	12-20	(on order since 1986)
	Sa'ar 5 missile boat	4	(on order since April 1988)
United Kingdom	Centurion tank	940?	1967-75
	Submarines, T-206	3	1977
	BN-2A Islander transport aircraft	4	1974
France	Fast patrol boats 'Saar' class	12	1968-69
	SA 321 K Super Frelon helicopter	12	1966-67 (8 or 9 of the original shipment are reportedly still in service)
Germany	Submarines	3	(on order)
	Do-27 transport aircraft	23?	1976
	Do-28D-1 transport aircraft	15	1974

NB: According to the memoirs of former German defence minister Franz-Josef Strauss, from 1957 to 1961 West Germany supplied Israel with transport aircraft, helicopters, artillery and anti-tank weapons worth some \$800 million.

Austria	S-65A helicopters	2	1981
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\* NB: Some of the above aircraft figures for recent years are for planes still on order.

Sources: Mordechai Gazit, 'Israeli military procurement from the United States', in Gabriel Sheffer (ed.), Dynamics of Dependence: US - Israeli Relations (London; Boulder, CO: Westview Press for the Leonard Davis Institute, 1987), pp. 100-23; Stockholm International Peace Research Institute, The Arms Trade with the Third World (Stockholm: Almqvist and Wiksell, 1971), p. 845; Andrew Whitley, 'Way clear for Israel to buy German submarines', Financial Times, 7 April 1988; ' "Positive Antwort" ', Der Spiegel, 17 July 1989, No. 29; 'Israel to buy fewer, more modern F-16s', Aviation Week and Space Technology, 11 April 1988, p. 18; Russell Warren Howe, Weapons, pp. 539-46; Tirza Leibowitz, 'Sa'ar 5 missile boat, Voyage into the future', IDF Journal, Winter 1989, No. 16, p. 35; Bill Gunston, An Illustrated Guide to the Israeli Air Force (London: Salamander Books, 1982); International Institute for Strategic Studies, The Military Balance 1988-1989 (London: IISS, 1988), pp. 103-4; I have drawn heavily from the extensive listing of Israeli arms imports from 1971-85 found in Appendix 1 in Michael Brzoska and Thomas Ohlson, Arms Transfers to the Third World (Oxford: Oxford University Press, 1987), pp.195-8; Franz-Josef Strauss, Die Erinnerungen (Berlin: Siedler, 1989), p. 342-5.

APPENDIX 6 - South African Arms Exports Since 1965

Country	Weapon/Service Received	Quantity	Year
1) Argentina	Exocet, Gabriel and Skerpioen missiles (Reports of South African missile shipments during Falklands/Malvinas War denied by Pretoria. A 1984 UN report said that Israeli arms were shipped to Argentina via South Africa during the War.)	?	1982?
2) Botswana	military equipment	?	?
3) Chile	Cactus surface-to-air missile (reportedly sold via France)	6	1980
	Kukri, air-to air missile	?	on order
	Construction aid for Magellan Straight shipyards	\$13 million	-
	SOR-18 telephone system	?	1980
4) Guatemala	Small arms, police equipment?	?	?
	Advisers for Indian resettlement programme		
5) Hong Kong	Police riot equipment (Purchased for testing)	?	1989
6) Iran	G-5 howitzer and shells	?	1980s
	Small arms and explosives shipped to Iran via Greek armaments producer of which the South African government bought a controlling share		1984-87
7) Iraq	G-5 howitzer and shells	100	1984-89
	Ballistic missile technology		1984-88

8) Israel	Spare parts for Mirage fighters during 1967 War	?	1967
10) Lesotho	military equipment	?	?
11) Malawi	Ferret armoured car (ex-British)	6	1972
12) Morocco	Eland-5 and Eland 6 and Ratel armoured cars	?	1977-79
13) Oman	Small arms? (in counter-trade agreement for oil)	?	?
	Armoured cars	?	1979
14) Paraguay	Pilot training in South Africa		?
15) Peru	arms?	?	?
16) Portugal	armoured cars, jeeps and other equipment (supplied during wars in Portuguese colonies Guinea-Bissau, Mozambique and Angola)	?	before 1975
	DC Dakota transport aircraft	1	1972
17) Rhodesia	Bell helicopters (Israeli sale transacted via South Africa)	11	1978
	Small arms and other weapons	Rand 18 million	1972-74
	AL-60 light transport aircraft (ex-Italian)	19	1967 and 1971
	Alouette-3 helicopters	4	1967
	Eland armoured cars	30	1973
	AM-3C light aircraft	7	1971
	Puma helicopters	?	1973
18) Somalia	Training for air	-	?

force personnel

Soviet arms in exchange for airbase rights for South Africa reported by The Observer in 1985. Deal denied by Somali government.

19) Sri Lanka	Buffel armoured personnel carriers	?	?
20) Swaziland	Military equipment	?	?
21) Taiwan	Military technology cooperation	?	?
22) Thailand	Small arms	?	1985?
23) Venezuela	Small arms?	?	?

Non-State  
Military  
Organisations

	Weapon/Service received	Quantity	Year
1) Uniao Nacional para a Independencia Total de Angola (UNITA)	Small arms	?	?
2) Mozambican National Resistance (MNR=RENAMO)	Small arms	?	?

Sources: Africa Confidential, 10/4/85 and 31/7/85; SIPRI Yearbooks, 1981-84; Latinamerica Press, 17/4/86; CARDRI News, June 1985; African Defence, January 1983; M. Brzoska, 'South Africa: Evading the Embargo', in Brzoska and Ohlson, Arms Production in the Third World, p. 208; Financial Times, 13/11/87. Signe Landgren, Embargo Disimplemented, South Africa's Military Industry, (Oxford: OUP for SIPRI, 1989), pp. 177-182; A.J. Venter, 'South Africa's military industrial complex', International Defense Review, December 1971, cited in Landgren, Embargo Disimplemented, p. 177; Figure of Rand 18 million in arms sales to Rhodesia from To the Point (Johannesburg), 17 September 1979, cited in Philip Frankel, Pretoria's Praetorians (Cambridge: CUP, 1984), p. 89; 'Hong Kong police use SA riot gear', Sunday Times, 9 July 1989; Lee Stokes, United Press International, 'Greek connection in SA arms deal with Tehran', The Independent, 27 November 1987; Anthony Robinson, 'Arm Scor, symbol of South Africa's outsider status', Financial Times, 26 April 1989

## APPENDIX 7 - South African Arms Imports

Below is a summary of reported arms, technology and component transfers to South Africa since 1977 and a selection of major sales from before 1977:

### South African military imports from Israel

Weapons/Services Received	Quantity	Year
Kfir fighter and/or major components thereof	?	1986?
Gazelle helicopters	50	1986
Boeing 707 in-flight refueling tankers	2	1986
ELTA EL/L-8300 computerized data collection analysis systems	4-6	1986
Shafrir air-to-air missiles	?	?
Reshef-class fast patrol boats (9 more built under license in SA)	3	1978
Dvora-class fast patrol boats	6	?
Gabriel-2 ship-to-ship missiles	At least 108 on order. No. delivered to date unclear.	
Scout and Mastiff remotely piloted vehicles (drones)	?	?

Nuclear technology	?	?
Military and especially counter-insurgency training	-	-

Various electronic components, computer software, small arms, night sights, microwave protection and detection systems, electronic fences, barbed wire, anti-personnel mines.

South African military imports from France

Weapon/Services Received	Quantity	Year
Mirage III and F1	114	1962-77?
Aerospatiale AM.39 Exocet AS missile	?	1977
Matra R-530 and R550 air-to-air missile	?	?
AS-20 and AS-30 air-to-surface missiles	?	?
SS-11 anti-tank missile	?	?
Milan and Entac anti-tank missiles (both are French-German co-productions)	?	?
Daphne-class submarines	3	1970-72
Nuclear reactors at Koeberg	-	-
Crotale/Cactus Surface-to-air missile	600	1974-83

AS-12 ASM	1848	1974-80
SA-316B helicopter	2	1983-84
Spare parts and modernisation package for Puma helicopters	-	1981-85
Technology transfer for Armscor's Alpha XH1 helicopter	-	1981-86?
Small arms and ammunition	-	1981-82

Other South African arms imports

	Weapons/Services Received	Quantity	Year
Czechoslovakia	Pistols	one of many consignments said to include 2000 weapons	1986-87
Jordan	Puma helicopters	?	1986-87?
	Tigercat surface-to-air missiles (British origin)	18 batteries	1976

(Note: A March 1987 report in the Jerusalem Post said that Jordan has become one of the major arms conduits to South Africa -- shipping arms worth Rand 6 billion between 1972 and 1987. The report was published at a time when Israel was under intense pressure from the U.S. to reduce military ties with South Africa.)

Spain	7.62mm cartridges	3 shipments	1976
United Kingdom	Westland Wasp HAS Mk1 ASW helicopter	6	1973-74

Marconi S247 radar modernization package	-	1983
Various avionics for Cheetah/Kfir	-	1984-86?
Long-range aerial photo reconnaissance equipment	\$1.2 million	1983
Westland Puma helicopter spares (sent to France and rerouted to South Africa)	-	1989
Spare parts for Bren and Vickers .303 guns	-	1982

(Note: Some Rand 50 million worth of naval vessels were provided by the UK to South Africa under the 1955 Simonstown Agreement. Included were four anti-submarine warfare frigates, five Ford class seaward defence vessels, 10 minesweepers, HS Avro Shackleton maritime reconnaissance bombers, and Canadian Sabre-4 jet fighters.)

UK/ West Germany	Multi-sensor platforms for tracking high-speed objects (developed by British Aerospace and Messerschmitt)	1 (with two more on order)	1988
West Germany	U-209 submarine blueprints and plans/components? for the SAS Drakensberg	-	1983-86
Netherlands	ASM AMD/BA Atlantic Mk1 maritime patrol and combat aircraft (sale unconfirmed)	6	1985?
Bulgaria	Land mines, rocket launchers, small arms (to supply rebel movements in Angola and Mozambique)	-	1978-80
Austria	Automatic pistols (confiscated en route)	500	1983

at Copenhagen International  
Airport)

USA	AIM-9 Sidewinder air-to-air missiles	200	1956
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Sources for South African imports:

Israeli Foreign Affairs, various issues; Jane Hunter, 'Israel and the Bantustans', Journal of Palestine Studies, no date; SIPRI, Southern Africa, The Escalation of a conflict (Stockholm: Almqvist and Wiksell International, 1976); Anthony Terry, 'French sell arms to Pretoria through Cairo', Sunday Times, 17 February 1980; SIPRI Yearbooks, 1968-86; The Guardian, 6 November 1985; The International Herald Tribune, 8 January 1985; The Observer, 24 April 1983; The Daily Telegraph, 10 June 1983; Deutsche Presse Agentur in Die Tageszeitung, (Berlin, West) 11 November 1987; David Pallister, 'S Africa evades arms ban', The Guardian, 5 July 1988; 'Sanctions busters gaoled', The Guardian, 17 April 1987; 'Is SA arms dump?', Uniform, Newspaper of the South African Army, 5 October 1987, No. 190; 'Westland helicopter parts sent to SA', Business Day, 28 July 1989; 'Jordan "top channel for SA arms"', The Star (International Weekly) 21 March 1987, reporting on a story in Jerusalem Post on Jordan's arms exports to South Africa; Signe Landgren, Embargo Disimplemented, South Africa's Military Industry (Oxford: OUP for SIPRI, 1989), pp. 39-40, 104, 107, 129.

## APPENDIX 8 - Yugoslavian Arms Exports

As is stressed in Chapter Seven, the information deficit regarding Yugoslav arms exports severe. For example, official Yugoslav statements say that military materiel has been delivered to Latin America. But these is scant evidence as to which Latin American states have received arms and what the nature of the exports has been. James Nichol speculates that since Brazil is listed in Yugoslav statistical yearbooks as being Belgrade's biggest trade partner in the region, much of the trade is probably with Brasilia.<Nichol in Katz (ed.) Arms Production in Developing Countries, p. 353.>

Because arms exports have been an important aspect of Yugoslav foreign policy since the 1950s, the listing below includes all reasonably documented major arms transfers since 1950.

Country	Weapons/services	Quantity/value	Year
1) Algeria	G-4 Super Galeb jet trainer	?	Under negotiation
2) Bangladesh	Kraljevica patrol craft	2	1975
3) Burma	river gunboats	10	1955?
	general equipment for one army brigade	barter deal	1955
	108 torpedo boat	2	1965
4) Cyprus	M55 A2 anti-aircraft gun	?	?
	M-77 Oganj multiple rocket system	?	?
5) Egypt	torpedo boat	6	1956
	tanks	?	1973-74
	spares for MiG-21	?	mid-1970s
	laser rangefinders for T-54/55 tanks	?	?

6) El Salvador	M-56 towed howitzer	14	1982
		(based on uncertain data)	
	M-55 anti-aircraft gun	?	?
7) Ethiopia	M-47 Patton tank	50	1977
		(delivery unconfirmed)	
	Kraljevica class large patrol boat	1	1975
	torpedo boat	2	1960
8) Honduras	CL-13 Sabre fighters (Canadian-built F-86 Sabre; private deal; seller unconfirmed)	6	1980
9) Hungary	Nestin class river mine sweeper	5	?
10) India	large patrol boats	2	1959
11) Indonesia	frigates	2	1981-84
	various aircraft	?	1958
	Kraljevica class Type 501 and 519 large patrol boats	6	1958
	LCT landing craft	4	1958
12) Iran	East and West European weapon re-exports including East German ZSU anti-aircraft guns	?	?
	U.S. missile guidance systems manufactured under licence in West Germany	?	?
13) Iraq	training frigate	1	1981
	Nestin class river minesweeper	3	?
14) Lebanon	M55 A2 anti-aircraft gun	?	?

15) Libya	G-2AE Galeb jet	89	1979-90
	Koncar class fast attack boats	4	on order
	technical assistance for air defence systems	?	mid-1970s
	R-2 MALA class two-man submarine	6	?
16) Malta	Kraljvica class Type 501 and 519 large patrol boats	?	1982
17) Mozambique	M55 A2 anti-aircraft gun	?	?
18) North Vietnam	Unidentified military aid	?	1970-75
19) Sudan	small arms	?	1962?
	naval and air force training	?	1962?
	Kraljevica class Types 501 and 519 large patrol boats	2	1969
	patrol boats	4	1962
	Sobet landing craft	2	?
20) South Africa	helicopter rotor heads ( <u>Interavia</u> reported in 1986 that South Africa was importing components for helicopter manufacture from Yugoslavia or Romania.)	?	?
21) Sweden	R-2 MALA class one- and two-man submarine	?	?
22) USSR	R-2 MALA class two-man submarine	?	?
23) Zambia	G-2 Galeb jet trainer	5	1971
	J-1 Jastreb fighter	4	1971
	G-4 Super Galeb (unspecified number ordered		

1984, delivery unconfirmed)

24) Zimbabwe M55 A2 anti-aircraft ? ?  
gun

Non-state military organisations      Weapons/service received      Quantity/value      Year

- 1) Rhodesia, liberation movement      unspecified military aid      ?      ?
- 2) Angola, liberation movement      unspecified military aid      ?      ?
- 3) Mozambique liberation movement      unspecified military aid      ?      ?
- 4) South West African Peoples Organisation (SWAPO - Namibia)      Unspecified military aid      ?      ?
- 5) Palestine Liberation Organisation      Unspecified military aid      ?      ?

(Source for all non-state military organisations: Trond Gilberg, 'Eastern European military assistance', in John F. Cooper and Daniel S. Papp (eds.), Communist Nations ' Military Assistance (Boulder, CO: Westview Press, 1983), pp. 87-8>.

Sources: Brzoska and Ohlson, Arms Transfers in the Third World, 1971-83; SIPRI, The Arms Trade with the Third World; Russell Warren Howe, Weapons; The Observer, 31 August 1986; Financial Times, 13 November 1987; SIPRI Yearbooks, 1985 and 1987; M. Lambert, 'The second world of armaments - Chile and South Africa at FIDA 86', Interavia, May 1986, p. 493; Christopher F. Foss (ed.), Jane's Armour and Artillery 1987-88 (London: Jane's, 1987), p. 750; Christopher F. Foss, Jane's Main Battle Tanks 2nd

ed. (London: Jane's, 1986), p. 201; Jane's Armour and Artillery 1988-89 (Coulson, Surrey: Jane's, 1988), p. 730; Jane's Fighting Ships 1986-87 (London: Jane's, 1986), pp. 814-7; Trond Gilberg, 'Eastern European military assistance', in John F. Copper and Daniel S. Papp, Communist Nations' Military Assistance (Boulder, CO: Westview Press, 1983), p. 87-8; The International Institute for Strategic Studies, The Military Balance 1990-91 (London: IISS, 1990 ), pp. 112, 118, 146.

## Appendix 9 - Yugoslav Arms Imports

Below is a listing of major Yugoslav weapons imports which have been documented since 1950. This section, in conjunction with the earlier sections of this chapter dealing with Yugoslav arms manufacture and technology imports clearly illustrates the continued dependency of Belgrade on outside sources for its weaponry and military materiel.

<u>Supplier</u>	<u>Weapon/Service Received</u>	<u>Quantity</u>	<u>Year</u>
1) USA	M-4 Sherman tank	630	1951-57
	M-47 Patton tank	300	1951-57
	M-3 and M-8 armoured personnel carriers	?	1951-57
	76mm M-18 Hellcat and 90mm M-36 Jackson SP guns	?	1951-57
	P-47 Thunderbolt fighter	150	1951-57
	F-84G Thunderjet fighter-bomber	210	1953-57
	F-86 D/E Sabre jet fighter bomber	250	1953-57
	Fougueux class corvette	1	1953?
	Sirius class coastal minesweepers	4	1953?
	Ham class inshore minesweepers	4	1953?
	AGM-65B, air-to-surface missile	40 (delivery not confirmed)	1982
2) United Kingdom	Mk-6/-38 Mosquito medium bombers	140	1951-57
	W-class destroyers	2	1956

3) USSR	MiG-21 fighter-interceptors	130	1962-?
	Mi-8 helicopters	70	?
	SA-2 Guideline surface-to-surface missiles	?	?
	Barlock air search radars	?	?
	T-54/-55 tank	700	1964-?
	Osa-1 class missile boats	10	1964-69
	Shershen-class torpedo boats	4 (plus an additional 10 which were built under license in Yugoslavia)	1964-?
	MiG-29 fighter	26	1988
	Ka-25 anti-submarine warfare helicopters	8	?
	Yak-40 transport	6	?
	An-12 transport	12	?
	An-26 transport	15	?
	SA-2 (SAM)	8 (battalions)	?
	SA-3 (SAM)	6 (battalions)	?
	M-1974 122mm howitzer	20	1982
	T-74 tank	24	1983-84
	AT-3 anti-tank missile	300	1980-84
	SA-7 portable SAM	8	1983

(plus more on order)

	SSC-3 ship-to-ship missile	20	1984-85
	Koni-class missile frigate	2	1980
4) Japan	Kappa-6 rockets	?	mid-1960s
5) Norway	Penguin-2 ship-to-ship missile		under negotiation
6) Canada	CL-215 amphibian	2	1981
7) Switzerland	PC-6 Porter transport	9	1982
8) France	Vukov Klanac class minehunters	3 (with fourth built in Yugoslavia with French assistance)	1957

Sources: IISS, The Military Balance, 1988-89; Milan N. Vego, 'Yugoslav armed forces since 1968', RUSI Defence Yearbook 1983; James P. Nichol, 'Yugoslavia', in J.E. Katz, Arms Production in Developing Countries; Pierre Maurer, 'United States - Yugoslav Relations, A marriage of convenience', Studia Diplomatica, Vol. 38, No. 4, 1985; SIPRI Yearbooks, 1983, 1984, 1985, 1986, 1987; Jane's Fighting Ships, 1986-87 (London: Jane's, 1986), pp. 815-7; Christopher F. Foss, Jane's Main Battle Tanks second ed., (London: Jane's, 1986), p. 200.

## Appendix 10

Source: G.M. Steinberg, 'Israel: high-technology roulette', in Michael Brzoska and Thomas Ohlson, Arms Production in the Third World (London: Taylor and Francis for the Stockholm International Peace Research Institute, 1986), pp. 177-8.

## Production of small arms and other equipment in Israel

Type	Producer	Source of technology	Comment
<i>Pistols</i>			
Uzi 9-mm	IMI	Indigenous	Derived from Uzi sub-machine-gun
<i>Sub-machine-guns</i>			
Uzi 9-mm	IMI	Indigenous/ Czechoslovakia	In service since 1952; produced under licence in Belgium
Mini-Uzi 9-mm	IMI	Indigenous	Small version for security forces
<i>Machine-guns/rifles</i>			
Galil 5.56- and 7.62-mm	IMI	Indigenous	Partly derived from Soviet AK-47; in service since 1973; several versions
<i>Small-calibre ammunition</i>			
5.56-, 7.62-, 7.92-, 9-, 12.7-mm; .30-06-, .50-in	IMI	Indigenous	
<i>Large-calibre ammunition</i>			
75-mm	IMI	Indigenous	For AMX-13 light tanks
76-mm	IMI	Indigenous	For naval guns
90-mm	IMI	Indigenous	For M-47/M-48 tanks
105-mm	IMI	Indigenous	For all tanks/tank destroyers in Israeli Army and for export
155-mm	IMI	Indigenous	For towed/self-propelled guns and howitzers
<i>Artillery rockets</i>			
290-mm MLR system	IAI	Indigenous	Entered production 1984
240-mm rocket	IMI	Indigenous/ USSR	For captured Soviet BM-24 systems
<i>Anti-aircraft weapons</i>			
TCM-20	IAI	USA	2 x 20-mm gun in several versions
TCM Mk-3	IAI	Indigenous/ USA	2 x 20/25-mm gun; towed or on RAM-V-1 recce ACs
TCM-30 (Spider-11)	IAI	Indigenous	2 x 30-mm naval CIWS
<i>Anti-tank weapons</i>			
B-300	IMI	Indigenous	In production 1984
106-mm RCL rifle	IMI	(Indigenous)	Recoilless rifle
<i>Mortars<sup>a</sup></i>			
52-mm	IMI	Indigenous	
60-mm	Soltam	Finland	Three versions
81-mm	Soltam	Finland	Four versions
120-mm	Soltam	Indigenous/ Finland	Light mortar; latest version designated K-6
120-mm A-4	Soltam	Indigenous/ Finland	Heavy mortar
120-mm M-65	Soltam	Indigenous/ Finland	Standard version
160-mm M-66	Soltam	(Indigenous)	Heavy mortar; range: 9.6 km

Appendix 10, cont.

—continued

Type	Producer	Source of technology	Comment
<i>Grenades</i>			
No. 5 (smoke)	IMI	Indigenous	
No. 14 (offensive)	IMI	Indigenous	
M26A2 (fragmentation)	IMI	USA	
MA/AP-30 (rifle)	IMI	Indigenous	
MA/AP-65 (rifle)	IMI	Indigenous	Can pierce up to 13-mm armour plate
MA/AT-52 HEAT (rifle)	IMI	Indigenous	Can pierce 150-mm steel armour
SGF-40 (smoke-rifle)	IMI	Indigenous	
<i>Mines</i>			
M1A3 (trip-flare)	IMI	Indigenous	
No. 4 (anti-personnel)	Explosive Ind.	Indigenous	
No. 10 (anti-personnel)	IMI	Indigenous	
No. 12 (anti-personnel)	IMI	Indigenous	
No. 6 (anti-tank)	Explosive Ind.	Indigenous	
No. 25 (anti-tank)	IMI	Indigenous	
No. 26 (anti-tank)	IMI	Indigenous	
<i>Other equipment</i>			
Tal-1	Rafael	Indigenous	Cluster bomb
Tal-2	Rafael	Indigenous	IR-homing smart bomblets
Mastiff	Tadiran	Indigenous	Remotely piloted vehicle
Scout	IAI	Indigenous	Remotely piloted vehicle
Lizard	AAI	Indigenous	Light vehicle: to be produced under licence in Italy
CJ-5/CJ-6	Matmar	USA	Several versions incl. anti-tank and recce
M-325	Automotive Ind.	Indigenous	

<sup>a</sup>All types of mortar ammunition locally produced by IMI and Soltam.

Source: SIPRI.

Appendix 11

Source: Aaron Klieman, Israel's Global Reach. Arms Sales as Diplomacy (London: Pergamon-Brassey's, 1985), p. 95.

HOW ARMS POLICY IS MADE

The Calculus for Arms Sales.

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NECESSITY	OPPORTUNITY
<i>Domestic Inputs</i>	
<ul style="list-style-type: none"><li>• Economic stagnation</li><li>• Defense budget cuts</li><li>• Unreliable IDF orders</li><li>• Goal of full employment</li><li>• Maximum productive capacity</li></ul>	<ul style="list-style-type: none"><li>• Industrial infrastructure</li><li>• Skilled manpower</li><li>• Military-industrial interest group</li><li>• Pro-arms public consensus</li><li>• Supportive governments</li></ul>
<i>Regional Inputs</i>	
<ul style="list-style-type: none"><li>• Arab-Israel conflict</li><li>• Middle East arms race</li><li>• Enemy numerical superiority</li><li>• Arab access to suppliers</li><li>• Preserving qualitative edge</li></ul>	<ul style="list-style-type: none"><li>• Low Arab defense manufacture</li><li>• Battlefield experience</li><li>• Reputation of Israeli weapons</li></ul>
<i>Systemic Inputs</i>	
<ul style="list-style-type: none"><li>• Israel's diplomatic isolation</li><li>• Few sources of supply</li><li>• Dependence on U.S.</li><li>• No international safeguards</li></ul>	<ul style="list-style-type: none"><li>• "Security dilemma" of all states</li><li>• Conventional arms race</li><li>• Third World rearmament</li><li>• No international constraints</li><li>• Israeli competitiveness</li></ul>

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Source: Robert E. Harkavy and Stephanie G. Neuman, Israel, in James Everett Katz, Arms Production in Developing Countries (Lexington, MA: Lexington Books, D.C. Heath, 1984), pp. 205-7.

### The Structure of Israel's Defense Industries

Company and Subsidiaries	Products	Ownership
Israel Aircraft Industries, Inc. Electronics Division Elta Electronics Ltd. MBT Weapons Systems Tamam Precision Instruments Engineering Division Combined Technologies Division Golan Industries Mata Precision Mechanism Ltd. (PML) Servo Hydraulics Lod Ramta Structures & Systems BedeK Aviation Division Aircraft Mfg. Division	Aircraft, missiles, ground equipment, ships. Components to whole systems of Lavi, Kfir, Westwind, Sea Scan, Arava, Gabriel SSM, Dabur and Dvora boats, Ramta AFV	Israeli government
Rafael Armament Development Authority	Computers, missiles, ordnance, Shafir AAM, David artillery computers, Mahat weapons control system	Israeli government
Army Main Ordnance Factory	Ordnance—various	Israeli government
Koor Industries Electric & Electronics Co. Ltd. Eltek Ltd. Keren Electronics Ltd. Koor-Babcock Ltd. Koor Systems Ltd. Meeda Scientific Instrument Ltd. Penguin Electronics Industries Telkoor Telrad Telecommunications & Electronic Industries Ltd.	Telecommunications systems and equipment, fuses, data link systems, RD modules and amplifiers, military and airborne power systems, chemicals, metals, building materials	Histadrut, but numerous subsidiaries with mixed ownership involving other firms, Israeli and foreign
Koor Metals Ltd. Agan Engineering Works Gichner - Ramin Ltd. Hamat Engineering Merkavim Metal Work Ltd. Vulcan Engineering		
Israel Military Industries Ammunition Division Central Laboratory Chemical Division Forging Division Plant Operations Rockets Division Small Arms Division	Small arms, ammunition, bombs, rockets, aircraft cannon, Uzi, Galil, tank cannon	Israeli government
Tadiran Israel Electronics Industries	Electronics, communications equipment, computers	50% GTE Sylvania (U.S.), 50% Koor Industries
Israel Shipyards Ltd.	Missile patrol boats, floating docks, ship repairs	Jointly owned by Koor and Clal
Elbit Computers Ltd.	Computers, simulators, displays	50% Control Data (U.S.), 50% Elron
Soltam	Mortars, artillery, ammunition, sights	50% Tampella (Finl), 50% Koor
Motorola, Israel Ltd.	Communication equipment, C <sup>3</sup>	100% Motorola (U.S.)
AEL Israel Ltd.	EW, ECM, signal, switching equipment, avionics	37% Amer. Electronics Labs, 37% Siemens (FRG), 26% Tadiran
Ormat Turbines Ltd.	Turbogenerators	n.a. % Turbomeca (Fr)
Bet Shemesh Engines Ltd.	Jet engines and parts	Israeli government
Israel Electro-Optical Industry	Cameras, range finders, gun sights, night-vision devices	50% Tadiran, 50% Federmann Group
Otlite Engineering Ltd.	Trucks, aircraft components	Bank Hapoalim and a U.S. Company
Turbochrome Ltd.	Engine turbines	Chromalloy America
Iscar Blades Ltd.	Gas turbine compressors, turbine blades	TRW (U.S.), % n.a. Israeli Discount Bank Investments

## The structure of Israel's defense industries, continued

Astronautics CA, Ltd.	Avionics, cockpit displays	100% Astronautics Co. of America
Urdan Armor Plant	Tank armor	Clal subsidiary
Hayes Ltd.	n.a.	Aarhus Clefabrik (Den), % n.a.
Eljim Ltd.	Computers	100% Control Data (U.S.)
Eltek Ltd.	n.a.	67% Control Data (U.S.)
Automatic Coil of Israel Ltd.	Electronics, mechanical components	Designatronics, Inc., (U.S.), % n.a.
DECSYS Computers Ltd.	Computer parts	100% Digital Equipment Corp. (U.S.)
Beta Engineering & Development	Mine and other detection devices	Joint venture: 54% Gerber Scientific (U.S.), 46% Clal
Intel Israel	Computer circuits	100% Intel Corp. (U.S.)
SDSI Scientific Data Systems, Israel	n.a.	Information Magnetic Corp. (U.S.), % n.a.
Sci-Tex Corp.	Optical systems	Itek (U.S.) % n.a.
Landseas, Israel	Electronics, computers	Landseas Corp., (U.S.), % n.a.
Laser Industries	n.a.	Locke Technology, (U.S.), % n.a.
Mennen Electronics	n.a.	Mennen Greatback Electronics (U.S.), % n.a.
Metal Working Laser Ltd.	Computer welding	Metal Working Laser Int'l, (U.S.), % n.a.
Science-Based Industries (Technion)	n.a.	Microwave Assoc. (U.S.), % n.a.
Israelectra Ltd.	Computers, electronics	Swissbanks, % n.a.
Pioneer Enterprises Ltd.	n.a.	Pioneer Systems (U.S.), % n.a.
Arand	Computers	Rand Information Systems (U.S.), % n.a.
Iltam	Computers	Rand Information Systems (U.S.), % n.a.
Teledyne Intercontinental	Electronic control systems	Teledyne, Inc. (U.S.), % n.a.
Fibronics Communications	Computers	VALTEC (U.S.), joint venture with Elbit
Islambola Electronics	n.a.	Veeco Instruments (U.S.), % n.a.
Vishay Israel	n.a.	Vishay Intertechnology

Sources: *Defense and Foreign Affairs Handbook, 1983*; Gerald Steinberg, "The Costs and Limits of Independence: Defense Production in Israel," paper presented at annual meeting of International Studies Association, 25 March 1982, Cincinnati; Esther Howard, "Israel: The Sorcerer's Apprentice," *Merip Reports*, no. 112 (February 1983), p. 18; and Neuman data.

Source: US General Accounting Office, US Assistance to the State of Israel (uncensored version of the draft report released on 24 June 1983).

Appendix 6

	Data Exchange Agreement	Technical Data Package	Commercial Production	Commercial Procurement	Cooperative R & D	FMS Credits
Aircraft fuel tanks		x	x	x	x	x
Ammunition		x	x	x		x
Armored systems/components	x	x	x	x	x	x
Communications equipment	x	x	x	x		x
Electronic warfare/radar	x		x	x		x
Hydrofoil missile boats			x	x	x	x
Industrial equipment				x		x
Inertial systems				x	x	x
Intelligence/electronic warfare			x	x	x	x
jet engines/components		x	x	x		x
military engineering		x	x	x	x	x
military medicine				x	x	x
military spares and parts		x	x	x		x
precision munitions/fuses	x	x	x	x		x
raw materials/specialty metals				x		x
weapon delivery systems	x		x	x	x	x

ENTIRE CHART CENSORED

U.S. SUPPORT FOR ISRAEL'S MILITARY INDUSTRIES

Source: Stockholm International Peace Research Institute, The Arms Trade with the Third World (Stockholm: Almquist and Kiksell, 1971), pp. 843-5.

## Arms supplies to Israel

Date	Number	Item	Supplier	Comment
<b>Aircraft</b>				
(1950)	21	NA T-6 Harvard	USA	
(1950-53)	60	DH Mosquito NF. 38	France	Sold for scrap. u.c. \$200 overhauled in Israel
(1951)	(5)	Boeing PT-17 Kaydet	USA	
1952	4	NA P-51 Mustang	Sweden	Surplus
1952	40	Fokker S-11	Holland	
1953	20	DH Mosquito NF 38	UK	
1953	21	NA P-51 Mustang	Sweden	Surplus
1953	14	Gloster Meteor F. 8	UK	
1953	(5)	Gloster Meteor T. 7	UK	
1953	(10)	Piper L-18B	USA	
1953	(10)	Piper L-21	USA	
(1953)	(5)	Max Holste M.H. 1521 Broussard	France	
1954	6	Gloster Meteor NF .13	UK	
1955	15	Dassault Ouragan MD 450	France	
1955	24	Dassault Mystère IVA	France	
1956	45	Dassault Ouragan MD 450	France	Lost 10 in 1956
1956	36	Dassault Mystère IVA	France	
1956-58	25	Sud Vautour 2-A	France	
1957-59	24	Sud Vautour 2-N	France	
(1958)	2	Sikorsky S-55	USA	
(1959)	6	Boeing Stratofreighter	USA	
(1959)	(5)	Bell 47G	USA	
1959	24	Dassault Super Mystère B. 2	France	
(1959)	2	Hiller UH-12 A	USA	
1960	2	Convair PBV-5 A Catalina	USA	
1960	31	Sikorsky S-58	USA	
1960	6	Nord 2501 Noratlas	France	
1960-64	100	Potez/Bedek Magister CM 170	France/ Israel	Built under licence; u.c. \$200 000
(1961)	5	Sud Alouette III	France	
1962-64	72	Dassault Mirage III-CJ	France	
1963	2	Pilatus Turbo Porter	(Switzerland)	
1965	6	Sud SA-321 Super Frelon	France	
1968	48	Douglas A-4B Skyhawk	USA	
1968	7	Sud SA-321 Super Frelon	France	
1968	25	Fouga Magister	France/W. Germany	Ex-Bundeswehr; refurbished by Sud Aviation
1968-69	20	Agusta-Bell 205 Iroquois	Italy	
1969	25	Douglas A-4B Skyhawk	USA	
1969	7	Sikorsky S-65A	USA	
1969-70	50	McDonnell-Douglas F-4 Phantom	USA	
<b>Missiles</b>				
1956	(200)	Nord SS. 10	France	
(1962-64)	(300)	Nord AS. 30	France	For use with Mirage
1963	288	Raytheon MIM-23A "Hawk"	USA	\$25 mn contract, 10-year loan at 3.5 % interest
1963	(150)	Nord Entac	France	
(1963)	(150)	Nord SS. 11	France	
1966	100+	Matra Model R-530	France	For use with Mirage
1968	128	Raytheon MIM-23A "Hawk"	USA	
1969	2	MD-660	France	
1969-70	..	Sparrow	USA	For use with Phantom
1969-70	..	Bullpup	USA	For use with Phantom
<b>Naval vessels</b>				
(1950)	1	Coastguard cutter	USA	Built 1927. Displacement: 2150 t.

## Appendix 14, cont.

Source: Alex Mintz, 'The military aid to Israel: American concepts and Israeli realities', *Journal of Strategic Studies*, Vol. 29, No. 4, December 1983.

## Arms supplies to Israel, continued

Date	Number	Item	Supplier	Comment
(1950)	1	Patrol vessel	USA	Ex-US. Displacement: 295-450 t.
1950-51	2	Motor torpedo boat	France	Displacement: 62 t.
1952-53	2	Motor torpedo boat	France	Displacement: 62 t.
(1952-55)	14	Landing craft	USA	Ex-US. Displacement: 1 of 22-60 t, 1 of 230-387 t, 2 of 143-309 t.
1954-55	2	Motor torpedo boat	France	Displacement: 62 t.
(1955)	(2)	Landing craft	UK	Ex-UK. Displacement: 143-309 t.
1955	2	Patrol vessel	UK	Ex-UK; built in 1943. Displacement: 46-54 t.
1956	2	Destroyer "Z"	UK	Completed 1944; refitted. Displacement: 1 710-2 555 t.
1956-57	3	Motor torpedo boat	Italy	Built 1956-57. u.c. \$300 000. Displacement: 40 t.
1956-57	2	Patrol boat	W. Germany	Built 1956-57. Displacement: 96-109 t.
1959-60	2	Submarine, "S" class	UK	Completed 1945; refitted. Displacement: 815 t. surface, 1 000 t. submerged.
1967-68	3	Submarine, "T" class	UK	Completed 2 in 1944, 1 in 1945; refitted. Displacement: 1 535 t. surface, 1 740 t. submerged.
1968-69	12	Gunboat, "Saar" type	France	Displacement: 220 t.
<b>Armoured fighting vehicles</b>				
1950-51	(50)	Sherman, Mk. 3	USA	
1950-51	(25)	Cromwell	UK	
(1954)	100	AMX-13	France	
1955	(50)	M-4 Sherman	France	With 105 mm guns
1956	150	Sherman	France	After conversion in Israel designated Super Sherman
(1957-64)	200	Centurion	UK	
(1961-63)	(30)	Panhard 245	France	
1964-66	200+	M-48 Patton	USA/FRG	Ex-Bundeswehr
(1965-66)	100	Centurion	UK	
(1967)	40	Centurion	UK	
(1968-69)	100	Centurion	UK	

Source: Alex Mintz, 'The Military-industrial complex, American concepts and Israeli realities', Journal of Conflict Resolution, Vol. 29, No. 4, December 1985, p. 629.

**The Defense Sector's Share in the National Economies  
of the United States and Israel - 1982 Data**

	U.S.	Israel <sup>a</sup>
Percentage of labor force employed in the defense sector	over 5	almost 25
Defense sector employees per 1000 inhabitants	9	45
Per capita defense expenditure (\$)	800	more than 1400
Defense expenditures as a percentage of the GNP	6.5	about 28 (including 9% for local purchases)
Share of defense exports in overall exports	3-4	about 1/4 of industrial exports

SOURCES: ACDA (1984), Mintz (1985).

a. Including the IDF, military industries, and the Ministry of Defense.

Source: Signe Landgren, Embargo Disimplemented, South Africa's Military Industry (Oxford: OUP for SIPRI, 1989).

## South Africa's major weapons industry: the dependence on foreign military technology

### The aircraft industry

Type	Foreign military technology	Stage of know-how	Method of disimplementation
Impala series 1-3 COIN fighter/armed trainer	Italy/UK (MB 326)	<i>Stage 5:</i> From assembly to manufacture Programme completed 1986 400 units	Licence 1965 Sold as 'unarmed trainer'
Boshok transport liaison	Italy/USA (AM-3C)	<i>Stage 2:</i> Assembly of 40 units from imported components Programme completed 1975	Licence 1971 Sold as 'light plane'
C-4M Kudu transport/liaison	Italy/USA (AM-3C, AL-60)	<i>Stage 2:</i> Local modification 1973 25 units Programme completed 1976	Sold as 'light plane'
Mirage F-1C/A jet fighter	France (Mirage F-1C/A)	<i>Stage 2:</i> Assembly of 48 units Programme completed 1977	Sold for 'external defence' Licence 1971 Planned local production of 100 stopped by embargo
Cheetah jet fighter	France/Israel (Mirage-3)	<i>Stage 5:</i> Local redesign Prototype 1986	Unofficial technical co-operation for modification of 47 Mirage-3 still in service
Alpha XH-1 gunship helicopter	France (Alouette-3)	<i>Stage 5:</i> Local redesign Prototype 1986	Unofficial technical co-operation

### The missile industry

Type	Foreign military technology	Stage of know-how	Method of disimplementation
Cactus surface-to-air	France (Crotale)	<i>Stage 2:</i> Assembly of sub-assemblies	Licence 1964 Developed in France with South African financing and South African specifications Sold for 'external defence'
Scorpion ship-to-ship	Israel (Gabriel 2)	<i>Stage 2:</i> Assembly	Licence 1974, to arm 12 Reshef patrol boats
Kukri air-to-air	France/USA/Israel (Magic, Sidewinder)	<i>Stage 5:</i> Local RDT&E from 1964 Previous V3 and Whiplash cancelled Kukri redesign 1980 In production 1984	Unofficial technical co-operation with Israel
Exocet ship-to-ship	France (Exocet)	<i>Stage 5:</i> Local redesign 1982 Under development Project unconfirmed	Unofficial technical co-operation
ATM anti-tank	France/FRG (Entac, Milan, SS-11)	<i>Stage 5:</i> Local redesign 1984 Under development Project unconfirmed	Believed based on types in use with Army

## Armoured vehicles

Type	Foreign military technology	Stage of know-how	Method of disimplementation
Eland series 1-7 armoured car	France (Panhard AML-60/90)	<i>Stage 5:</i> From assembly to manufacture of 1600 units 1966-84	Licence 1963 Not defined as 'COIN' weapon Clandestine acquisition
Ratel series armoured car	Belgium/FRG (Sibmas)	<i>Stage 5:</i> Local redesign late 1960s 1500 units produced Programme continued	Continued use of imported technology
AC-100 armoured car	Belgium/FRG (Sibmas)	Under development in 1986, based on Ratel	
AC-200 armoured car	Belgium/FRG (Sibmas)		
Olifant main battle tank	UK/Israel (Centurion)	<i>Stage 5:</i> Local redesign 1982	Unofficial technical co-operation Modification of 250 Centurions originally imported from UK
Valkiri multiple rocket launcher	Israel	<i>Stage 5:</i> Local redesign of Israeli copy of 'Stalin organ' 1980 In production	Unofficial technical co-operation
G-5/G-6 self-prop. long-range howitzer	Canada/USA/Belgium/Sweden	<i>Stage 5:</i> Local adaption of foreign-designed concepts Production start 1977	Developed by Space Research Corp. in USA/Canada and Belgium according to South African specification Clandestine acquisition 1976

## Military trucks/transporters

Type	Foreign technology	Stage of know-how	Method of disimplementation
Landrover, jeep	UK	<i>Stage 5:</i> From assembly to manufacture 1962-1980 (?)	Licence 1961; not defined as 'COIN weapon'
Trax, jeep	France/UK/USA	<i>Stage 5:</i> Local design In production 1976 (?)	Licensed engines from Chrysler, Leyland and Peugeot; to replace Landrover UK radio communication system
Samil series, trucks Over 70 variants including: Buffel APC Bulldog APC Rhino troop carrier	FRG/Israel	<i>Stage 5:</i> From assembly to manufacture Redesign based on Samil-20, Samil-50 and Samil-100	Licence 1964 Magirus-Deutz/Unimog Reported Israeli-designed armour plate Continued use of imported technology
Magnis series, trucks	FRG/Japan	<i>Stage 5:</i> In production 1984	Merger of Magirus/Nissan technology; to replace Samil
Sakom series, light trucks Sakom-50	FRG	<i>Stage 5:</i> Redesign base on Samil-50 1982	Continued use of imported technology
Casspir series transporter	Unknown	<i>Stage 5:</i> 1972	Reportedly developed in co-operation with Rhodesia
Hippo/Ribbok transporter	Unknown	<i>Stage 5:</i> 1976	Reportedly developed in co-operation with Rhodesia

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## The warship industry

Type	Foreign technology	Stage of know-how	Method of disimplementation
P 1558 large patrol boat	Unknown	Stage 5: One unit produced 1974-76	Armed with Bofors guns
Flexible torpedo recovery ship	UK	Stage 2: One unit produced 1969	Built by foreign subsidiary Dorman Long (Africa); probably licence
De Mist tug	UK	Stage 5: One unit produced 1978	Built by foreign subsidiary Dorman Long (Africa); probably licence
De Neys and De Noorde tugs	UK	Stage 5: Two units produced 1961 and 1969	Built by Globe Engineering Works
Navigator training ship	Unknown	Stage 5: One unit produced 1964	Built by Fred Nicholls
87-tonne rescue launchers	FRG	Stage 2: Produced 1961 and 1962	Probably licence 1961 FL9 SAR type built by Krögerwerft
'Namacurra'-class 5-tonne harbour patrol boat	Unknown	Stage 5: Reported as local design; 30 units produced 1979	
'Minister of Defence'-class missile-armed FAC	Israel/Italy	Stage 2: 12 units in production from 1978	Licence 1974 Armed with Oto Melara guns
Voortrekker-II ocean racing yacht	Unknown	Stage 5: Produced 1983	In Navy service
Shirley-T helicopter carrier	Unknown	Stage 5: Prototype 1982	Reportedly produced for Israel: Unconfirmed
Tafelberg armed helicopter carrier	Denmark/Israel/Switzerland	Stage 1: Conversion of aged tanker 1983-84 Purchased from Denmark 1965	Modification of imported civilian vessel Armed with Scorpion missiles and Oerlikon guns
Drakensberg fleet replenishment vessel	FRG	Stage 5: One unit produced 1984-86	Announced as the first naval vessel designed and built in South Africa
Submarine Type-209	FRG	First unit planned 1992	Clandestine acquisition of blueprints 1985 Reported technical aid also from Chile and Turkey

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South

SouthScan  
Der Spiegel  
The Star (South Africa)  
Sueddeutsche Zeitung  
The Sunday Telegraph  
The Sunday Times  
Der Tagespiegel (Berlin)  
Die Tageszeitung (Berlin)  
The Times  
Uniform, Newspaper of the South African Army  
United Press International (UPI)  
The Wall Street Journal  
The Washington Post  
Washington Post News Service  
The Washington Times  
Die Welt  
West Africa  
The Wisconsin State Journal (USA)  
Yedioth Ahronot  
Die Zeit