MEETING OF THE IEWSS COMMITTEE ON REGIONAL ARMS TRANSFERS
AND ARMS CONTROL IN THE MIDDLE EAST
Institute for East-West Security Studies
Winston House, Sussex, 7-9/II/1990

a. "Memorandum"
b. "Schedule: working group on East-West cooperation: coping with change in a multipolar world: meeting of Committee on regional arms transfers ..."
c. "List of participants ..."
d. "Biographical sketches"
e. "Meeting report"/ Mary Albon
1. "The United States and the Soviet Union and the control of ballistic missile proliferation to the Middle East"/ Aaron Karp
2. "Ballistic missiles and chemical weapons in the Middle East"/ Mark A. Heller
3. "Unconventional weapons and regional stability in the Middle East"/ Ali Dessouki
4. "Preventing the proliferation of chemical weapons and ballistic missiles in the Middle East"/ Andrei Shumikhin
5. "Chemical weapons proliferation in the Middle East"/ Julian Perry Robinson

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13 FEB. 1990

MEMORANDUM

TO: Dr. Stefano Silvestri
Vice President
Institute of International Affairs

FR: Mr. Keith Wind
Director
Conferences, Programs & Alumni Affairs

DT: January 25, 1990

RE: Meeting papers and last-minute information for February 7-9, 1990 Wiston House meeting

I am pleased to enclose the most recent updated conference schedule and the five papers for the upcoming meeting of the Committee on Regional Arms Transfers and Arms Control in the Middle East.

PLEASE BE SURE TO BRING THESE PAPERS WITH YOU TO THE CONFERENCE.

The titles are as follows:

Session I

Professor Ali Dessouki (Egypt), **"Unconventional Weapons and Regional Stability in the Middle East"**

Session II

Dr. Mark A. Heller (US), **"Ballistic Missiles and Chemical Weapons in the Middle East"**

Sessions III and IV

Dr. Aaron Karp (US), **"The United States and the Soviet Union and the Control of Ballistic Missile Proliferation to the Middle East"**

Dr. Julian Perry Robinson (United Kingdom), **"Chemical Weapons Proliferation in the Middle East"**

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Session V

Dr. Andrei Shumikhin (USSR), **"Preventing the Proliferation of Chemical Weapons and Ballistic Missiles in the Middle East"**

PLEASE NOTE:

ANY PERSONAL EXPENSES INCURRED DURING THE MEETING MUST BE PAID AT CHECKOUT WITH CASH, TRAVELER'S CHECKS OR EUROPEAN CHECKS. *No credit cards are accepted.* We apologize for incorrectly stating in the Joining Instructions that credit cards would be accepted.

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When you arrive at Wiston House, you can pick up your conference packet at the Institute's registration desk, in the reception room.

Please refer to your Joining Instructions for all additional information!

I look forward to seeing you at Wiston House.

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Schedule

**WORKING GROUP ON EAST-WEST COOPERATION:
COPING WITH CHANGE IN A MULTIPOLAR WORLD**

Meeting of Committee on Regional Arms Transfers and Arms Control in the Middle East*

February 7-9, 1990
Wiston House
Sussex, England

Wednesday, February 7

a.m.	Participant arrivals at Wiston House	
13:00-14:30 *Great Hall*	Luncheon	Welcome remarks by **Mr. Geoffrey Denton**, Director, Wiston House Conference Center, West Sussex
15:00-16:30 *Conference Room*	Session I:	Opening comments by **Dr. Peter M.E. Volten**, Director of Research, Institute for East-West Security Studies, New York; and **The Honorable David Gore-Booth**, Assistant Under Secretary for the Middle East, Foreign and Commonwealth Office, London
		Discussion of Paper I: **"Unconventional Weapons and Regional Stability in the Middle East"**
	Paper Writer:	**Professor Ali Dessouki**, Director, Center for Political Studies and Research, University of Cairo, Cairo
16:30-17:00 *Common Room*	Afternoon tea and cake	

*The Institute wishes to thank the Foreign and Commonwealth Office of the United Kingdom for its financial support of this meeting.

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17:00-18:30 *Conference Room*	Session II:	Discussion of Paper II: **"Ballistic Missiles and Chemical Weapons in the Middle East"**
	Paper writer:	**Dr. Mark A. Heller,** Senior Research Associate, The Jaffee Center for Strategic Studies, Tel Aviv University, Tel Aviv
19:00-19:30 *Common Room*	Reception	
19:30 *Great Hall*	Dinner	
	Speaker:	**Mr. Andrew Gowers,** Middle East Editor, Financial Times, London

Thursday, February 8

08:00 *Great Hall*	Breakfast	
09:00-11:00 *Conference Room*	Session III:	Discussion of Paper III: **"The United States and the Soviet Union and the Control of Ballistic Missile Proliferation to the Middle East;"** and Paper IV: **"Chemical Weapons Proliferation in the Middle East"**
	Paper Writers:	**Dr. Aaron Karp,** Olin Fellow in Security and Economics, Center for International Affairs, Harvard University, Cambridge
		Dr. Julian Perry Robinson, Senior Fellow, Science Policy Research Unit, University of Sussex, East Sussex
11:00-11:30 *Yellow Room*	Coffee break	
11:30-13:00 *Conference Room*	Session IV:	Continuation of Discussion of Papers III and IV
13:00-14:30 *Great Hall*	Luncheon	

16:00 - 17:00

14:30-16:30 *Conference Room* — Session V: Discussion of Paper V **"Preventing the Proliferation of Chemical Weapons and Ballistic Missiles in the Middle East"**

Paper Writer: **Dr. Andrei Shumikhin,** Head of USA Middle East Policy Sector, Institute of USA and Canada, Moscow

17:30 12:30

16:30-17:00 *Common Room* — Afternoon tea and cake

17:00-19:30 — Free time

17:30 14:00

19:30 *Common Room* — Reception

20:00 *Great Hall* — Dinner

Friday, February 9

08:00 *Great Hall* — Breakfast

09:00-11:30 *Conference Room* — Session VI: Summary, conclusions, and future work agenda for the committee

11:30 *Great Hall* — Buffet lunch

Afternoon — Participant departures

14:00-17:30 — Optional Tour: Guided tour of Brighton (including visit to the Royal Pavillion)

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LIST OF PARTICIPANTS
COMMITTEE ON REGIONAL ARMS TRANSFERS
AND ARMS CONTROL IN THE MIDDLE EAST

MEETING AT WISTON HOUSE, ENGLAND

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0 **DR. SHAHRAM CHUBIN** (Iran)
Director of Strategic Planning
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0 **PROFESSOR ALI DESSOUKI** (Egypt)
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0 **DR. PETER GLADKOV** (Union of Soviet Socialist Republics)
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0 **THE HONORABLE DAVID GORE-BOOTH** (United Kingdom)
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Middle East Editor
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WISTON HOUSE MEETING

Biographical Sketches

Christophe Carle is Research Fellow at the French Institute for International Relations in Paris.

Shahram Chubin is Director of Strategic Planning for the M Group in Geneva. Formerly an Assistant Director of the International Institute for Strategic Studies and Director of Research for the Program on Strategic Studies at the Geneva Graduate Institute for International Studies, he remains a consultant to the latter. In addition, he has been a consultant to various agencies and governments including the United States Defense Department.

Ali Dessouki is Director of the Center for Political Studies and Research at Cairo University and a member of the Council of the International Institute of Strategic Studies. He is also a member of the editorial board of the Cairo Papers in Social Science, and consulting editor to Mediterranean Studies. Professor Dessouki has written extensively on Middle East issues, and in 1978 received Egypt's State Medal for Science and Arts of the First Order for the best book in political science for his Democracy in Egypt.

Peter V. Gladkov is Head of the Multilateral Diplomacy and Negotiations Section at the Institute of the USA and Canada. He is the author of Perestroika in the USSR: the American View (in print), and co-author of The Glasnost Papers (Nauka, 1987).

David A. Gore-Booth is Assistant Under Secretary of State for Middle East affairs in the British Foreign and Commonwealth Office. He has served in a number of posts in the Middle East and Africa, and headed the Foreign Office's Policy Planning Staff for two years in 1987-88. Mr. Gore-Booth was also a First Secretary in the UK's Permanent Representation to the European Communities from 1974 to 1977.

Andrew Gowers is Middle East Editor for the Financial Times. He has been with the Financial Times since 1983, and served as Commodities and Agriculture Editor from 1984 to 1987, when he took over his current position. Prior to his working at the Financial Times, Mr. Gowers was a correspondent for Reuters in Brussels and Zurich. He is currently writing a book on the Palestine Liberation Organization.

Przemyslaw Grudzinski is Senior Fellow with the East European Research Group and Associate Professor at the Institute of History at the Polish Academy of Sciences. His writings on nuclear arms include The Nuclear Policy of the United States, 1939-1945, and Theology of the Bomb: The Origins of the Nuclear Deterrence, 1939-1953.

Mark Heller is Senior Research Associate at the Jaffee Center for Strategic Studies at Tel Aviv University. He has written prolifically on Middle East issues, including superpower involvement, the Arab-Israeli conflict, and the Iran-Iraq war. His latest publications include The Soviet-American competition in the Middle East (co-editor) and "Superpower Involvement in the Iran-Iraq War" (forthcoming in the IDF Journal).

Jan Honig recently joined the Institute for East-West Security Studies as Research Analyst. Prior to this, Mr. Honig was NATO Research Fellow (1987-88), and MacArthur Resident Fellow at the Department of War Studies, Kings College (1988-89).

Darryl Howlett is Information and Conference Officer for the Programme for Promoting Nuclear Non Proliferation. A lecturer in International Relations at Southampton University, he is also Visiting Research Associate at the International Institute for Strategic Studies in London. He is the author of EURATOM and Nuclear Safeguards (Macmillan, 1990) and coauthor of Ballistic Missile Proliferation and Regional Instability in the 1990's (forthcoming).

Helmut Hubel is Resident Fellow at the Institute for East-West Security Studies and Visiting Scholar at Columbia University. He is also currently working on a project on regional conflicts in US-Soviet relations.

Aaron Karp is John M. Olin Research Fellow at the Harvard University Center for International Affairs. From 1987 to 1989 he served as Arms Trade Project Leader for the Stockholm International Peace Research Institute. He has written extensively on disarmament and nuclear proliferation issues.

Geoffrey Kemp is Senior Associate at the Carnegie Endowment for International Peace. He served on the National Security Council from 1981 to 1985, and from 1983 to 1985 was Senior Director for Near East and South Asian Affairs and Special Assistant to the President for National Security Affairs. He is the co-author of Western Interests and US Policy Options in the Middle East (1988) and numerous articles on Middle East and security issues.

Richard Latter is Associate Director of Wilton Park and a member of Wilton Park Academic Staff since November 1987. From 1977 to 1987 he served first as assistant to the Director and later as Deputy Director of the International Statistical Institute in the Hague. Mr. Latter's research interests include security and alliance politics, arms control and terrorism; his publications include The Making of American Foreign Policy in the Middle East, 1945-1948, and Terrorism and the Media: Dilemmas for Government, Journalists and the Public.

Ambassador Pierre Morel is the Representative of France to the Conference on Disarmament in Geneva. He has served numerous posts in the French government in foreign affairs, including First Secretary and Counsellor at the French Embassy in Moscow, and Diplomatic Adviser to the President in charge of European affairs and multilateral summits. Most recently he was Chairman of the Ad Hoc Committee on Chemical Weapons for the 1989 session of the Conference on Disarmament.

Martin Navias is Research Associate at the Department of War Studies at King's College.

Julian Robinson is Senior Fellow at the Science Policy Research Unit at the University of Sussex. He has written numerous publications in the field of chemical and biological weapons, including The Problem of Chemical and Biological Warfare (1971-75) and The Effects of Weapons on Ecosystems (1979). Until 1987 he served as editor of SIPRI Chemical and Biological Warfare Studies. He has held consultant positions at the World Health Organization, United Nations Secretariat, the International Committee of the Red Cross, and the United Nations Environment Programme.

Joseph Romm is Assistant on International Security at the Rockefeller Foundation in New York.

Andrei Shumikhin is Head of the USA Middle East Policy Sector at the Institute of USA and Canada.

Stefano Silvestri is Vice-President of the Istituto Affari Internazionali in Rome. He is also a commentator and analyst of foreign and security affairs for the main Italian economic newspaper, Il Sole 24 Ore. In addition, he is currently a member of the International Institute for Strategic Studies, and the Italian Consultative Commission on European Cooperation and Security Problems. He has held a number of positions with the Italian government, including Special Assistant for the Undersecretary of State of Foreign Affairs, and Consultant to the President of the Council of Ministers on foreign affairs and security problems.

Ian Smart is an independent adviser on international energy policy affairs, and former Director of Studies at the Royal Institute of International Affairs. He has served as Chairman of the International Consultive Group on Nuclear Energy and the British Institute of Energy Economics, and as Council at the Royal United Services Institute. He is also the author of Nuclear Fuel and Power: A View Towards 2000 (1986).

Roland Smith is Deputy Head of the Science, Energy and Nuclear Department of the British Foreign and Commonwealth Office. In his career in the British Diplomatic Service, he has served two tours of duty in his country's embassy in Moscow. After spending two years at the International Institute for Strategic Studies, he served as Political Adviser to the British Military Government in Berlin from 1984-1988.

Yannis G. Valinakis is Associate Professor of International Relations at the University of Athens and Deputy Director of the Hellenic Foundation for Defense and Foreign Policy. Following his term as Resident Fellow at the Institute for East-West Security Studies in 1982-83, he served as Adviser to the Greek Ministry of Foreign Affairs from 1983-86. In addition to his publications on Greek foreign policy, he is currently doing research on Eastern Europe and conventional arms negotiations.

Peter Volten is Director of Research at the Institute for East-West Security Studies. Prior to this, he was Director of Studies and Strategic Planning of the Defense Staff of the Dutch Defense Ministry in the Hague, and also Professor of the History of War at Utrecht University. He has written extensively on security and defense matters, with a special interest in the Soviet Union and East-West relations.

Zhang Jingyi is Professor and Senior Fellow at the Institute for American Studies at the Chinese Academy of Social Sciences, and a Senior Fellow at the Center of International Studies at the PRC State Council. He is also Director of the Program for International Studies at the Chinese Association for International Friendship Contact. His publications include "After the Superpowers" (Far Eastern Economic Review, April 1989).

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Meeting Report

East-West Cooperation and Its Impact on Regional Security Issues

The possibility that the Middle East could benefit from the experience of East-West arms control initiatives and diplomatic negotiations was the subject of a conference entitled "East-West Cooperation, Arms Transfers and Arms Control in the Middle East" hosted by the Institute for East-West Security Studies at Wiston House, Sussex, U.K., February 7-9, 1990. Although the Middle East is not a unique case and the geographical extent of the region is ambiguous, sometimes expanding to include countries on its fringes, such as India and Pakistan, this region exemplifies many of the political complexities faced by all of the parties engaged in long-standing regional conflicts, in particular ones which include high levels of sophisticated armaments and superpower involvement. The Institute brought together specialists from Eastern and Western Europe, the Middle East, the United States, the Soviet Union and China to discuss these issues. The group, chaired by the Honorable David Gore-Booth, Assistant Under Secretary for the Middle East in the British Foreign and Commonwealth Office, is a subcommittee of the IEWSS Seminar Group on "East-West Cooperation and Its Impact on Regional Security Issues."

The meeting focused primarily on the impact of ballistic missiles and chemical weapons (CW) in the Middle East, but its participants acknowledged that it is difficult to examine any particular weapons system in isolation from other types of armaments.

Chemical Weapons

Chemical weapons, which were employed in the 1980s by Iraq against Iran in the Gulf war, as well as domestically by the Iraqis against insurgent Kurds, have a tremendous terrorizing effect. The conference participants agreed that the psychological impact of the use of chemical weapons is out of all proportion to their actual destructive capability. The military effectiveness of CW is highly unpredictable because of the impact of a large number of variables, in particular weather conditions and wind direction. In addition, it is relatively easy to provide effective protection against CW by issuing gas masks and special protective clothing to troops who face the risk of a CW attack. Although they recognized that the use of CW had a demoralizing effect on troops under attack and provided a certain psychological boost to CW-armed troops, participants were in agreement that CW could not be considered war-winning weapons, and they doubted CW's usefulness as weapons of deterrence against nuclear weapons.

A West European participant drew the group's attention to the 1989 Paris conference on chemical weapons and emphasized that a strong desire was evident among many of its participants to react, albeit belatedly, to the use of CW in the Iran-Iraq war. The desire stemmed from the threat such activities pose to the 1925 Geneva Protocol outlawing the use of chemical weapons. Yet he also noted an unspoken undercurrent of interest in CW among some countries taking part in the Paris conference because they perceived the role of these weapons, after their use in the Iran-Iraq war, as a "poor people's atomic bomb." He asserted, however, that the importance of CW in the Gulf war was overestimated. Because all states--particularly in the Middle East--must be engaged in preventing the use of CW, this participant advocated a comprehensive ban on production, stockpiling and use of CW rather than a nonproliferation treaty. Such a prohibition would be particularly important in a region in which conflicts are often irrational and ideologically or emotionally charged and furthermore can involve the use of CW both by states and by terrorists. This type of conflict represents the most probable scenario for CW use.

Despite the enormous qualitative differences between chemical and nuclear weapons, differences which should logically preclude any practical linkage between the two weapons types, IEWSS conference participants acknowledged that some sort of de facto linkage does exist in the minds of some in the Middle East. The connection is political and psychological, however, not military: linkages exist if people believe they do (there does not have to be a rational basis for the perception). Weapons that instill fear in the leadership or population of one's opponent have utility. Both nuclear and chemical weapons have that capacity, but both are also highly destabilizing.

Some participants argued that the Arab states view CW as a deterrent (albeit only partial) against Israeli nuclear capabilities. As such, these states would be unlikely to give up their CW capability without a simultaneous elimination of Israel's nuclear arsenal. An Israeli participant pointed out that chemical weapons have been in the possession of Middle Eastern states for over 25 years--long before the supposed existence of Israel's nuclear capabilities. He maintained that the more important link was between chemical and conventional weapons, and that the actual role of Arab CW might be to compensate for the weaknesses which the Arabs consider exist in their conventional military capabilities vis-à-vis those of Israel.

Ballistic Missiles

Ballistic missiles, which can deliver nuclear, chemical or conventional warheads, have recently become one of the primary focuses of U.S.-led Western nonproliferation efforts. An American participant pointed out that the United States has global interests and responsibilities regarding the proliferation of ballistic missile technology; in the early 1960s, the United States freely gave missile and rocket technology to a dozen countries. The main international nonproliferation effort in this area is the Missile Technology Control Regime (MTCR), which was established in 1985 and officially announced in 1987. Currently eight Western states participate in the regime, including the United States, the United Kingdom and France. According to the American participant, the MTCR internationalizes U.S. missile proliferation policy, but since the regime is not a treaty, its regulations must be implemented and enforced unilaterally by each of the participating governments. The MTCR proscribes most exports of ballistic missiles capable of carrying a 500-kilogram warhead a distance of 300 kilometers. The export of major components of ballistic missiles, such as stages, engines and guidance technology, is also prohibited.

The MTCR's main shortcoming is that it does not address motives for acquiring ballistic missile technology. Furthermore, because so much technology is already generally available, it could be pooled by a number of developing countries to build effective missile systems. All of these countries could then deploy such missiles. Thus ballistic missile proliferation problems now center on the control rather than the restriction of missile technology.

At present the United States is trying to strengthen the MTCR by urging more rigorous enforcement of its regulations by participating governments. It is also encouraging more states to adhere to the agreement, particularly the Soviet Union and China, two of the key suppliers of missile technology to developing countries. However, the conference participants considered it unlikely that the USSR will join the regime. Although sympathetic to the MTCR's underlying principles, the USSR did not take part in the initial negotiating process to establish the regime. Furthermore, it is questionable whether Moscow is prepared to alienate its clients among the developing countries by cutting off this flow of valuable technology.

According to a Soviet participant, there are two main Soviet views on arms transfer and proliferation of ballistic missile technology. Soviets who advocate strict control of arms transfers, particularly missile technology, view arms transfers as a threat to international stability and a drain on the domestic economy, carried out at the expense of the Soviet consumer. Soviet supporters of the arms trade (primarily members of the military-industrial complex, who derive their livelihood and privileged position in the Soviet economy from arms production) view it as an irreplaceable source of hard currency; however, as the Soviet participant pointed out, this view overlooks the fact that many clients among the developing nations frequently have difficulties in paying their bills and thus are not a reliable source of income.

The Soviet participant proposed a three-stage institutional solution to the problem of ballistic missile proliferation. The MTCR would constitute the first stage; in the second stage, the regime should be expanded to include regional actors; and in the third stage the regime could be integrated into a larger international system, perhaps set up under United Nations auspices. This approach would address the problem of missile proliferation from both the supply and the demand side. However, the key problem with this process, he said, would be in achieving the second step--involving the Middle Eastern countries (and other developing countries such as Brazil, which have already become major suppliers of missile technology) in the regime. This difficulty stems from the problem, common to all arms control initiatives in the Middle East, of identifying motives or creating incentives for the participation of regional governments in arms control efforts.

Arms Control in the Middle East

Many participants were uncertain about the feasibility of regional arms control outside of the superpower framework, particularly in the Middle East. Some doubted that the East-West example was appropriate to other areas of the world. It might be possible, however, to adapt some aspects or types of European arms control initiatives to the Middle East's very different geographical, political and cultural context. They agreed that it is first necessary to determine the conditions under which regional actors would want to move toward an arms control regime. This might be best achieved by demonstrating how regional security would benefit from such a regime. Several participants also stated that the special relationship between the United States and Israel is an obstacle to arms control and missile nonproliferation in the Middle East. They emphasized that the Israeli ballistic missile arsenal would have to be addressed in any Middle Eastern arms control regime.

One major difference between the European arms control process and the situation in the Middle East is that whereas the concept of deterrence is a key tenet of European security, in the Middle East war-fighting and war-winning strategies are central. In the European context deterrence is possible because, within the East-West framework, it is used to preserve the status quo set out in treaties and agreements. The Middle Eastern

experience is not comparable because the status quo is unacceptable to many regional states; thus it will be a major challenge to encourage deterrence thinking in the region.

A Middle Eastern participant suggested that arms control in the Middle East should be pursued in the broader political sense of improving dialogue among the parties involved. The objective would be to work toward some sort of understanding that could lay the groundwork for more concrete steps. However, support for arms control solutions to regional conflicts was not universal. A Chinese participant suggested that arms control is a Western tradition, culturally and historically alien to oriental societies, other than Japan. He questioned whether arms can actually be controlled, and suggested that the crux of the problem lay in a cost-benefit analysis of the costs of weapons and their potential utility. In addition, local market demand for arms has to be taken into consideration. He said that China considers only its own security in the continued development of its nuclear defenses and maintains a policy of no first use. In such a framework, the concept of arms control is irrelevant. He also questioned the utility of any restraint on the part of major suppliers. If the United States, the Soviet Union and the European powers halted or further restricted their arms trade, other arms suppliers would step in to take their place in meeting the demands of the developing countries.

Confidence-Building Measures

There was strong support for the idea that confidence-building measures (CBMs) also have a role to play in the arms control and peace processes in the Middle East. The participants noted that there are two types of CBMs: those that encourage military disengagement and those that encourage political dialogue. Arms control and CBMs should be designed to reinforce each other, although it must be taken into consideration that some measures could have a negative political impact. The group agreed that the applicability of various types of arms control depended on what phase of the regional peace process was currently under way when the measures were implemented. The objective of the arms control process should be to help lead on to the next phase of the overall peace process.

The primary role of CBMs in the Middle East should be to provide warning against the danger of surprise attack, and the participants advocated greater military openness as a major contribution toward this end. There was a consensus that the most stable forms of arms control in the Middle East would be those which are developed within the region itself. However, arms control, CBMs and all other measures designed to increase stability in the Middle East should not have a strictly parochial approach; developments in the region will necessarily have global reverberations.

The conference participants were in agreement that new concepts were needed to supplement or even replace the arms control process and confidence-building measures which stem from the East-West experience. One participant suggested the term "arms management," which would include structures and policies that would not increase the danger of war. Another suggestion was the use of the acronym MESS for regional agreements, standing for "measures for enhancing security and stability."

Possibilities for Settlement

The group also examined possibilities for settlement of the Iran-Iraq and Arab-Israeli conflicts. Regarding the former, the group agreed that a formal settlement would take quite some time to achieve, especially since no formal negotiations are currently under way and Iraq still occupies Iranian territory. The war was viewed as a stalemate--perhaps the only factor that could change the calculus would be the introduction of nuclear weapons. Although it did not appear likely that fighting between Iran and Iraq would resume in the short run, in the long run the prognosis was ambiguous--a future war was always possible, and would probably be more technologically advanced, and thus more devastating.

Regarding the Arab-Israeli conflict, most conference participants seemed to think that arms control progress in the Middle East as a whole hinges on a settlement of the Palestinian question and Israel's occupation of the West Bank. One Middle Eastern participant saw signs of the possibility of progress in the dispute. First, he said, most Middle Eastern countries have problems with their domestic economies and with foreign debt, which would make it increasingly difficult to continue maintaining high levels of military expenditures. Second, the impact of external events, such as the recent rapprochement of the United States and the Soviet Union, the democratization of Eastern Europe and the legalization of the African National Congress and release of Nelson Mandela in South Africa, is beginning to create greater demands for political participation among Palestinians. The same is also true in Arab countries, such as Iraq, where repressive regimes hold power. He also pointed to greater pragmatism and cooperation among Arabs and the calls from Palestinians for greater Egyptian-Israeli contacts. There are also signs of positive change among a noticeable sector of the Israeli population with regard to the Palestinian question. However, another Middle Eastern participant emphasized that although the Palestinian problem is the central Israeli political issue, there is no consensus among Israelis as to its solution. It is also a distortion, he said, to connect resolution of this problem with the larger security questions of the region, especially with Israel's external security problems.

Conference participants reached a consensus that prospects for arms control in the Middle East, particularly halting the spread of ballistic missiles and chemical weapons in the absence of extensive CBMs and the settlement of the Arab-Israeli and Iran-Iraq conflicts, were not good. In addition, they noted that each Middle Eastern government is under considerable domestic pressure and threatened externally in one way or another, and that internal changes in any given country might have consequences for all of them.

Recommendations

The participants recommended further study of the conditions under which regional powers would be willing to embark on negotiations aimed at achieving military stability in areas of tension. The group would look at how the superpowers and nonregional states could contribute to the creation of these conditions. How can East and West work together to play a role in managing the situation in areas of regional tension and act as mediators for purposes of conflict restriction? Furthermore, in the absence of such cooperation, can either or both sides take unilateral or bilateral steps, including limits on arms transfers, implementation of CBMs, encouraging transparency and even the possibility of disengagement from the area, to facilitate regional arms control?

It was agreed that the main focus of the group's future activities should be to build up a clear picture of the attitudes and motivations of the various countries, both regional and nonregional, involved in areas of confrontation or conflict. Particular attention needs to be paid to the state of the military balance in various regions and how that impacts on regional stability. Included in this study would be a close scrutiny of stationed forces and their impact both on the military balance and on political and economic stability in the various regions of the world.

The group also recommended a deeper examination of the lessons to be learned from European-centered East-West negotiations and agreements aimed at achieving military stability. The objectives would be to determine the applicability of such models and modalities in other regions, and see whether this large body of knowledge could provide guidelines for what to do as well as what not to do. This would include study of both the political and the public debate on military stability in Europe, the Soviet Union and the United States, and the political and psychological effects of merely engaging in negotiations.

Finally, a more intensive look at the individual countries involved in various regions of conflict--both local and outside powers--and their approaches to military stability, including arms transfer, and the regional conflicts there would also be useful. In particular, further study is needed of their individual views on military-operational questions, economic issues, technological considerations, political and psychological approaches to certain types of weapons and arms transfer. Their views on legal aspects, such as the use and effectiveness of international law, would also be of great interest.

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"The United States and the Soviet Union and the Control of Ballistic Missile Proliferation to the Middle East"

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The United States and the Soviet Union and the Control of Ballistic Missile Proliferation to the Middle East

by

Aaron Karp

Introduction

Events in the late 1980s have elevated the issue of ballistic missile proliferation into one of the major questions in the field of international peace and security. Policy-makers and analysts alike were surprised by the sudden emergence of a problem and of its intensity. While it may have seemed as if missile proliferation came out of nowhere, the process has been under way since the late 1950s. In 1958, Egyptian President Nasser commissioned a team of ex-patriot German rocket engineers to begin work on a series of new ballistic missiles to be built in Egypt. Israel acquired assistance from France and tested a suborbital sounding rocket with a surface-to-surface range of 100 km in 1961. The following year, Nasser announced the test of a 370-km missile. By the time of the 1973 Middle East war, ballistic missiles were fully integrated into the regional arms race. Most of today's controversial regional ballistic missile programs can trace their beginnings to reactions to the use of ballistic missiles in 1973.

During the 1960s and 1970s, ballistic missile proliferation was rarely discussed as a distinct issue, or even as a consequential one, of international politics. When the subject was

dealt with at all, it was usually as a secondary or tertiary concern, an inadvertent side-effect or a minor part of policies and analyses stressing other matters. Occasionally ballistic missile proliferation might seem interesting, but only once or twice was it thought to be genuinely important. Not until a series of new programs were revealed in the late 1970s did missile proliferation begin to appear significant enough to warrant direct consideration by the major powers. Even then it failed to receive the kind of attention lavished on more familiar problems of regional security and arms control.

Only in the mid-1980s did ballistic missile proliferation rise to the top of the international agenda. Four disclosures accelerated this concern. First was the 1987-1988 "War of the Cities" in which Iran and Iraq, in particular Iraq, fired more than 500 conventionally armed ballistic missiles. Second, in December 1987, the multinational Condor II program was revealed, in which Argentina, Egypt and Iraq cooperatively invested some $5 billion to illegally acquire Western technology and develop a 1,000-km range ballistic missile. Third, Israel tested its Jericho IIb ballistic missile with a range of 1,450 km, sufficient to reach Soviet territory. Finally, in early 1988 China delivered DF-3 ballistic missiles, with a range of 2,700 km, to Saudi Arabia.

The rise of regional ballistic missile programs was especially ironic coming at the very moment that the Soviet Union and the United States were putting the finishing touches on the 1987 INF Treaty banning similar weapons of their own. The emergence of

regional ballistic missile arsenals also raised specific fears, including: regional instability leading to war, massive destruction through the use of chemical and nuclear weapons should regional war occur, the possibility of regional conflict spreading to include outside powers, and the ability to target outside powers for direct attack.

While ballistic missile proliferation in general and especially in the Middle East has become a leading issue for the Soviet Union and the United States, and only slightly less important for China and Europe, there is no clear sense of how to cope with the problem. Existing policies are tentative. Their creation was guided by expediency and their substance has changed over the years. They undoubtedly will change even more in the years ahead. Yet there is little collective sense of what is possible and what should be done.

This paper focuses on the evolution of United States and Soviet policies on ballistic missile proliferation. As the leading actors in missile proliferation questions, their policies have shaped the international agenda and will continue to do so. Many other countries are involved as suppliers of missile technology, especially China, France, the Federal Republic of Germany, Italy and a growing list of Third World exporters such as Argentina, Brazil, Egypt, Israel and North Korea. Yet there is a widespread and justifiable expectation that traditional superpower leadership will be most instrumental in shaping future control efforts. Historically, the United States and the Soviet Union have regarded

the issue very differently. To compare their approaches, this paper examines how their policies on ballistic missile proliferation evolved from the late 1950s to the present, evaluates the concerns that have motivated them, and describes alternative courses of action under consideration. The United States is presented first as the instigator of most control efforts, setting the initiatives to which other states, including the Soviet Union, are responding.

The Evolution of U.S. Policy on Missile Proliferation

In the 1980s the United States was the leading force pursuing control of regional ballistic missile programs, acting the zealous policeman to restrict transfers of relevant technology. There is no reason to suggest this approach will change much in the 1990s. Yet Washington is not without ambivalence on the issue, and its policies on the transfer of missile technology have changed over the years. The United States was the first power to export ballistic missiles and missile technology to the Third World. Its restrictiveness today is belied by important exceptions. The flexibility of U.S. policy in the past points to basic conflicts among goals still waiting to be resolved.

Early U.S. policy and the spirit of international cooperation. Long before the problem of ballistic missile proliferation was understood, the United States led efforts to transfer missile-related technology to developing countries. U.S. policy initially was shaped by the 1958 National Aeronautics and Space Act. As the

country's basic legislative reaction to the Soviet launch of Sputnik in October 1957, the Act chartered NASA and, among other things, committed the new space agency to undertake cooperative international activities. In the shadow of the far more prominent manned space program, the agency established a large technology transfer program. This stressed cooperative arrangements, negotiated through memoranda of understanding (MOUs), for the use of research data and satellites launched by the United States. Several developing countries also received assistance in starting their own space launch programs. Beginning with Argentina in 1959, MOUs were signed with a dozen countries in Latin America, South Asia and East Asia.[1] They were provided with satellite tracking facilities, small launch facilities and suborbital sounding rockets. A few countries also received sounding rockets from France and the Soviet Union, although their aid programs were far smaller.

These programs reflected the positive view of technology transfer to developing countries common to the times. Coming on the heels of the highly successful 1957-1958 International Geophysical Year and the U.S. Atoms for Peace program, enthusiasm for multinational scientific endeavor was extremely high. With faith in "foreign aid" generally unquestioned, every major agency of the U.S. government established a foreign aid program of its own. The obligation was thought to be especially great in an area of tremendous symbolic competition with the Soviet Union for the "hearts and minds" of developing nations. It was an enthusiasm

best captured in President Kennedy's inaugural address, an enthusiasm that left no room to question whether to provide such technology, while the question of how much to offer was resolved mostly by the recipient's ability to digest it all.

The countries receiving the benefits from these programs were equally enthusiastic to share in the human adventure in space. With the support of the NASA rocket technology transfer program--it had no formal name since it was organized bilaterally, although "rockets for peace" might not have been inappropriate--they were able to develop an organizational base for mastering the technology. Their principle activity was high-altitude atmospheric research. National spokesmen often justified their part of the expenditure as a first step toward domestic space launch capability. Small rockets were expected to lead to progressively larger ones. The program was entirely civilian, although the participants were gaining valuable large rocket experience that later would be transferred to the military. The largest of the sounding rockets they worked with differed from ballistic missiles only in their guidance equipment, payloads and launch angles.

Some countries participating in the U.S. program were unable to sustain these activities by themselves and dropped out by the late 1960s, including Mexico, Peru and the Phillipines. Others were acquiring skills and infrastructure which later proved to be of great use to their own civilian space launch and military rocket programs, especially Argentina, Brazil, India, Pakistan and Taiwan. Although the Soviet Union had ceased to offer assistance with

rocket technology, India received further help from France, as did Israel.

At the time, any possibility that these "underdeveloped" countries were establishing foundations for advanced military capability must have seemed remote if not fantastic. It was not appreciated that they also were developing competent aerospace industries capable of manufacturing large rockets. Nor was it fully appreciated that many were developing the capability for weapons of mass destruction required to arm ballistic missiles effectively.

The most noteworthy exception to this civilian-oriented technology transfer policy was the delivery of Honest John missiles (37-km range) to four regional allies in 1959-1961: Greece, Turkey, Taiwan and South Korea. While the first two are NATO members, the second two became the first recipients of ballistic missiles outside of the major alliances.[2] No other transfers of U.S. ballistic missiles to the developing world occurred in the 1960s. This does not seem to have been due to a specific prohibition. Rather, the U.S. simply lacked other suitable short-range ballistic systems to transfer.

A rising tide of restrictiveness. It was not concern with military applications but potential commercial competition that led to the first reappraisal of U.S. policy. In July 1969, the Nixon administration agreed to furnish Japan with production licenses for the McDonnell-Douglas Thor-Delta space launch vehicle. The Japanese government assigned the licenses to Mitsubishi Heavy

Industries, where the design was used as the basis for Japan's own N-series space rockets. The 1969 Japanese-U.S. Agreement on Space Activities subsequently became subject to a debate in Washington, questioning the merits of sharing such technology. In tone--if not intensity--the debate closely resembled the FSX fighter debate of 1987-1989. France also was developing a space launcher with U.S. assistance (the Ariane). Critics charged that the U.S. inadvertently was fueling a competition in launch services that would harm NASA programs and jeopardize the commercial success of the Space Shuttle then on the drawing boards.

The dispute culminated in a White House decree, NSDM-187, issued on October 16, 1987, prohibiting further exports of space launch technology. NSDM-187 ended the era of U.S. technical cooperation with foreign rocket programs. Several countries lost their principle source of technology and their programs slowed noticeably. Argentina shut down its entire program for several years, as did Pakistan. Other countries turned to European suppliers for assistance as they began to accelerate their space launch and ballistic missile programs in the mid-1970s. A French firm already had designed Israel's Jericho I missile, test-fired in 1968. In 1973, India began its indigenous space launch program with extensive French support and assistance from the Federal Republic of Germany. West German firms and research institutes also helped Brazil design large sounding rockets and master solid fuel technology.

The pace of foreign transfers of ballistic missiles began to quicken as well, causing further alarm. Moscow aroused little interest in 1968 when it began shipping Frog-7 missiles (70-km range) to Middle Eastern clients. The delivery of Scud-B missiles (280-km range) had greater political impact, although Washington refused to respond in kind by supplying similar systems, such as Pershing 1As, to Israel. But after it was attacked with several dozen Soviet-supplied ballistic missiles during the 1973 war, Israel turned to Washington, formally requesting Pershing Ia missiles (740-km range). U.S. Secretary of State Henry Kissinger refused to permit such a transfer, maintaining that it would be unnecessarily provocative. It also was clear that the Pershing was capable of carrying Israeli nuclear warheads. Instead Israel was permitted to purchase Lance missiles (120-km range).[3] This was the last time the United States transferred ballistic missiles to a country outside NATO. It also marked the first time Washington acted explicitly in recognition of the relationship between nuclear weapons and missile proliferation. By the early-1980s this linkage would dominate official U.S. (and Western) thinking completely.

Awareness of the relationship between nuclear proliferation and the spread of ballistic missiles was reinforced by the efforts of several developing countries to acquire complete nuclear fuel-cycle technology in the 1970s. Nuclear non-proliferation became a key issue in U.S. regional security policy, a lens influencing perception of other issues. Already in 1976 a proposed sale of A-7 Corsair attack aircraft to Pakistan was stopped largely in

reaction to suspicions that Pakistan could use the aircraft to deliver nuclear weapons. Tactical aircraft still could be justified as dual-use systems primarily for use with conventional ordnance. But ballistic missiles increasingly appeared to be nuclear delivery vehicles with some secondary conventional capability.

No blossoming missile program received as much public attention in the 1970s as Otrag, the West German firm that began developing a dual-use space launcher/ballistic missile (300-km range) for sale on the commercial market. Initially operating in Zaire, Otrag moved its operations to Libya in 1979. Considering Muammar Khadafi's support for terrorism and repeated efforts to purchase nuclear weapons, Otrag's activities created great alarm among a large number of governments. Compelled by pressure from Washington, in 1981 Bonn forced the firm to pull out of Libya. The Otrag design was amateurish in some aspects; it has been suggested that the company basically was an investment scheme.[4] But it alerted policy-makers and the public to the scope of the dangers of unrestrained missile exports, suggesting the image of a future world where countries would be as free to buy ballistic missiles as they are accustomed to purchasing tanks and artillery.

Missile programs in South Korea and Iraq received less public notice, but elicited more intense U.S. government reaction. When the Carter administration tried to withdraw U.S. troops from South Korea in 1977, Seoul responded with official protests and thinly veiled hints regarding its nuclear potential. In 1978 it

publicized tests of a new ballistic missile, a modification of U.S.-supplied Nike-Hercules antiaircraft missiles. The U.S. intervened to stop the unlicensed program, going so far as to dispatch missions to inventory South Korea's Nike-Hercules. While Washington was not fully satisfied with its findings, diplomatic priorities inhibited it from pushing the issue further.

Less has been revealed about Iraq's missile program in the late 1970s and early 1980s. Coinciding with the establishment of the Osiraq nuclear reactor facility, President Hussein apparently sought European assistance with ballistic missiles. Tentative agreement was reached with the Italian firm Snia-Viscosa (Snia-BDP today) to supply large rocket engines and stages, ostensibly for space launch vehicles. U.S. inquiries, followed by a demarche through its Rome embassy, appear to have ended the discussions.

Through these experiences the U.S. government was learning --about the nature of ballistic missile proliferation as a phenomenon; about the intention of many countries to acquire ballistic missiles; that nuclear threshold countries were especially interested; of the dangers of unrestricted exports of missile technology; and that civilian space launch programs could conceal military options. Through its responses to these experiences, the United States was assembling a policy toward the problem. As this was a vague policy, not publicly articulated, largely ad hoc and reactive. Its goal, in effect, was to discourage transfers of ballistic missile technology as well as independent missile programs (with the important exception of

Israeli missile programs). Licensing regulations were used to restrict U.S. clients and bilateral diplomacy to compel countries outside Washington's immediate reach. The older policy of support for space launch programs was not dropped altogether, European governments met no U.S. resistance to their assistance to space launch programs in Brazil, India, Indonesia and elsewhere.

The Missile Technology Control Regime (MTCR) and internationalization of U.S. policy. The ad hoc approach was shaken by India's orbital launch of its SLV-3 space vehicle on July 18, 1980. The SLV-3 had an impact on the West similar to the effect of India's test detonation of a nuclear device in 1974. The earlier event catalyzed Western and Eastern governments to institutionalize multilateral restrictions on the export of nuclear fuel-cycle technology, leading to the establishment of the London Nuclear Suppliers Group, one of the essential bulwarks against nuclear proliferation. The SLV-3 test had the same effect of demonstrating the inadequacy of unilateral restraints on missile technology. Indian officials contributed to Western apprehensions, as did Satish Dhawan, then Director of the Indian Space Research Organization, who declared that "Any nation capable of launching a satellite can build an IRBM." Western reactions were not translated into policy quickly, for reasons that remain obscure, but there was a consensus on the direction to take.

The United States took the lead, although a specific policy on missile proliferation was not promulgated until November 1982 when the National Security Council approved DD-70. This provided

guidance for preliminary talks with the United Kingdom, where officials shared similar concerns. In 1983 formal discussions began with the United Kingdom, France, the Federal Republic of Germany, Italy and the United States. Later they were joined by Canada and Japan, making seven participants. These talks led to tentative completion of the Missile Technology Control Regime (MTCR) in 1985. French demands for U.S. concessions regarding the 1985 Treaty of Raratonga (the South Pacific nuclear weapons-free zone) delayed a public announcement until April 16, 1987.

The MTCR effectively internationalizes U.S. policy on missile proliferation. It obliges the eight participating governments (Spain joined in December 1989) to adopt restrictions on missile technology exports virtually identical to those previously established by Washington. Since they do not constitute a treaty, MTCR restrictions must be implemented and enforced by each participating government individually. The MTCR prohibits most exports of whole ballistic missiles able to carry a 500-kg warhead to a distance of 300 km. Major subassemblies such as engines and stages are proscribed similarly. The MTCR maintains reduced loyalty to the 1958 National Aeronautics and Space Act by permitting sales of smaller components and manufacturing technologies if it can be assured that they are to be exclusively for civilian space launch programs.

The MTCR is designed primarily with the dangers of the proliferation of nuclear armed ballistic missiles in mind. The 500-kg payload threshold is based on the assumption that a nuclear

proliferator's warheads will weigh at least that much. At the time the MTCR was negotiated, the dangers of chemical weapons armaments were not fully appreciated. It was not until analysts had the combined sights of Iraqi chemical weapons use starting in 1983-1984 and the massive use of conventionally armed ballistic missiles by Iran and Iraq in 1987-1988 that the possible synergism of missiles and chemical armaments became apparent. Because the technical requirements and military effects of chemically armed ballistic missiles are poorly understood, there has been no rush to amend the MTCR, which remains oriented toward the threat of nuclear armed ballistic missiles. The regime tries to address the proliferation of cruise missiles as well, although this too has proven to be more difficult due to the overlap with aircraft technologies that are an established part of the international arms market.

The MTCR reflects some distinctively U.S. security priorities. The moving force behind the MTCR came from U.S. Undersecretary of Defense Fred Ikle, who later sponsored the report Discriminate Deterrence, released in January 1988. The strategic-reorientation described in the report toward a greater emphasis on military preparations for regional contingencies met with little sympathy among European leaders. The same changing priorities can be seen in a report by U.S. Army Chief of Staff General Carl Vuono, A Strategic Force for 1990s and Beyond, issued in October 1989. Vuono foresees U.S. troop reductions in Europe to less than half present levels and greater preparation for events elsewhere.

Rising U.S. concern over the military implications of ballistic missile proliferation reflects the same shifting priorities. While many European governments share a general concern over missile proliferation, some do not share the strategic concerns motivating many U.S. officials, nor do they give the issue the same high priority.

Differences over economic policy also weaken the potential strength of the MTCR. The United States historically has been ready to sacrifice export markets for national security purposes: the MTCR fits into a pattern of deliberate trade-offs between exports and security dating to Jefferson's Embargo Act of 1807. The same philosophy guides restrictions such as Cocom, the London Nuclear Suppliers, Jackson-Vanik and the 1980 grain embargo on the Soviet Union. U.S. officials can easily convince their domestic listeners that the economic sacrifices lost by prohibiting exports of missile-related technology are small and acceptable. European nations, however, do not all make the same distinction between economics and national security. Most have strong export ministries and vigorous trade ideologies. They are less willing to sacrifice even relatively small export markets if it might mean trading military insecurity for economic insecurity. Largely as a result of this difference, some MTCR members have been unwilling to enforce its provisions aggressively, especially France, the Federal Republic of Germany and Italy, none of whom have acknowledged their adherence in formal public statements.

The greatest problems for the MTCR come not from its European participants, but from non-participants. Its membership does not include the two most important suppliers of ballistic missiles today: China and the Soviet Union. China has sold IRBMs to Saudi Arabia, reportedly is marketing a new missile with a range of 600 kilometers, and assists missile manufacturing projects in Iran and Pakistan. Soviet missile exports of 280-kilometer Scud-Bs fall under the MTCR threshold of 300 kilometers or more, but weaken the regime's credibility nevertheless.

Strengthening the MTCR approach. There are other serious difficulties with the MTCR and the entire concept of controlling missile proliferation through restrictions on technology transfer. There already is a large amount of relevant technology in regional hands and thousands of ballistic missiles which their owners cannot be expected to relinquish. Developing countries have begun to cooperate on a large scale to circumvent the MTCR by pooling their resources. This is clearest in the Argentine-Egyptian-Iraqi Condor II, as well as Egyptian-North Korean cooperation on Scud-B production and improvement, and North Korean Scud-B sales to Iran. Developing countries also have been caught trying illegally to acquire and smuggle missile technology out of MTCR member countries. There is growing awareness shared even among the staunchest MTCR advocates that this regime cannot permanently stop missile proliferation, although statements of frustration from officials in Argentina, Brazil and India show that it is slowing the process down. But since it does nothing to address the motives

for missile proliferation, the MTCR only can affect the rate of proliferation, not its ultimate progress.

Nevertheless, within the U.S. government and most of the West there is a consensus that the most effective way to cope with missile proliferation is by strengthening the MTCR, if only for lack of clear alternatives. The United States leads these efforts, encouraging better enforcement among participating countries, and working diplomatically to secure the adherence of non-participating exporters.

Enforcement efforts include domestic investigations by customs and federal agencies. As early as 1976 a Taiwanese engineering program at the Massachusetts Institute of Technology was closed when investigators determined it was being used to train experts in long-range missiles. Domestic U.S. enforcement efforts peaked in 1989, when an Iranian attempt to smuggle solid rocket fuel was intercepted in Rotterdam, Egyptian agents were convicted of conspiring to smuggle nose-cone materials, and South African agents were sentenced for conspiring to acquire missile guidance sets. It should be noted that these prosecutions were conducted through Operation Exodus, a program initiated in 1983 to stop illegal exports of U.S. technology to the Soviet Union. Since the mid-1980s Operation Exodus has become increasingly oriented toward the rising black market driven by demand from the developing world.

Washington also presses its European allies to enforce their restrictions on exports of missile technology more rigorously. This often leads to awkward confrontations of the sort typified by

the Rabta Libyan chemical weapons plant embroglio in late 1988 between Washington and Bonn. Pressure from the United States probably contributed to the German prosecution of aerospace giant Messerschmitt-Bolkow-Blohm for assisting missile development in Argentina and smaller firms supporting similar work in Libya. Italy is prosecuting employees of Snia-BDP for illegal missile technology exports and Sweden (not an MTCR member) is investigating Bofors. Other countries such as France (an MTCR participant), Austria and Switzerland have been reluctant to undertake investigations.

The greatest problem for MTCR enforcement is dual-use technology. There is no consensus on how to regulate multipurpose items such as mainframe computers and testing equipment. Failure to adequately oversee dual-use technology exports made it possible for several U.S. firms to contribute hundreds of millions of dollars of equipment as subcontractors for Iraq's missile R&D facility, Saad-16.

Soon after the MTCR was made public in 1987 the United States launched a diplomatic offensive to strengthen the new regime by attracting new members and, where formal participation was impossible, tacit adherence. In a series of speeches on the Middle East and on emerging themes in international politics, references to the dangers of ballistic missile proliferation became a routine warning. In one of the clearest statements, U.S. Secretary of State George Shultz observed that:

> Just at the point when we have begun to achieve greater strategic stability at lower

> levels of offensive nuclear arms, and just as we are getting a handle on the proliferation of nuclear weapons, we are seeing unexpected correlative dangers appear: the spread of sophisticated missile technology and the use of chemical weapons. These increase the potential for devastation in unstable regions of the Third World. And conflicts themselves may become far more difficult to contain or isolate.[5]

William Webster, director of the U.S. Central Intelligence Agency, pointed to the scope of the problem in congressional testimony. "By the year 2000," he fully expects that "at least 15 developing countries will be producing their own ballistic missiles."[6] Combined with these statements of alarm was a series of briefings on the MTCR for many non-participating European governments, including some East European governments. The British government also tried to build support for the regime. Yet progress in Europe has been slow. In December 1989, Spain became the first country to join after the original seven. The Netherlands and Sweden offer tacit support.

The United States raised specific ballistic missile export issues bilaterally with countries thought unlikely to participate in the MTCR. During meetings in Washington in September 1988, the Argentine defense minister was asked to restrain his country's missile cooperation with Egypt and Iraq. Earlier that year the U.S. Embassy in Brazil pressed that country to decline a Libyan invitation to cooperate on long-range missiles, with greater success. After disclosures in March 1988 that China was supplying Saudi Arabia with DF-3 IRBMs, Washington urged Beijing to renounce further ballistic missile sales to the Middle East. Secretary

Shultz and U.S. Defense Secretary Frank Carlucci raised the issue during meetings in China. There is recent evidence, however, that China has continued missile negotiations with Libya and Syria.

Discussions with the Soviet Union have received the most attention. At their May 29-June 2, 1988 Moscow summit, Soviet President Mikhail Gorbachev and U.S. President Ronald Reagan agreed to initiate bilateral discussions on the missile proliferation problem. A meeting of Soviet and U.S. arms control officials subsequently convened in Washington to discuss the issue on September 26, 1988. Soon after coming to office, the Bush administration promoted ballistic missile proliferation as part of a potential "fifth basket" of multilateral issues in which both superpowers had similar interests, along with the environment, drugs and terrorism. The "fifth basket" dropped out of sight soon thereafter. But President Bush continued to raise the specter of ballistic missile proliferation in his public addresses. At the Moscow ministerial meeting in May 1989, U.S. Secretary of State James Baker urged Soviet Foreign Minister Eduard Shevardnadze to bring the Soviet Union into the MTCR. While the Soviets were not swayed by these appeals, they have sustained a sympathetic dialogue. The joint statement of the Wyoming ministerial meeting held September 22-23, 1989 showed that, "The sides noted the importance of joint efforts by the United States and the Soviet Union to prevent the proliferation of missiles and missile technology and agreed to activate bilateral consultations on this pressing problem."[7]

A meeting of the eight MTCR participants in London on December 7, 1988, also brought agreement to hold regular meetings to maintain and strengthen the regime. In his December 12, 1989, speech in Berlin, otherwise concentrating on the need to establish "a new architecture for a new era" in Europe, Secretary Baker declared that weapons proliferation would be a priority for that architecture:

> Regional conflicts, along with the proliferation of missiles and nuclear, chemical and biological weapons, present growing dangers. Intensified NATO consultations on these issues can play an important role in forming common Western approaches to these various threats.[8]

Thus by the end of 1989, the United States had taken steps to make consideration of ballistic missile proliferation a routine part of superpower relations and trans-Atlantic consultations. The MTCR was at the center of this process, but the process also was understood to be more important than the MTCR, so that other nations could readily be brought into consideration of the issue.

Controlling Ballistic Missile Proliferation Over the Long Run

Despite its importance, there is widespread appreciation in Washington that the MTCR is not a sufficient instrument for coping with missile proliferation ten or more years hence. Yet there is no consensus on the best direction in which to proceed.

One of the more popular proposals calls for negotiation of regional confidence- and security-building measures (CSBMs) similar to the precedents of the Stockholm Agreements in Europe. While

this would do little if nothing to reduce the actual numbers of regional ballistic missiles, it could ameliorate regional tensions and reduce pressures to acquire new ballistic missiles, strengthen crisis stability and reduce dangers of preemptive attack. Measures such as information exchanges, mutual visits to military facilities, notification and observation of weapons tests and military exercises, and other mechanisms to promote consultation and ease suspicion could make a palpable difference. Some progress already has been made elsewhere. Argentina and Brazil have held mutual visits to each other's nuclear facilities. India and Pakistan agreed not to attack each other's nuclear facilities in 1985. But the lack of even a rudimentary political dialogue between key nations in the Middle East precludes negotiation of a CSBM agreement there for the foreseeable future. With Iran and Iraq and Israel and Syria locked into technical states of war, separated by difficult territorial issues and the presence of the all-pervasive Palestinian issue, even modest CSBMs appear ambitious in the Middle East.

In December 1988 the outgoing Reagan administration proposed steps to start dialogues with Egypt and Israel to explore paths that might lead to regional arms control. With Egypt and Israel at peace since the ratification of the Camp David Accords in 1979, it was believed that they might offer a basis for agreements that could eventually be extended to include other nations in the region. Separate meetings were proposed with Egyptian and Israeli leaders to start the process. The question was raised with

Egyptian President Mubarak during meetings in Washington a few months later. When Israeli Prime Minister Shamir visited Washington the following week, the discussions were dominated by consideration of the Egyptian and U.S. peace proposals and the ballistic missile issue apparently failed to come up. Nothing has been heard of the proposal for Middle Eastern regional arms control since.

The Israeli ballistic missile arsenal is becoming perhaps the most important single issue shaping future U.S. policy on missile proliferation. Since its missile programs appear to be entirely independent of new foreign technology, Israel is beyond the reach of the MTCR. Nor is Washington willing to endanger Israeli security by taking aggressive measures to restrain its nuclear and ballistic missile programs. Despite the obvious conflicts with its nuclear non-proliferation policies, the United States has tolerated Israel's nuclear weapons program. U.S. commitment to controlling the spread of ballistic missiles has not led to criticism of Israel's Jericho II missile or its Shavit space launch vehicle. Indeed, the United States finances SDI research in Israel and currently has a $128 million contract with Israeli Aircraft Industries for development of the Arrow anti-tactical ballistic missile (ATBM). Scheduled to be launched in 1991, the Arrow is equivalent to a very high-speed ballistic missile with a surface-to-surface range of approximately 150 to 250 kilometers.

U.S. unwillingness to act to restrain Israeli ballistic missiles undermines the legitimacy of its efforts to control

Egyptian, Iraqi, Syrian and other countries' missile forces, especially in the eyes of the Arab world. Consequently, exceptionalism toward Israel virtually precludes progress in controlling Middle Eastern missile proliferation. Public demonstration of U.S. displeasure with Israeli actions such as its ballistic missiles sales to South Africa or possible use of U.S.-supplied computers in missile research are not enough to offset Arab feelings. As Geoffrey Kemp expressed it, "To expect the Arabs to give up or put restrictions on the very categories of technology which trouble Israel, without any effort to place limits on Israel's missiles and nuclear devices, is unrealistic."[9]

The Evolution of Soviet Ballistic Missile Export Policy

Starting in 1961 with a limited transfer to Cuba, the Soviet Union made ballistic missile exports a routine element in its arms transfer policy. By the end of 1989, Moscow had supplied at least 2,300 ballistic missiles to 11 regional clients and allies, mostly in the Middle East (Figure 3). While a few of these countries have made large investments and diplomatic efforts to develop alternative sources for ballistic missiles, Soviet-made systems still comprise most if not all of their deployed missile forces.

It is ironic that after supplying ballistic missiles with relative freedom for over 20 years, the Soviet Union is the major power most directly threatened by missile proliferation in the 1990s. Yet Moscow also has demonstrated restraint over aspects of its missile trade. Indeed, Moscow is increasingly sensitive to the

dangers of missile proliferation and forthrightly contributes to international deliberations on the issue. While Soviet officials are cognizant of the dangers the problem poses to Soviet and international security, there is strong resistance in Moscow to dramatic shifts in policy on ballistic missile transfers. Willingness to discuss the problem and its dangers has not be translated into deeds.

From arms transfers to ballistic missile transfers. Some policy on exports of ballistic missiles grew directly out of arms export and military assistance policies. Soviet arms exports to developing countries outside the Warsaw Treaty Organization (WTO) really began in 1955 with the massive transfer of military equipment to Egypt through Czechoslovakia. This was then followed by smaller shipments in support of newly independent nations in Africa, Asia and the Middle East. Other large transfers followed in the early 1960s as Algeria, Cuba and especially Indonesia received shipments to completely reequip their armed services.

Through the 1960s most major Soviet arms deals were arranged on concessionary terms, dominated by generous offset arrangements such as barter with local commodities, repayment with local soft currency, low-interest loans and outright grants. In the mid-1970s this approach gradually yielded as Soviet arms recipients became wealthier and better able to pay and as the Soviet Union became more dependent on arms exports in its foreign trade. By the early 1980s, only Cuba and Vietnam received Soviet military equipment under the same terms as during the 1960s. A few other

recipients, most prominently India, were allowed to pay for Soviet armaments through favorable offset and local currency schemes. Most other clients, especially those in the Middle East, found the new Soviet terms to be only slightly more competitive than Western financing arrangements. Arms exports had become a leading source of Soviet hard currency earnings, constituting approximately 40-50 percent of Soviet exports of manufactured goods, 15-20 percent of all Soviet exports.

Soviet transfers of ballistic missiles were part of this shift from aid to trade in military equipment exports. The first transfer of Frog-4 missiles to Cuba in 1961 appears to have been exceptional. Large-scale missile transfers did not begin until 1968 when Egypt received the more advanced Frog-7. The transfer was an important signal of support of Egyptian President Nasser after the destruction of his forces during the 1967 war with Israel. The timing also appears to have been affected by technical factors within the Soviet Union; the Frog-7 was transferred about four years after it became operational in the Soviet Union, permitting Soviet divisions to be equipped first. The same pattern was followed with other weapons systems and ballistic missiles transferred to regional allies.

If the conventionally armed ballistic missiles were intended to compensate for the weakness of Arab air forces against Israel, the initial military experience in 1973 was disappointing. Several dozen Syrian Frog missiles and Egyptian Scuds were fired against targets in Israel, but their low accuracy made the attacks

ineffectual. The enduring effect of these small missile strikes was to accelerate the regional arms race as Israel sought additional ballistic missiles from the United States and other Arab governments sought Soviet missiles of their own.

After the 1973 war, Soviet transfers of ballistic missiles to the Middle East became widespread. Egypt and Syria were resupplied and augmented their missile inventories. Iraq and Libya also received substantial forces, while other Arab countries received token quantities. The scope and scale of these transfers do not reflect any detectable strategic or tactical rationale. Indeed, for some recipients such as Algeria, Libya or South Yemen it is virtually impossible to construct a credible military role for these weapons. The use of these missiles in 1973 showed that conventionally armed, low-accuracy ballistic missiles are politically provocative but military ineffective. Nor did the recipients explicitly justify their missile purchases in strategic or tactical terms. Rather, symbolism and prestige appear to have been the reigning principles.

There is no evidence of a Soviet decision that such transfers were militarily essential either. Soviet ballistic missile transfers were guided more by standard operating procedures initially, and later by economic consideration. Ballistic missiles became part of the normal Soviet table of organization and equipment for its army units in the 1960s. Soviet arms transfer policy is normally simply to send complete tables of equipment. Where Western arms exporters typically supply weapons systems by

individual type and in quantities specified by the recipient, Soviet practice is to furnish whole regiments or divisions of military equipment. An individual Soviet arms transfer arrangement might specify a motorized rifle division and include tanks, armored personnel carriers, scout cars, artillery, antiaircraft weapons, combat engineering and logistic vehicles, as well as a certain number of ballistic missiles. A fully equipped Soviet tank or motorized rifle division has one ballistic missile battalion with four Frog-7 or SS-21 launchers. An army command also has one Scud-B brigade with 12 launchers. The distribution of Soviet ballistic missiles in the Middle East conforms closely to this routine pattern.

As greater quantities of ballistic missiles were transferred abroad, the process became more institutionalized. Initially Soviet ballistic missile transfers were accompanied by Soviet personnel, ostensibly to train recipient country personnel, but also to oversee employment of the missiles. In 1979, Kuwait purchased Frog-7 missiles as part of a larger Soviet arms deal, but refused to permit Soviet instructors permanently on its soil. In response, Moscow established a Frog and Scud missile course to train new recipients.

In the early 1980s commercial consideration became more explicit. As commercial arms sales became more important to the Soviet economy, clients able to pay hard currency were able to specify distinct national requirements. Moscow's preferred defense client, India, has been able to insist on modification to standard

Soviet military equipment and purchasing practices since the late 1960s. Over the years more Soviet recipients were able to express this privilege. As part of its large arms purchases in the early 1980s, Libya accumulated exceptionally large Frog and Scud missile inventories. Iraq was able to purchase about 300 Scud missiles in 1985 for use against Iran. Other large ballistic missile sales may have gone unnoticed; the Iraqi deal was discovered only when President Hussein fired the missiles in 1987-1988.

Restraint in Soviet technology transfer policy. In a mirror image of Western practices, the Soviet Union sells ballistic missiles relatively freely but it has always been extremely careful about transferring individual rocket technologies. This restrictiveness is pervasive throughout Soviet military export policy. Ever since the 1950s, when Soviet leaders supplied virtually every kind of military production license and manufacturing technology to China only to have it turned against them after the split in 1960, Moscow has been hesitant to offer component technology or production licenses for anything other than small arms. Soviet leaders also traditionally are unwilling to provide long-range weapon systems. Despite the relative ease with which Moscow sells Scud missiles, longer-range missiles such as the SS-12 (sought by Libya and Iraq) or the SS-23 (requested by Syria) have been refused consistently.

While the Soviet Union is a strong verbal supporter of almost anything connected with the peaceful use of outer space, it has not assisted efforts by developing countries to manufacture their own

space launch vehicles. Even transfers of suborbital sounding rockets were ended during the early 1960s. The Soviet Union furnishes its regional allies with satellite tracking facilities, down links, and readily offers its own launch services, but direct transfers of rocket technology do not appear to have occurred. India's SLV-3 launch vehicle and Agni IRBM, for example, do not appear to contain any Soviet technical contributions.

Important technology transfers have occurred, however, as the unintended consequence of ballistic missile transfers. Through the acquisition of Soviet ballistic missiles, many Middle Eastern militaries also acquired important skills in at least five areas: setting national missile force requirements, concealment and protection, handling and maintenance, targeting policy and techniques, and launch procedures. These skills may have facilitated the establishment of indigenous ballistic missile development programs using Western components and assistance.

Transfers of ballistic missiles to the Middle East also started a cycle of uncontrolled missile sales and development. After terminating Soviet assistance agreements in 1974, Egypt shared its Soviet hardware with several countries, particularly with China. A Scud-B missile and launcher received from Egypt in the late 1970s led to Chinese development of its M-series missiles with twice the range, now being offered to Soviet arms clients against Moscow's wishes. Egypt also furnished Scuds to North Korea, where the missile was reverse engineered and put into unlicensed production in 1985. North Korean Scuds were used by

Iran to hit Iraqi targets in 1987-1988. Iraq developed Scud-versions with double or triple normal range. When used against Tehran, these Scud-versions triggered a diplomatic crisis in Soviet-Iranian relations. Egypt and North Korea are reportedly developing an improved Scud-version of their own.

Moscow debates a new direction. Soviet exports of ballistic missiles to the Middle East met with no serious challenges for almost 20 years, remaining a consistent element of Soviet military assistance policy. The only known consideration of an alternative to regular transfers came during the 1977-1978 Conventional Arms Transfer talks, a Carter administration initiative to control the arms trade. The talks quickly ran aground in a sea of incompatible goals and priorities, but not before negotiators discovered a mutual interest in prohibiting exports of ballistic missiles. The degree of agreement remains obscure and the brief record of the negotiations reveals mostly that the two sides used identical language to mean very different things. The talks collapsed before the extent of agreement on ballistic missiles could be assessed.

The Soviet Union did not begin to publicly reconsider its approach to ballistic missile exports until the late-1980s. Two factors appear to have been instrumental in this reevaluation: U.S. diplomatic activity regarding the MTCR, and the rising Israeli ballistic missile capabilities.

The Soviet Union was deliberately excluded from the MTCR negotiations which began in 1982-1983. This was the time when Western relations with Moscow were at their nadir. 1983 was the

year of a blatant Soviet effort to influence the West German federal elections, the destruction of Korean Airlines flight 007 and the Soviet walkout from the Geneva and Vienna arms control negotiations. Most NATO governments shared an image of the Soviets as mischief-makers or worse, whose presence would complicate the negotiations unnecessarily and hinder an agreement. As the leading exporters of ballistic missiles, the USSR was also thought to have no genuine interest in restraint.

By the time that a Soviet delegation was formally briefed in London on the MTCR in the spring of 1987, East-West relations were rapidly improving. Under Gorbachev the Soviet Union was reducing its regional commitments and searching for cooperative solutions to regional conflicts. Soviet officials were sympathetic to the goals of the MTCR but suspicious of its discriminatory approach, forbidding transfers of a whole class of technology to the Third World but offering virtually nothing in return.

A series of meetings with U.S. and other Western officials gave Soviet leaders an opportunity to develop a clearer position. Several of these meetings were elaborated in the United States section above. Over the next two years, Soviet officials articulated several reasons for refusing to join the MTCR:

- The Soviet Union would prefer an agreement with balanced obligations for technology recipients and suppliers alike.
- A regime should restrict regional missile manufacturers like Israel, not just importers of foreign missile technology.

- The MTCR's definitions and thresholds for proscribed technology were too vague and invited disputes over interpretation.

- Some foreign observers maintained that the Soviet Union wished to avoid pressure on its right to export Frog, Scud and SS-21 ballistic missiles, although their sale is permissible under the letter of the MTCR.

- At times Soviet officials sought Western support for their civilian launch services in exchange for MTCR participation.

- On other occasions restrictions on exports of weapons with similar capabilities was sought, especially for multirole fighter aircraft.

- A final demand was that China observe equivalent restraints also.

At the same time that U.S. officials were trying to persuade their Soviet counterparts on the need for controls on long-range missile exports, Moscow's own security was coming under direct threat from events in Israel. In July 1987, it was publicly revealed that Israel has test-launched its Jericho II IRBM to a range of 480 kilometers. When fully developed, the system was expected to have a maximum range of 1,450 kilometers, sufficient to reach targets in the southwestern Soviet Union. At that range, the system could only be justified if it were armed with nuclear weapons, which Israel almost certainly has.

The Soviet reaction was broadcast over Radio Moscow's Hebrew language service in a series of criticisms of the Jericho II program, culminating in a statement on July 23, 1987, that the missile "is a nuclear challenge to the Soviet Union and a threat to its security." A statement the next day urged Israel to "Think twice again about the influence of developing the missile that can

strike at the territory of the Soviet Union." A broadcast a few days later was even more explicit, warning Israel to reconsider "consequences it could not possibly handle." The Jericho II was described as "a threat to economic and strategic centers, such as the oilfields in Baku and Black Sea naval bases." Continued development of the missile "will force the Soviet Union to carry out defensive and political steps," although these were not specified. Further Jericho II test flights in November 1988 and September 1989 were denounced similarly.

On September 19, 1988, Israel launched the Shavit space launch vehicle, a four-stage, 25-ton indigenously developed rocket, lifting a satellite into orbit. Calculations in the United States showed that the rocket could carry a nuclear-sized payload a distance of up to 7,000 kilometers, more than sufficient to reach Moscow. Israel clearly has the capability to manufacture an ICBM, although the Shavit probably is too complex to be suitable in that role.

Rising concern with the ballistic missile proliferation threat reached the top of the Soviet leadership. In his speech at the opening of the Vienna negotiations on Conventional Forces in Europe (CFE), Soviet Foreign Minister Eduard Shevardnadze called attention to the new Israeli programs as well as Saudi Arabia's Chinese-supplied DF-3s:

> In the Middle East and Southwest Asia--that is, in close proximity to Europe--powerful weapons arsenals are being created. . . missiles have already appeared with a range of 2,500 kilometers, that is to say, of precisely the same class that is being eliminated from

> Europe. . . .The conclusion is obvious: the process of disarmament in Europe and settlement in the Middle East have to be synchronized.[10]

Soviet alternatives to the MTCR. At this point, Soviet participation in the MTCR probably is out of the question. The regime is too reminiscent of Cold War antagonisms. Accepting its discriminatory terms would undermine Soviet relations with its most important regional allies, especially India, the most outspoken critic of the MTCR. Moreover, too many Soviet policies currently are being implemented through ballistic missile transfers, including massive transfers to maintain the Afghan government in Kabul in its fight with the Mujihadeen.

Instead, Moscow already has implicitly adopted a policy of case-by-case review on missile exports, which no longer seem to occur as routinely as they did ten or even five years ago. This approach is manifest in the Soviet refusals to Syria's regular requests for SS-23 ballistic missiles. The same case-by-case approach leads to an emphasis on Israeli ballistic missiles as opposed to the equally long-range missiles tested by Iraq. It also has fostered at least one diplomatic initiative, when Gorbachev raised the question of Chinese efforts to sell their M-series missiles to Libya and Syria during his meeting in Beijing with Chinese leaders, May 14-16, 1989.

Soviet Deputy Foreign Minister Victor Karpov has suggested that the MTCR should be replaced with a new organization for all countries based on the International Atomic Energy Agency (IAEA), imposing limits on missile proliferation while encouraging

cooperation in peaceful uses of outer space.[11] Although he has not been specific, it would be consistent with such an approach to present the issue before the United Nations General Assembly. Soviet Deputy Foreign Minister Vladimir Petrovsky has urged that the United Nations be used more aggressively to resolve issues of war and peace. Soviet analyses of the international arms trade usually arrive at the same conclusion. In this regard it is striking that President Gorbachev failed to raise the issue of ballistic missile proliferation in his important and wide-ranging December 7, 1988, speech to the UN General Assembly.

The most promising mechanism for greater restrictions could be a post-INF agreement on short-range nuclear forces. A treaty banning short-range systems such as Frog and Scud missiles would compel Moscow to control and probably to cease its exports of those systems. Rather than make a treaty on short-range nuclear forces less likely, this would provide Soviet leaders with a legitimate and acceptable explanation for its regional friends and allies. It would help bring to a close the destabilizing trade in ballistic missiles. But it would still leave the more daunting task of how to address growing regional indigenous missile capabilities.

Footnotes

1. Diplomatic barriers prevented NASA's technology transfer program from being extended to the Middle East. Hopes of resuscitating the Central Treaty Organization (CENTO) alliance precluded extending symbolically significant aid programs to Israel in the late-1950s and early 1960s. The only Arab nation in a technical position to accept such aid was Egypt, but acrimonious relations with President Nasser ended all major U.S. assistance after the 1955 Aswan High Dam dispute.

2. Both superpowers already had transferred missiles or missile technology to their European allies in the late 1950s. This side of the rocket and ballistic missile trade grew in the 1960s, but it generally was accepted at the time.

3. The Lance missile also was transferred to the United Kingdom, the Federal Republic of Germany and Italy. Israel appears to have been unsatisfied with the Lance, which it assigned to its artillery corps instead of to the strategic force that operates its Jericho missiles. Unable to buy the Pershing 1A, Israel set out to develop its own equivalent, the Jericho II.

4. In the mid-1980s, engineers previously involved in Otrag returned to Libya to participate in another, larger and more secretive ballistic missile project.

5. George Shultz, "The Ecology of International Change," San Francisco, October 28, 1988, Current Policy No. 1120 (Washington, DC: U.S. Dept. of State, 1989).

6. William Webster, "Testimony on Nuclear and Missile Proliferation," hearing before the Senate Committee on Governmental Affairs, May 18, 1989.

7. "Joint Statement of the Wyoming Ministerial," in Arms Control Today (October 1989), p. 22.

8. "Baker's New Europe: 'A New Atlanticism,'" International Herald Tribune, September 14, 1989, p. 4.

9. Geoffrey Kemp, "Middle East Opportunities," Foreign Affairs 68, No. 1 (1989) pp. 156-157.

10. Shevardnadze quoted in Thomas L. Friedman, "Soviet Mideast Diplomacy Linked to Missile Fears," International Herald Tribune, March 25-26, 1989, p. 1.

11. May 24, 1989, Novosti interview, quoted in David Silverberg, "MTCR More Likely to Lure Soviet Union than China," Defense News, September 4, 1989, p. 31.

Figure 1

U.S. Ballistic Missiles Exported or Sought in the Middle East

designation	range (km)	weight (kg)	CEP (meters)	year first operational	year first exported	total exported*	recipient
Honest John	37	2,640	?	1954	1959	54	Turkey
Lance	120	1,527	350	1972	1975	160	Israel
Pershing 1A	740	4,520	400	1962	refused	---	---

* total exported to Middle East only.

Figure 2

Soviet Ballistic Missiles Exported or Sought in the Middle East

designation	range (km)	weight (kg)	CEP (meters)	year first operational	year first exported	total exported*	recipient
Frog-5/7	50/70	2,500	400	1959/1965	1968/1973	480	Algeria, Egypt, Iraq, Kuwait, Libya, Syria, South Yemen
Scud-B (R-17E)	280	6,370	1,000	1961	1973	1,900	Afghanistan, Egypt, Iran, Iraq, Libya, Syria, South Yemen
SS-21 Scarab	120	1,500	300	1976	1983	60	Syria, North Yemen, South Yemen
SS-23	500	4,690	350	1980	refused		------
SS-12	900	9,000	1,000	1967	refused		------

* total exported to Middle East only.

Soviet export totals include missiles expended in the 1973 war, Iran-Iran 1980-1988, and in Afghanistan since 1988.

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Ballistic Missiles and Chemical Weapons in the Middle East

by

Mark A. Heller

At first glance, the introduction of ballistic missiles and chemical weapons (CW) into the Middle East and their use in combat appear to be new elements in the strategic equation of the region. In fact, these developments are not without precedent. In the mid-1960s, Egypt attempted, with the help of German experts, to develop an indigenous missile-production capability; prototypes (or possibly mock-ups) of three models were paraded through Cairo, but they never reached operational status and the project was eventually abandoned. On the other hand, in the 1960s Egypt did make operational use of poison gases in the Yemen war.[1] And during the 1973 Yom Kippur War, surface-to-surface missiles (SSMs) were fired on several occasions: during the first week, Soviet-supplied Syrian FROG rockets were aimed at the Israeli town of Kiryat Shmona and at the Ramat David airbase (though in the latter case, the warheads actually landed in a nearby settlement), and just before the ceasefire, Egypt launched one or two SCUDs in the direction of Israeli-held bridges across the Suez Canal.[2]

Despite these instances, however, the widespread acquisition of ballistic missiles and chemical weapons and the concerted use of these weapons are essentially phenomena of the 1980s. More specifically, important thresholds in the limitation of warfare were breached during the Iran-Iraq war, and the fact that no

sanctions were applied against those who used both chemical weapons and ballistic missile technologies has important ramifications, both for the probable pace of future proliferation and for the prospects that available capabilities will actually be used in future conflicts. This is particularly worrisome insofar as chemical weapons are concerned, since Iraq's documented use of these weapons is a clear violation of a treaty--the 1925 Geneva Convention--to which Iraq itself is a signatory. Of course, it must be noted that the use of these weapons was not entirely spasmodic or uncontrolled. Iraq used chemical munitions dozens of times, but it was careful to do so only on its own territory or just across the front line, generally as a weapon of last resort on the battlefield (although there were several instances of attacks against Kurdish civilians, including one on the town of Halabja which resulted in thousands of deaths); and the missile bombardment of enemy population centers, with conventional warheads, appears to have proceeded according to some sort of tacit dialogue with respect to frequency and intensity of attacks.

Nevertheless, any confidence which states may have had in the restraining effect of formal arms control mechanisms, not to mention informal norms, has been seriously undermined, and states will be more inclined than ever to base their security on self-help, i.e., on deterrence through the threat of retaliation in kind. It is difficult to imagine any kind of regime that would reverse the proliferation that has already taken place, and in a region rife with unresolved conflicts of the most intense

character, the prospects are for increasingly unstable military balances and increasingly destructive wars should those balances breakdown.

There is more than a touch of irony in the concern expressed by the superpowers in recent years about the proliferation of ballistic missile technology. After all, most Middle Eastern states acquired their first missiles from superpower patrons, and many are still entirely dependent on these sources. The superpowers were not always enthusiastic "pushers" of these weapons, and occasionally they resisted demands for particular systems (such as the Pershing, which the United States denied to Israel, and the SS-23, which Syria has for years been unable to obtain from the Soviet Union). On the whole, however, the transfer of these technologies to the Middle East follows the same logic that explains the diffusion of other military technologies: the perception that weapons are the currency by which political, strategic or commercial advantage can be gained or preserved in the Middle East. This is particularly evident with respect to the Soviet Union. Soviet SSMs, especially the FROG-7 and SCUD-B, are by far the most common missile in regional arsenals; of 11 Middle Eastern states possessing such missiles, at least nine have Soviet models (and a tenth, Iran, is also reported to have SCUDs, of uncertain provenance).

As in most other fields, however, here too there has been a diffusion of knowledge, and the missile market has been diversified and to some extent even privatized. China has supplied the CSS-

2 intermediate-range missile to Saudi Arabia and was reported to be on the verge of agreeing to sell the medium-range M-9 to Syria before it was dissuaded by the United States, and Brazil has reportedly supplied short-range missiles to Iraq and Saudi Arabia.[3] Secondly, the experience gained in maintaining and operating imported missiles created on elementary technical infrastructure for local modifications and ultimately indigenous production. Thus, Egypt has developed the Saqr-80, which is launched from FROG-7 launchers; Iraq has produced two SCUD-B upgrades; Iran has deployed and used the domestically-produced Oghab and is said to be working on two other short-range missiles; and Israel, with the most advanced technological base in the region, has reportedly produced several marks of the Jericho missile. Finally, there is a growing tendency to cooperate with emerging producers in other parts of the Third World; the most publicized consortium involves Egyptian and Iraqi participation in the manufacture of the Argentinian Condor, but these two Middle Eastern states are also assumed to be cooperating with North Korea on various refinements to basic Soviet SCUDs.[4]

The motives for acquiring or producing surface-to-surface missiles have been analyzed in far greater detail than is probably warranted. The complex of reasons usually cited includes the need to match regional rivals, cost-effectiveness, economic spin-offs (space programs, meteorological programs, etc.) and national prestige. But in the final analysis, missile technology, like most other military technology, is sought because it exists; the

peculiar requirements of individual states rarely provide more than commentary on a fundamental theme. In any event, consequences matter more than intentions, and the presence of missiles in various arsenals imposes itself on the logic of strategic relationships.

The major effect is to enhance the incentive to strike first, either as part of a premeditated offensive thrust, or as a preemptive action in the context of a political crisis. This is true at the highest level of abstraction, simply because of physical properties: barring some malfunction, missiles, once launched, are virtually certain to reach their targets. The only way that A can protect itself from B's missiles is to destroy them before they are launched, but since such "defensive" action by A also threatens B's capacity to retaliate against any aggression by A, B as well as A will be strongly influenced by the familiar logic of "use 'em or lose 'em" during a crisis of any sort. In other words, missile-armed protagonists, as a first-order principle, are very intolerant of ambiguity in their security relationships; vulnerable first-strike weapons, almost by definition, create a mutual fear of preemption which is the antithesis of crisis stability.

In the specific case of Israel and Syria, the presence of missiles is particularly destabilizing because it undermines the asymmetries which have kept the border between them quiet for 15 years despite the total absence of anything resembling equilibrium in the political and military doctrines of the two sides. Given

technologies rarely affect different protagonists in the same way; in this instance, ballistic missiles tend to constrain Israeli strategic options while expanding Syrian ones. In terms of their overall political postures, Israel is a status quo power with no defined national objectives that can be translated into a military idiom. Syria, however, is very much a revisionist power, and however its objectives are defined--ranging from the minimalist one of regaining the Golan Heights to the maximalist one of destroying Israel--they can be promoted through military means. Moreover, the Syrian leadership has consistently asserted its belief that Arab objectives will not be secured at least until the Arabs (under Syrian leadership) have developed a credible military option.

Despite unstinting efforts and great economic sacrifice, Syria has not developed a high-confidence military option and has therefore refrained from launching any military initiative against Israel since the end of the War of Attrition in 1974. Alliance considerations aside, Syrian hesitation has been dictated by two overriding considerations: overall Israeli superiority in mobilized military power, and Israeli escalation dominance stemming from air superiority. Both points require some elaboration.

At any given point in time, the ratio of standing forces greatly favors Syria, and there is little to prevent Syria from making initial gains following a surprise attack. Most of Israel's combat forces, especially its ground formations, are made up of reservists who must be mobilized, assembled, equipped and moved to the front before their power can be brought to bear. Israeli

doctrine requires that this be done quickly in order to deny Arab attackers the chance, either through military entrenchment or diplomatic intervention by the international community, to consolidate whatever initial gains they make. This, in turn, depends on the ability of the air force to take part in delaying operations at the front as well as to keep the skies over Israel clear and the rear area relatively free of disruption while reserves are mobilized during the critical first hours of a war. As long as Israel is assumed to have this capacity, it not so much the fear of immediate failure as it is the prospect of a swift and punitive Israeli counteroffensive that explains Syrian reluctance to move on the Golan Heights.

Alternatively, Syria might have been tempted to replicate the success of 1974 (i.e., the "liberation" of Kuneitra through political means) by launching a static war of attrition in order to weaken Israeli resolve in inflicting a steady stream of casualties while provoking active intervention by the superpowers. But what makes this an unacceptably high-risk proposition is Israel's credible threat to escalate, if not by resorting to war of maneuver, then at least by using air power to carry the war into the enemy's rear area. Israel has always enjoyed a marked advantage in the ability of its air force to deliver ordnance beyond the frontline; Syria could not really deter Israel from resorting to deep-penetration bombing tactics because it could not develop a capacity to retaliate in kind. Instead, it tried to neutralize Israeli capacity by making formidable investments in air

defense, but the failure of the Syrian airforce in the air contest in Lebanon in 1982 revealed that not enough had been accomplished in this regard.

Missiles hold out the promise of resolving both strategic dilemmas for Syria. As a counterforce weapon, they can be used in the opening stage of an initiated war to disrupt the mobilization of Israeli reserves. With a sufficient number of highly accurate missiles, even if equipped only with conventional high-explosive warheads, Syria could target Israeli assembly points, transportation junctions, communication facilities, POMCUS's and airbases, and thereby hope to delay the mobilization of reserves long enough for the Syrian advantage in standing forces to produce some significant territorial gains. As a counter-value weapon, missiles might provide Syria with a threat against Israeli population centers sufficient to neutralize Israel's deterrent against a Syrian-initiated war of attrition--the threat to employ air power. Incidentally, it was precisely this logic which made the Soviet Union, itself unenthusiastic about a new war in the Middle East, so reluctant to provide Egypt with a deep-strike capability before the 1973 Yom Kippur October war.

Economically, too, missiles represent a more cost-effective way to achieve this highly desirable capability. Theoretically, reusable manned aircraft are a cheaper (and more flexible) system for the delivery of ordnance against enemy targets, but if aircraft and pilots tend to get shot down before they reach their targets, their cost curve becomes very, very steep.

In almost every respect, then, the acquisition of a significant Syrian missile capability makes the world appear safer for conventional war (whether of movement or attrition), regardless of Israel's capabilities in this field, and in some circumstances, the benefit to be derived from using missiles first is, ipso facto, a strong incentive to do so.

Given Israel's well-known sensitivity to civilian casualties, even a limited counter-value threat might be enough to give Syrian decision-makers a margin of confidence they previously lacked. Outfitting missiles with chemical warheads would add another dimension to intra-war deterrence while providing a kind of "safety net" against worst-case contingencies: collapse of the Syrian army and/or an Israeli threat to march on Damascus. However, the battlefield advantage would be unpredictable (since Israeli forces are reputed to be at least as well prepared as any Arab adversary to operate in contaminated areas) and the strategic advantage would also be dubious given Israel's retaliatory capability. Although the use of chemical weapons might be calculated to produce a political shock, triggering superpower intervention, there is little, on balance, to indicate that Syria would derive any benefit from introducing chemical weapons into a war. The most logical purpose for Syria's chemical arsenal is to act as some kind of ultimate counterdeterrent to the nuclear capacity which it attributes to Israel.

The historical role that Israel's superior deep-penetration capability may have played in preventing the expansion of Arab war

coalitions must necessarily be speculative, but it is at least arguable that geographically more remote Arab states were deterred from sending expeditionary forces by the implicit threat that Israeli air power would be used against them in a punitive fashion. To the extent that this consideration was of any consequence, the acquisition of a retaliatory capacity in the form of ballistic missiles may make Arab leaders on the periphery (especially in Iraq) less wary of becoming involved in active hostilities with Israel. In other words, just as Syrian leaders might conclude that ballistic missile proliferation had made the theater appear safe for war, so may other Arab leaders come to believe that mutual assured damage to the rear area had made it safe to intervene.

Even in the pre-missile era, Israel always had a nervous military posture. The presence of missiles, especially if armed with chemical weapons, simply strengthens the logic of preemption, and as the threat is geographically dispersed, i.e., as more states acquire missiles, so does the temptation to undertake what could be termed "all-aspect preemption." In other words, there is at least a possibility that the mere possession of ballistic missiles by more remote Arab states, such as Saudi Arabia, will cause them to be directly implicated in any Syrian-Israeli conflict, whatever their own intentions might be.

However, preemptive attack in every direction is exceedingly complicated, both from the operational and political perspectives, and, in the near term at least, the most feasible course for Israel in any crisis will be to focus on Syria, in the expectation that

the rest of the Arab world will take care of itself. The reasoning is as follows: Syria poses the most immediate threat and also possesses the most effective air defenses in the region. Therefore, Israel's own limited missile capability should first be used to neutralize the Syrian missile threat. Against other Arab states, the Israeli air force has a greater capacity to penetrate and it can therefore be held in reserve to deter against any subsequent use of Arab missiles that might be contemplated.

In any scenario, preemption is a messy option. Strategic warning is almost never absolutely unambiguous, and aside from operational uncertainties, the political considerations will always be daunting. Consequently, Israel would prefer if possible to neutralize the missile factor by other means, and it is not surprising that a considerable investment is being made in anti-tactical ballistic missile (ATBM) defenses. Any comments about progress in this field would be sheer speculation; suffice it to say that any demonstrated movement toward a defensive capability would have an inhibiting effect on Syrian decision-makers thinking about using a missile strike to pave the way for a successful offensive on the ground.

In many respects, Iraq's strategic dilemma vis-à-vis Iran resembles that of Israel vis-à-vis Syria (and, a fortiori, any broader Arab war coalition). The analogy, of course, should not be carried too far. Iraq enjoys far more strategic depth than Israel, both in the geographical sense and in terms of a resource hinterland--allies in the Arab world--upon which it can draw.

Still, Iraq, like Israel, suffers from overall resource and manpower inferiority and it has sought to compensate for this by establishing deterrence through escalation dominance based on a deep-strike capability. Iraqi air power and missile strikes inflicted a very heavy cost on Iran's economy and society during the war, and although Iran was not completely incapable of retaliating, the imbalance of pain from these Iraqi deep strikes was so great that it was one of the major reasons that Iran was eventually compelled to agree to a ceasefire after eight years of bloody and inconclusive fighting.

Since the Iran-Iraq ceasefire has not been converted into a peace settlement, there is still a political basis for renewed combat; in any event, the force postures and military procurement policies of both sides do not reflect a conviction that the war which ended in August 1988 will never flare up again. In contrast to the Syrian-Israeli arena, the Iran-Iraq theater is too large for initial tactical gains to have momentous strategic consequences. Consequently, neither an opening missile strike nor a ground attack involving CW could decide the outcome of a new war, and this means that there is less incentive to employ these means or to preempt their employment. In short, neither technology is as directly destabilizing here as it is in the Syrian-Israeli context.

On the other hand, continuing indigenous production and overseas procurement by both sides do betray the belief of Iraq and Iran that such technologies serve important interests. In the case of Iraq, the interest is to preserve an advantage that

militates against any Iranian decision to renew the war. In the case of Iran, it is precisely to neutralize Iraq's advantage and thereby permit other factors (size of population, size of ground forces, etc.) to reassert themselves in the overall balance. If Iran were somehow able to acquire a significant counter-value force capable of evading Iraqi suppression and interception, i.e., a meaningful missile fleet, it would be able to deter Iraq's deterrent. In fact, it might not even need to match Iraq's destructive capacity; circumstances might change in the future, but the record of the war suggests that Iraq's social and political infrastructure is more fragile, relatively less able to absorb punishment, and some minimal destructive capability might be enough to favor Iran in any balance of suffering.

Thus, the institution of mutual (even if unequal) assured destructiveness would make it difficult for Iraq in the future to escalate out of a protracted war on the ground, and this very expectation might encourage Iranian leaders, after they have (with Soviet assistance) rehabilitated their armed forces, to try the fortunes of war once again. There is therefore this similarity with the Syrian-Israeli complex: that the proliferation of missiles may not necessarily mean that they will be used, but their presence does tend to create a general strategic environment more conducive to conventional war.

In the final analysis, a rational calculus of strategic costs and benefits indicates that while the availability of given technologies creates strong pressure to acquire them, the

possession of such technologies does not necessarily dictate their use. Indeed, the proliferation of chemical weapons probably reduces the likelihood that they will be employed, even against domestic insurgents who may acquire some minimal retaliatory capability. Even conventionally-armed ballistic missiles are more likely to be held in reserve for purposes of intra-war deterrence than to be employed in a tactical or operational mode.

However, it is important to register two qualifications to this generally optimistic prognosis. The first concerns inadvertent or unauthorized use stemming from accident, excessive command decentralization, or the breakdown of command-control-communications systems. Assuming that it will not be possible to eliminate such technologies from the Middle East, it might be worthwhile giving some thought to the problem of control of use in politically less stable and technologically less sophisticated military establishments. One course of action is to provide easy access to technical devices (e.g., permissive action links) that might mitigate the danger.

The second qualification concerns the premises of the analysis, particularly regarding rationality of ends and means. One implicit, if undefined, premise is that definitions of "reasonableness" concerning risk-cost calculations are more or less universal. In fact, most Middle Eastern regimes have found a common, if somewhat impoverished language with which to carry on their strategic dialogues. However, the possibility cannot be categorically excluded that different, far more radical regimes

will come to power in certain Middle Eastern countries. If these regimes are moved by millenarian, especially religious, visions, they are likely to be less sensitive to human casualties than even the most bloodthirsty ruling groups thus far. In that case, the restraints which in this analysis argued against the use of weapons of mass destruction will prove far weaker than we have assumed, and they may be altogether nonexistent.

Endnotes

1. Nadav Safran, From War to War: The Arab-Israeli Confrontation, 1948-1967 (New York: Pegasus, 1969), p. 437.

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"Unconventional Weapons and Regional Stability in the Middle East"

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Unconventional Weapons and Regional Stability in the Middle East

by

Ali E. Hillal Dessouki

The objective of this paper is to discuss the impact of the spread of unconventional weapons, particularly ballistic missiles and chemical weapons (CW), on regional conflicts and rivalries in the Middle East. Its main argument is that while the proliferation of such weapons is morally troubling, it has no definite unilinear influence. Rather it has both a stabilizing and a destabilizing impact at the same time. One may argue that it is the way arms are used and the political-military strategy they are employed to serve which determine the nature of their impact (W. Seth Carus). These weapons have an inevitable outcome, however: they change the character of the future battlefield, and if war erupts, they enable adversaries to inflict massive destruction on one another.

A serious discussion of the impact of unconventional weapons is better appreciated in the context of four caveats:

First, the proliferation of these weapons should be evaluated in the context of the general military-strategic situation in the region, including conventional weapons. It may be argued that the Israeli nuclear capability and the Syrian chemical capability act as a reciprocal deterrent on each other. The removal of both deterrents may be a desirable development, but it may also be a destabilizing one. Israel continues to have a qualitative strategic superiority based on conventional weapons. The removal

1 - le unconventional weapons (UW) sono ormai parte costitutive di un equilibrio dato; eliminarle può essere destabilizzante, invece che stabilizzante (lo stesso argomento si applica già alle NW)

of the unconventional deterrent may be an enticement for war. Likewise, the bulk of the deaths in the Iraq-Iran war was caused not by ballistic missiles or CW but through the intensive use of conventional weapons (Geoffrey Kemp). Thus, while our focus is on certain types of unconventional weapons, we should not lose sight of the general context.

2 Second, the possession of a weapon does not make its use inevitable, let alone ensure its effective use. Indeed, there is growing recognition of the limited utility of military force. At different times both Israel and Syria have achieved military victories in Lebanon but both have failed to translate their military power into political influence (Dessouki). The same is true of the Iraq-Iran postwar situation, and Israel recognizes the limits of military force in handling the Palestinian Intifada. There are also political limitations on the use of certain types of lethal weapons. The use of CW in the Gulf war was an exceptional case that took place in very particular political-military circumstances, and in an international context that allowed it. Equally significant is the non-use of these weapons by Egypt, Israel and Syria in the 1967 and 1973 wars although they have all possessed such weapons since the mid-1960s. Chemical weapons were not even used by what is usually viewed as the most adventurous and irresponsible Arab state, Libya, in its war against Chad, a war which ended in a Libyan defeat.

Third, the use of military force in the Middle East is further constrained by the overall political developments in the region

during the late 1980s. These have been characterized by the deescalation of traditional interstate conflicts. At the level of inter-Arab relations, one major trend is the movement from political fragmentation toward cooperation and solidarity. This new spirit of pràgmatism, deideologization and depolarization was best demonstrated in 1989 by Egypt's rejoining the Arab League and the emergence of two Arab subgroupings within the League, the Arab Cooperation Council and the Magharebi Union. Insofar as the Arab-Israeli conflict is concerned, it is likely that it will increasingly take the form of an internal war within the territories controlled by Israel, coupled with a further marginalization of the direct military role of the Arab states. Conflicts over resources, especially water, are likely to become more pronounced. Thus, the nature of security threats in the Middle East are increasingly recognized as being domestic, developmental and non-military.

3

With the deescalation of external conflicts and the new mood of Arab solidarity, domestic conflicts are likely to manifest themselves more forcefully. More challenges (primarily in the realms of political participation, distribution, justice and identity) to the legitimacy of ruling elites will pressure them to settle their domestic political accounts in the 1990s. The domestication of conflict is related to a more fundamental process under way in the region, the growing maturity and hardening of state structures and values. The rise of Arab pragmatism is related to the decline of the pan-Arab ideology as it was

3 i conflitti sono più interni che esterni; 3
quelli esterni hanno natura economica
e non militare; i conflitti interni,
tuttavia, possono estendersi all'esterno,
specie in vista dell'effetto destabilizzante del disimpegno delle superpotenze

pronounced in the 1950s. Thus the importance of pan-Arab issues as tools for mobilization and legitimation are likely to decrease in the 1990s.

Whether the domestication of conflicts will inevitably lead to regional stability and integration is an open question. Internal upheavals in key Arab states may have external consequences. Domestic conflicts may turn out to be unmanageable and ruling elites may turn abroad for a scapegoat. The regional and international environment make this option less probable, but it remains a possibility to be considered. Indeed, the changing relations between the superpowers have already affected regional situations in two different and contradictory ways. On the one hand, improvements in superpower relations seem to have led the two countries to a disengagement from regional armed conflicts (although not from regions per se) through a scaling down of their arms trade and military assistance policies. Already the Syrian objective of strategic parity with Israel is impossible to achieve because of the new Soviet policy. On the other hand, disengagement may have destabilizing effects since in the past the two superpowers had exercised a restraining and moderating hand on their respective friendly states. Regional actors may indeed now feel they have a freer hand to act independently in the absence of an external restraining influence.

Last but not least is the relationship between unconventional weapons and regional stability. There is a commonly held belief that those weapons have a definite destabilizing impact, but little

empirical evidence has been put forward to support it. One may argue that inherent technical features do not determine whether a particular weapon is stabilizing or otherwise. Nor do they make it offensive or defensive. Thus any weapon can contribute to stability or instability depending on the military balance prevailing in a particular region. Moreover, a weapon may have both stabilizing and destabilizing effects depending on the perspective of the analyst. In any adversarial situation, judging the impact of a weapon is likely to differ, and its stabilization/destabilization effect lies in the eyes of the beholder.

A weapon can be destabilizing if it ensures a decisive military victory or if it drastically changes the military balance. The same weapon can be stabilizing if it redresses an existing imbalance and creates greater parity and equivalence. For years Arab states lived under the shadow of the Israeli nuclear capability, and that was not perceived by many Western analysts as an unstable situation. However, when these states acquire new capabilities, the situation is perceived by many of the same analysts as being destabilized. Clearly, then, all weapons have stabilizing and destabilizing effects. What determines the impact of a particular weapon is the way it is used, the objectives which it is employed to achieve and the military-political strategy within which it is introduced.

It is in this context that the spread of ballistic missiles and CW needs to be discussed. The strategic situation in the Middle East is characterized by three main features:

1) It is a region riddled with protracted conflicts. In addition to the two primary ones--the Arab-Israeli and the Iraq-Iran conflicts--there are conflict situations in Lebanon, Sudan, North Africa and the Horn of Africa.

2) These conflicts have led to a number of arms races in the region. In the 1980s, thanks to the Iraq-Iran war, the Middle East arms market expanded and a number of new arms suppliers joined. Moreover, a number of regional states already have formidable indigenous arms industries. Thus, whether one considers military expenditure as a percentage of Gross National Product, as a percentage of government spending, the percentage of population in uniform or the extent of arms procurement and military technology transfers, the Middle East is the most heavily armed region in the Third World.

3) A significant development has been the use of weapons of mass destruction (missiles and CW) in the Iraq-Iran war. The introduction of unconventional, particularly CW, weapons change the nature of the regional military balance and of the target of any future war. These weapons pose a threat not only to states, but to peoples and societies. Societies are no longer just affected by war at the battlefront but have themselves become its immediate target.

Chemical Weapons are lethal weapons which directly affect living tissue. While their scope of destruction is much narrower than that of nuclear weapons, CW inspire terror and demoralize the civilian population, especially when they are used against cities. Militarily, CW can be used against troop concentrations in the field and against enemy defenses, as part of a surprise attack. In the Middle East, it seems that CW is perceived as a deterrent and, only as a last resort, a combat weapon. Ballistic missiles

are the instrument for delivering CW or nuclear warheads to distant targets. Missiles appear attractive to Middle Eastern states for a number of reasons. Because of their high speed there is no defense against them. They are less vulnerable to preemptive enemy attack, especially if they are mobile. Missiles are most attractive to countries which do not have, and cannot develop, a highly trained modern air force (Kemp). Their main shortcoming, however, is their inaccuracy.

As shown earlier, the acquisition of unconventional weapons is not inherently destabilizing. What makes the situation destabilizing in the Middle East is the multiple sources of conflicts, threat perceptions and the absence of a unified command which controls the use of these weapons. This development raises a number of questions related to the stability of conflict regimes (primarily the Arab-Israeli one) and their resolution.

This new situation has to be viewed in terms of the legacy of the region's military balance between Israel and the Arab states in the last four decades. Recent experience demonstrates three important lessons. First, in terms of integrated war capabilities, Israel enjoys more power than any one or combination of Arab countries. The Israeli advantage is not numerical but systemic and qualitative. Thus, even when Arab states fought under the best of circumstances in October 1973, Israel was able to turn the tide of the war in its favor. Due to the modernization of Arab armies, however, the human and material price of Israeli victory has tended to increase. Each Arab-Israel war has proven to be more difficult

and costly, and Israel's ability to terminate the war rapidly and with minimal costs has steadily declined. Second, until now both the Arab states and Israel have adopted an essentially conventional defensive posture which entailed denying one's territory to the other, limiting damages to itself, and destroying the other side's armed forces on the battlefield. Neither resorted to the use of mass destruction weapons or, with few exceptions, engaged in urban warfare or attacking civilian targets.

Third, Israel has developed a major military arsenal with capabilities that extend beyond the Middle East and which attract the attention of defense planners in the whole of southern Europe and the Soviet Union. In the field of missiles, Israel developed Jericho I, II and II-B with ranges of 500, 640 and 800 km respectively. It also developed the SHAVIT, an intercontinental missile with a range of 5,200-7,200 km. Moreover, Israel is cooperating with the United States in developing the Arrow, an anti-tactical ballistic missile. Israel's growing military power has enhanced Arab fears and insecurity, especially when the Israeli nuclear capability is taken into account. In the Middle East, CW and ballistic missiles cannot be separated from the nuclear issue. Israeli ambivalence toward its nuclear capability has been perceived by Arab states as a major threat and a further source of the regional military imbalance. In the view of the Arab states, Israel's nuclear capability allowed it the safety of conducting aggressive operations employing conventional weapons. Further, there always exists the fear that Israel uses its nuclear

capability as a means of coercion, to force the Arab states to accept certain policies. Hence the Arab search for an equalizer. A CW capability is viewed by most Arab states primarily as a deterrent. Thus, Syrian CW provides a retaliatory capability that Israel is likely to take into consideration when it contemplates the use of its nuclear weapons. Israel may also consider that a massive attack using conventional weapons against Syria may provoke the later to use its CW.

To say that, however, is not entirely reassuring; one must also investigate under what conditions these weapons can be used. Indeed, some have already been used in the Gulf war and their strategic impact goes beyond the direct actors in the Arab-Israeli or the Iraq-Iran war. For instance, the surface-to-surface missiles (SSMs) deployed on Iran's Gulf coast could strike targets anywhere on the southern shores of the Gulf, and those deployed to the north and east could reach targets in the Soviet Union, Afghanistan, Turkey and Pakistan. Similarly, Iran's missiles range over 400 km, and have within their reach all of Syria, parts of Saudi Arabia, Qatar, Jordan, Israel and the Soviet Union.

Can CW and ballistic missiles be used in the Arab-Israeli conflict? From past experience it seems that CW is used against countries which cannot respond in kind. Both Israel and the Arab states recognize that the other party has the ability to respond in kind. The Arab states also recognize that Israel has an elaborate defense system against CW, and that Israel has a strong retaliatory capability which it could use with devastating

consequences to an adversary using CW. On the other hand, given Israeli conventional arms superiority, the need for the use of CW does not arise. Hypothetically, a state could use CW in three instances: 1) when facing imminent military collapse; 2) against a domestic foe; or 3) against a country which does not have CW.

Of particular interest in this regard is Iraq's position toward Israel. One alarming view is that Iraq would revitalize the Eastern front and engage in conflict with Israel. This scenario is highly unlikely for a number of reasons. First, Iraq will be preoccupied with the tasks of economic and political reconstruction for quite some time. Second, even after reaching a political settlement, Iraq will continue to perceive Iran as a major potential threat. The deep hatred and mistrust between Iraq and Iran, fuelled by eight years of war, is impossible to defuse quickly. Third, the reactivation of the Eastern front would require Iraqi-Syrian cooperation, which is not a likely development. Reserve General Avraham Tamir, former director general of Israel's foreign ministry, contends that, rather than cooperate with Syria, Iraq would in fact reduce the threat posed in Syria by tying down Syrian troops on the Syrian-Iraq border.

Moreover, such reactivation seems out of place at a time when the PLO is making peace overtures toward Israel, and accepting its right to exist. Finally, that view ignores the emergence of new political realism in Baghdad. The Iraqi leadership is unlikely to alienate countries such as Egypt and Jordan, whose political and military support during the Iraq-Iran war was pronounced, or Kuwait

and Saudi Arabia, whose financial support was crucial. The establishment of the Arab Cooperation Council is another manifestation of Iraq's new pragmatism. It is interesting to note that the charter of the Council made no reference to Israel or the Arab-Israeli conflict. It is in this context that the new arms race in the region is better understood--it is a search for an equalizer. R. Litwak once argued that "perception of the regional military balance affects internal political debates in an often complex and subtle manner," and that Iraq's perception of a growing military imbalance with Iran in its favor encouraged its leadership to initiate large-scale military operations. Thus the acquisition of new arms must be seen in relation to the regional military balance and whether it maintains or destabilizes the balance. Admittedly, this is not always easy to establish, because of different perceptions and conflicting states' interests. What is important to recall, however, is that arms are the symptoms, not the cause, of conflicts and that a breakdown of the regional military balance in favor of one actor is a potential invitation to war.

How do we deal with the proliferation of weapons of mass destruction in the Middle East? It seems that talking about arms control regimes of one type or another is neither conceptually correct nor practically feasible. Such an approach does not address the reasons which led to the acquisition of these weapons. Moreover, given the number of arms suppliers, a commitment to restraint by the superpowers alone is not sufficient.

From previous experience, as long as some countries feel their national security is at risk, they are likely to circumvent any arms control regime. They will perceive any such arms control regime as an imposed policy to maintain an unbearable status quo. Therefore, the need is for a formula or package of policies in which military and political measures go hand in hand. Putting it differently, the process of developing an arms control regime is not primarily a political/technical one, but rather primarily a matter of politics. It follows that we have to discuss the political requirements of an arms control regime and the interplay between military, diplomatic and economic measures. It is such an interplay which can create a climate of confidence-building. Security is a two-way process. Thus, an acceptable regime has to respect the principle of reciprocity between adversaries in order that each party can maintain a sense of equivalence, in a way that satisfies the basic security needs to all.

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"Preventing the Proliferation of Chemical Weapons and Ballistic Missiles in the Middle East"

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Preventing the Proliferation of Chemical Weapons and Ballistic Missiles in the Middle East

by

Andrei Shumikhin

The remaining decade of the 20th century may well see a cardinal shift in the dangers emanating from the Middle East. In the past it was said that this region could become the detonator of a world war, meaning that a local conflict could escalate to a point where the great nuclear powers became involved and initiated a suicidal final "settling of scores." In contrast, today the Middle East is increasingly capable of precipitating Armageddon without the involvement of the great powers.

The reason for this shift is simple: countries in the Middle East are rapidly gaining nuclear, chemical and missile technology. Even if Middle Eastern technologies of mass destruction and the means of their delivery look "obsolete" by European standards, given the volatility of the regional situation and the intensity of passions that characterize the behavior of local players, these weapons may be used with much greater ease than has proved to be the case in the confrontation between the two military alliances in Europe.

Consequently a striking paradox emerges: even as Europe--the focus of greatest concern for the world since 1945--begins to disarm (with some claiming that it was precisely the balance of nuclear terror that helped bring this about), the Middle East is

stepping up its own deadly arms race, threatening to surpass Europe, if not in the volume of arms accumulated, then in readiness to employ them for purposes beyond sheer deterrence.

It is fairly easy to ascribe responsibility for this explosive situation. Clearly the global superpower rivalry is to blame above all. The Soviet Union and the United States provided "fuel" for local conflicts; they are still the largest suppliers of all types of arms to the region. Aided and abetted by the superpowers, their local clients developed military establishments, doctrines and industries. The superpower competition created a situation in which anyone could ask for and receive practically anything that was "standard issue" in Soviet and American armies. At a recent conference on the Middle East it was appalling, but also sobering, to hear a Pakistani professor launch a diatribe explaining how Soviets and Americans fighting over Afghanistan created the ideal conditions for Pakistan to complete its nuclear program.

Naturally other states should bear their share of responsibility for the arms race in the Middle East--British, French, Chinese and Argentine weapons can be found in fair quantity in various Middle Eastern countries. Another important factor is the appetites for arms, often quite insatiable, demonstrated by certain local regimes.

However, rather than seeking culprits or mourning missed opportunities, existing problems need to be examined objectively and solutions need to be found.

Chemical weapons and ballistic missiles proliferation have many common roots, but they should be discussed separately in view of their differing technical and political implications.

Chemical Weapons

There is hardly any argument against the moral, political and practical need to eradicate chemical weapons. Broad international agreement on this issue was demonstrated most recently at the Paris conference in early 1989 which brought together delegations from 146 nations, 70 of which were headed by foreign ministers. Nevertheless, a number of difficulties remain in achieving non-proliferation of chemical weapons.

One of the major psychological and political obstacles stems from the fact that many Third World countries (including Middle Eastern countries) have only recently entered the race in weapons of mass destruction, and thus they consider that the whole non-proliferation process is meant to undercut their position and to perpetuate the domination by the North. On the surface, there are valid reasons for a small and militarily weak nation to resist disarmament when much larger and traditionally powerful states preserve their own huge and deadly arsenals. An in-depth analysis of this rationalization reveals its deficiency: none of these smaller nations could feasibly try to compete with the "heavyweights," even in establishing credible deterrence against them. Maintaining deterrence vis-à-vis local opponents in a regional context may be a more realistic endeavor; however,

according to the "logic" of the arms race, levels of deterrence constantly have to be increased both quantitatively and qualitatively. Therefore it is impossible to set any limit to the amount and quality of chemical agents kept for deterrence purposes. (Nor is it possible to depend on creating defense procedures that would be foolproof against any potential chemical attack.) Clearly then, growing involvement in this type of arms race increases individual state and regional instability, creates new dangers for civilian populations in times of conflict and increases the chances for accidental and unauthorized use of chemical weapons (in the latter case especially by terrorists).

Additional problems arise for certain Middle Eastern and other Third World countries in connection with chemical industries that have peaceful applications, dual-purpose technologies and equipment and special control, verification and regulation procedures for exporters and users, especially in the private sector. Other difficulties stem from the qualified political positions of certain states which are only prepared to consider limitations or a comprehensive ban on chemical weapons in connection with reductions of other types of weapons or even changes in the policies of their opponents and adversaries. Thus certain Arab countries would like to establish a link between Israel's alleged nuclear capability and their own potential for chemical warfare.

Some of these problems are more tangible than others and must be addressed by experts to devise procedures whereby non-proliferation will not contradict legitimate economic and

production necessities. Other problems can be addressed only in the framework of broader changes in the political climate and psychological perceptions. Mutual fears between Arabs and Israelis that give rise to various forms of the arms race will probably be reduced only when their political conflict is settled. However, measures of mutual restraint in acquiring new and better weapons may send appropriate signals that might gradually help change attitudes and make an overall settlement of disputes in the region possible. If the immediate participants in this and other conflicts are incapable of such restraint, then outside powers, primarily suppliers of arms, should try to bring about such restraint by counselling moderation and, if need be, limiting the military exports they offer.

International negotiations seem to be the best, if not the only, way of dealing with chemical weapons. Unlike nuclear weapons, chemical substances are relatively easy and cheap to manufacture. Their elimination and the prevention of their further production may come about only as a result of agreements involving all members of the international community. Recent international conferences on chemical weapons prove that internationalizing the search for common ground in this area of arms limitation is easier than with other weapons: participants have included antagonists--even those involved in conflicts--who otherwise are separated by blank walls.

At the same time, as in any multilateral process, leadership and initiative to sustain progress are important issues. It is

natural to assume that these functions will be carried out by the great powers, which have the largest chemical weapons arsenals but recently have also demonstrated the greatest resolve in negotiations aimed at their complete elimination. The achievement of a Soviet-American agreement on chemical weapons could be the precursor to the introduction of more stringent controls over transfers of components and materials from these two countries to Third World regions. An international authority on chemical weapons, similar to the International Atomic Energy Authority (IARA), may be established with a mandate to impose and supervise control over issues of chemical weapons production.

Ballistic Missiles

Key countries in the Middle East have acquired their own means for producing medium- and even long-range ballistic missiles. It is impossible and illogical to try to reverse this proliferation process, especially since some of the launch vehicles are or will be used for peaceful purposes. The crux of the matter is military use, especially of missiles equipped with mass-destruction warheads.

One of the crucial components of the missile non-proliferation effort is finding the right balance between political, legal, technological and moral requirements. Major suppliers of missiles to the region have had trouble trying to reconcile these. Does the United States invoke sanctions against companies that transfer ballistic technologies to Israel, as is required by some proposed

U.S. legislation, while at the same time pursuing relations of "strategic cooperation" with that country? What are the limits for Soviet missile transfers to Syria in view of the conflict between the need to supply a client that feels threatened by an outside enemy and the desire to contain and finally resolve a regional conflict close to Soviet borders?

Another problem facing the Soviet Union and the United States that becomes insurmountable if faced alone, or even jointly, is the question of whether or not to terminate their own supplies of missile technology without any guarantee that other states (e.g., France, Argentine or China) will not fill the "vacuum" created by the unilateral withdrawal of the two largest suppliers. Though the possibility of unilateral solutions in this area may not be excluded entirely (and both superpowers have given demonstrations of this approach by, for example, by setting their own limits on the range and throw-weight of missiles they are prepared to transfer to Middle Eastern countries, including Israel and Syria), it is obvious that multilateral approaches are more effective--i.e., international efforts at missile technology control.

The Missile Technology Control Regime negotiated in 1987 by a number of Western countries set a good example of this sort of multilateral effort. It is unfortunate that the initiative was not expanded and supported at the time by other states, the USSR in particular. However, it is reassuring that suppliers from the East and the West have now opened up a dialogue on missile transfers in a regional context. Hopefully it may lead to new international

agreements that will include not only exporters but also importers, and will lead to the emergence of more constrained missile and anti-missile regimes in the Middle East.

Another way of introducing limitations on regional races in hi-tech weapons is to regulate the transfer of sophisticated computer technology. Since only a few nations possess the supercomputers that are needed for nuclearization and missile development programs, this aspect of arms control is easier to coordinate and streamline.

Ballistic missile proliferation creates certain special problems for market economies. Periodically news comes out about certain Western companies breaking their governments' regulations on exports or transfers of specific technologies and materials that go into the production of missiles, warheads, nuclear and chemical weapons. In this connection dual-purpose technologies represent an especially difficult case. The seriousness of the problem from the point of view potential and real proliferation of mass destruction capabilities is illustrated by a recent report published by the U.S. Congress on the need to establish effective controls over weapons-production information and technology dissemination. According to this report, which was commissioned by Senator John Glenn, existing U.S. norms and regulations did not prevent countries such as Iraq, Israel and Pakistan from purchasing thousands of documents produced by U.S. agencies dealing with sensitive weapons-production matters that apparently were later used to promote local armaments programs.

Clearly, it is imperative for exporting countries to devise special legal norms and practical regulations that establish specific conditions for the transfer of technologies, materials and know-how that can be used for acquiring and/or producing weapons of mass destruction and the means of their delivery. These norms should be elaborated on the basis of cooperative efforts among exporting countries, and they must be applied universally and without exception to make non-proliferation effective.

Changes in weapons export policies are unavoidable, particularly in the case of Western-type democracies where private companies try to protect their independence from government regulations. At the same time, hopefully their partners in the East will realize the difficulties of regulating private business and will cooperate in devising a mechanism that will not create unbearable difficulties for traditional open markets.

Another disconcerting aspect of Third World regional programs aimed at increasing local potential for production of arms, particularly delivery vehicles, is cooperation among several producers. For example, the "Condor-II" program, which involves Argentina, Egypt and Iraq, may provide participating nations with a missile capable of carrying nuclear warheads and possessing an 800-1000-km range. Thus not one but three states may acquire increased delivery capabilities as the result of a single coordinated effort. In addition, there are periodic reports to the effect that a particular nation in the category of the "less privileged" is prepared to extend its potential, or a particular

weapons system, to other states that have the same status, on the grounds of ideological or political solidarity, national, ethnic or religious affinity, etc. Dissemination of such highly destructive weapons on the basis of "solidarity" or "charitable" considerations is a truly awesome possibility. With this situation, the USSR cannot fail to observe that some armaments, particularly missile programs, in neighboring Middle Eastern countries may lead to the emergence of direct military threats to the Soviet hinterland.

Options for Prevention

A very pertinent question that arises in connection with arms control philosophies and practical methodologies is whether or not force or the threat of force should be used to prevent a particular military procurement program from coming to fruition. Historically, there have been attempts of this sort, particularly involving Israel and its neighbors (as on June 7, 1981, when Israel destroyed an Iraqi nuclear reactor near Baghdad). Most recently in late December 1989 international sources reported that Israel was contemplating making another "preventive strike" against Iraqi missile-production facilities. Allegedly Israel had a series of contacts on this matter with Iran and might also be considering using two submarines recently obtained from the Federal Republic of Germany for this purpose. Obviously, any such move could ignite a new conflict in both the region and internationally. In addition, the physical effects on humans and the environment

resulting from trying to "take out" a plant or installation involved in producing weapons with greatly increased destructive capabilities or weapons of mass annihilation are completely unknown because of the highly volatile nature of some of the materials used in the production of such weapons.

It is also true that certain weapons technologies already at the production stage may cause considerable concern in neighboring countries; attempts at producing and/or acquiring some of these weapons by certain states may be considered a provocation by other states, especially under conditions of tension and hostility. Accumulation of offensive weapons, especially weapons of mass destruction, by a particular party may be interpreted as a sign of its aggressive intentions. But then again, it is fairly easy to use any military program as a pretext for political outcry and even "preventive" counteractions as a convenient casus belli.

In this connection it must be emphasized that unilateralism and the search for superiority in both armament efforts and countermeasures meant to oppose them prescribe a fairly perilous course. Multilateral attempts at increasing regional stability and initiating arms control and non-proliferation activities are much more preferable. If worst comes to worst, use of counterforce must be regulated by and channelled through international mechanisms. Moral and legal precedence in any such case should be found in the United Nations Charter and the appropriate UN machinery. The fact that in the past these mechanisms were more often than not insufficient or ineffective when put to practical use is not an

acceptable argument against their application in the future. The effectiveness of UN mechanisms depends not on the form and substance of Charter stipulations but on the readiness of member-states to apply them. Under the present circumstances, when, on the one hand, there is less divisiveness in international relations, at least within the East-West paradigm, and, on the other, there is increased recognition of the perils of an unbridled arms race, particularly in weapons of mass destruction (which is true for East and West, North and South), these mechanisms have a much better chance of success if and when they are used in the context of international cooperation. Legal, political and practical methods and procedures for using counterforce in conditions when a clear threat to peace, security and stability emerges that may have far-reaching regional and international consequences are highly controversial; nevertheless, this issue cannot be avoided in discussion.

It is becoming increasingly obvious that the refinement of military technology and the contined accumulation of military arsenals do not improve state, regional and international security. It is highly dubious, for example, whether defense capabilities of any nation will be augmented by regional or subregional anti-ballistic missile (ABM) or anti-tactical ballistic missile (ATBM) systems. However, their emergence will unavoidably result in a new round of regional arms races, which will repeat the race in strategic nuclear weapons that involved the superpowers for decades.

A purely military-technological approach to solving the problem of non-proliferation in the Middle East appears to be a non-starter; it may also adversely affect the positive tendencies in the area of strategic arms reduction by drastically changing the global military-strategic situation. Local states acquiring longer-range missile capabilities could initiate a chain reaction which would worsen not only the regional but also the global situation. In particular, unilateral attempts to deploy "territory" ABM systems in the Middle East aimed against other Third World states, which would contradict both the letter and the spirit of the U.S.-Soviet ABM Treaty, might be regarded by the USSR as a threat to its security and force it to adopt strategic countermeasures.

The fact that within the framework of the limited ABM systems permitted under the 1972 ABM Treaty it is practically impossible to defend against "terrorist" nuclear or chemical weapons armed missile strikes must also be taken into account. Even if the USSR's capital and central regions are protected against a single missile strike and the United States exercised its right to defend Washington, other major industrial centers and highly populated areas on their territories, as well as on that of their allies, could be held hostage to possible ballistic missile strikes by terrorist groups or regimes. The moral aspects of such selective defense gives rise to great doubts. The extension of at least a "thin" ABM defense to the entire territory of either the United States or the Soviet Union would require either a revision of the

ABM Treaty or a considerable improvement in the components of the ABM complexes now permitted.

Any non-proliferation regime for chemical weapons and ballistic missiles must be based on broad acceptance of the inadmissibility of the use or the threat of use of ballistic, cruise and other types of carriers, especially those equipped with mass-destruction warheads aimed at civilian targets. The emerging point of East-West agreement on hi-tech transfers must not be allowed to be sidetracked by extraneous matters or linkages to other issues. On the contrary, the problem of non-proliferation should create a sort of background for discussing other disarmament issues. For example, the search for a missile non-proliferation regime in the Middle East might contribute to attempts to eliminate the entire class of shorter-range ballistic missiles in Europe in the near future and to elaborate a universal mechanism of international control over military activity in all its manifestations.

Agreements on chemical weapons and ballistic missile non-proliferation should not, however, interfere with peaceful uses of chemical substances or peaceful exploration of outer space. Transfers of appropriate technologies to Middle Eastern and other Third World countries should be placed under effective international supervision, preventing the military applications of such dual-capable technology.

Final success in dealing with the problem of non-proliferation is not likely to be achieved through the introduction of extensive

prescriptions and bans but rather through the greater economic and technological integration of nations belonging to various regions of the world. This participation of states that follow different ideological and political systems in the world economy and promotion of global and regional interdependence are the best guarantees against relapses of aggressive behavior, military confrontation and attempts to provide for national security exclusively through military power.

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DISCUSSION PAPER

on

"Chemical Weapons Proliferation in the Middle East"

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Chemical Weapons Proliferation in the Middle East

by

J. P. Perry Robinson

Chemical-warfare (CW) weapons were introduced into the Middle East by British ground forces during the final year of World War I. In North Africa, a factory for mustard-gas weapons was built not long afterwards in what is now Morocco by a private, subsequently notorious, German firm. Later, in the 1930s, the Italian air force operating in what is now Libya and then in Ethiopia had supplies of CW weapons, some of which, as is well known, they used. There are state papers in Italian archives which cite the existence of British CW weapons in Kenya (though not elsewhere, apparently) as reason for the supplies. Further proliferation occurred during World War II with the deployment of rather large stocks of CW weapons into the region. It is not at all clear from the public record that these stocks were all withdrawn once the war was over. The CW weapons used in what is now North Yemen during 1966-1967, and perhaps earlier too, by the Egyptian air force intervening in the civil war, are thought to have come from World War II British supplies, though other sources have also been mentioned. The Yemeni republicans themselves are said to have received CW weapons from China--phosgene aircraft bombs originating in World War II lend-lease shipments, their U.S. markings still discernible. So it is not a new phenomenon which the present paper is addressing, little known

though its history may be.

The purpose of the paper is no more than to provide context for discussing the spread of CW weapons in the Middle East. No conclusions or prescriptions are offered. The essay begins with a section entering caveats and sketching further historical background. Then it examines what "proliferation" should actually be taken to mean when applied to CW weapons. The third section speculates on the utilities which might be ascribed to the weapons in countries of the region. This is followed by a summary, necessarily brief, of what can be said with confidence about the actual state of CW armaments in the Middle East, and about the motors driving it. The final section, on remedial measures and constraints, is omitted from this draft.

The paper in its present form is very much a preliminary draft for later revision. It was written under circumstances which precluded adequate access to reference materials.

The context of the problem

The spread of CW weapons is not a hypothetical issue. The concern about it is not artificial. The heavy use of poison gas by Iraqi forces during the Gulf war and then in Kurdistan is testimony enough to that. Yet in trying to assess the true dimensions of the problem--to make what sense one can of the mishmash of recent reporting and allegation about, for example, CW-weapons production at Rabta, Abu Zaabal, Samarra, Tehran, Homs, Dimona and other such places, or about the actual use of the

weapons in Ethiopia, Chad, the Sudan and by Iran in the Gulf war --it is as well to be wary of inflationary factors, ones that may be operating to distort our view of the issue, its implications and its urgencies.

Several can be envisaged, not least in the context of Palestinian-issue politics. More generally, it needs to be remembered that there are certain interests which remain vested in CW armament. Such interests have had much experience over the years in defending, even advancing, a cause that is hardly popular, and in beating back the view of CW weapons as antique and fading remnants of history, latter-day longbows, blunderbusses, fire-ships, etc., soon to go the way of horse cavalry and the Pigeon Service. Propagating the notion that CW weapons can suppress chemical warfare is a way of doing this, but another is to propagate belief that CW weapons are proliferating, and that their proliferation is real cause for concern. It is indeed cause for concern; but when we hear people expressing it and then arguing that countries such as the United Kingdom must acquire the weapons, or maintain them if they have them already, in order to be able to threaten Libya with retaliation in kind, we may wonder at their motives.

Again, the feebleness of the reaction of the international community against the Iraqi resort to CW may have induced another form of inflation. Iraq is now paying a price for its behavior, but the penalty has been a relatively trivial one, slow to develop, and unsatisfying to people who expected a more forthright upholding

of the 1925 Geneva Protocol.[1] As an Indian commentator observed a while ago (Mohan, 1984), the immediate political costs of flouting the international CW non-use regime turned out to be so slight that the regime itself suffered grave damage. The Paris Conference of January 1989--attended by 149 states, the majority represented by ministers--was an attempt to patch things up, but the politics both of that gathering and of international relations with Iran and Iraq required that the Gulf war CW be portrayed, not as the criminal act of a single war-crazed state, but rather as an aspect of a general problem, that of CW weapons spreading within an environment of diminishing restraint. Under the circumstances, this portrayal unfortunately suggested that what was beneficial to Iraq could be beneficial to other states. It has thus entrenched belief--quite unjustifiably, for where, yet, is the substantiation?--that CW weapons were militarily important in the Gulf war, and that they are likely to be so again elsewhere in the developing world. It is exactly this sort of thing which undermines confidence in the custom and conventions establishing the regime, deepening an erosion which events such as the Yellow Rain[2] had already started.

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[1] The Geneva Protocol is the treaty that outlaws resort to chemical or biological warfare. Some choose to regard it as a no-first-use agreement. A small minority of states parties, about a quarter, reserved a right to retaliate in kind when they joined. Some have since withdrawn their reservations. In the Middle East, parties to the Protocol include Egypt, Iran, Iraq, Israel, Jordan, Libya, Saudi Arabia and Syria. Israel reserved the right to use CW (and biological warfare) against "any enemy State" from whose territory operate "regular or irregular forces or groups or individuals" that fail to respect the Protocol. Syria stated that "its ratification shall in no way signify recognition of Israel or lead to entry into a relationship with it regarding any matter regulated by the...Protocol"; much the same was stated by Libya.

[2] The 'yellow rain' of southeast Asia was declared by certain figures in the Reagan administration to be communist chemical warfare. It now transpires that it was nothing of the kind (Robinson, Guillemin & Meselson, 1987), but there still seem to be people who think it was.

So this may not be an inflationary factor at all. It may instead prove an active stimulus to the very spread which it had sought to inhibit.

There is some irony here, no doubt, but the possibility can hardly surprise the student of CW history. In countries such as the United Kingdom, people have for many years become accustomed to viewing CW weapons along the East-West dimension of international security, altogether belittling or at any rate failing to notice the threats that CW weapons may pose along the North-South or South-South dimensions. But these are precisely the contexts within which it is the evidence of history that CW weapons have their maximal military utility; something which the Gulf war CW resoundingly reaffirmed. That is why some commentators have always regarded the East-West context as being of lesser importance for the future of CW. The evidence, in its most basic form, is simply the record of the conflicts in which CW weapons have and have not been used for military purposes. It is sampled in Table 1, where a list is given of all those <u>authenticated</u> episodes of poison-gas warfare since World War I known to the present author. It is striking that the conflicts listed do not include World War II nor any of the other wars in which technologically advanced belligerents were pitted against one another. The feature of technological inferiority is also common to most of the 30-odd other conflicts in which poison-gas warfare was alleged, without verification. The pattern becomes more pronounced still if the list of conflicts is extended to those where forms of CW weaponry

other than poison gas found employment.[3]

There is further reason why this piece of history has topicality--why it is essential background to any discussion of CW proliferation. Rather plausible scenarios--not many, but some--can now be envisaged in which, along that North-South dimension, the signs are reversed: scenarios in which, despite technological superiority, the armed forces of an interventionary power are peculiarly vulnerable to CW attack. The present paper is not the place to dwell in any detail on this; and a discreet literature is anyway now beginning to accumulate (e.g. Robinson & Polmar, 1989). One need observe only that the "projection of power" into remote regions inevitably stretches lines of communication, and that some of the technology which might then come to be relied upon heavily is technology that may not have been designed for a toxic environment. Here one may recall that the quantity of mustard gas which disabled the SS Bisteria in December 1943, a few hours out of Bari harbor, was probably no more than a kilogram. There is new potential, in other words, for a property often ascribed to CW weapons, that of force-multiplication. The concept is of CW armament, not so much as "the poor man's atomic bomb," but more as new-age slingshot for David facing Goliath.

There is one further, and closely related, piece of background which needs sketching in. It is the growing recognition that, among the violent threats that could endanger the security of the

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[3] Such as the chemical herbicides used by the United Kingdom in Malaya for "food control" during the early 1950s, by France in North Africa during the late 1950s, by the United States in IndoChina during 1961-1970, and by Portugal in its insurgent African colonies from 1968 to the mid-1970s.

industrialized countries, the ones that most need to be guarded against may no longer reside in the regular military forces of enemies; irregular "terrorist" force may, for a variety of reasons, have now become altogether more considerable. Whether that force be wielded by domestic or by foreign enemies, its threat perhaps even now weighs more heavily upon society in countries of the North than do the more familiar military threats which it is supplanting. And it is not, it hardly needs saying, a threat to which there is vulnerability only in the North.

It has rightly been observed that, among the characteristics which differentiate CW weapons from other types, there are ones which make them particularly suitable armament for terrorist force. This is a matter which maybe one should not elaborate. One need note only the insidiousness of those CW weapons that exploit delayed-effect toxic agents, the area-effectiveness of those that operate by environmental pollution, and the propensity of poisons for frightening people to an extent disproportionate to the actual degree of hazard which they present. And lying beyond CW weapons, capable of using much of their technology, is biological weaponry.

Defining Proliferation

CW weapons as defense against "power projection," as armament of terrorists, as harbinger of germ warfare: one can see reasons for rich industrialized countries perceiving danger to themselves in CW armament, despite the waning of East-West tension. And one can appreciate why the danger is said to be growing, now that a

fashion for CW armament is thought to be sweeping the developing world in the wake of the Gulf war. Nor is it a threat which, whether in actuality or in substanceless fear, menaces only those countries. Hence, presumably, the grave concern expressed in the Final Declaration of the Paris conference (endorsed by all participants, among them the important states of the Middle East) about the "growing danger posed to international peace and security by the risk of the use of chemical weapons as long as such weapons remain and are spread."

The Declaration of Paris did not speak of "CW proliferation," for outside the West this is a dirty word, redolent of the discriminations enshrined in the Nuclear Weapons Non-Proliferation Treaty. Within the West, however, the expression does wide service as catch-all for those multiple sources of concern. What the term actually means in practice, however, is rarely made clear. Its vagueness is at once an asset to those who would use it as stimulus to action, and a liability to those who want to determine what actually needs doing. The result is that different people may hear different things when the term is spoken, and can easily end up talking at cross purposes.

Take, for example, the basic question of whether a particular state is or is not to be treated as a possessor of CW weapons. "To the best of our information, there are 22 nations that have chemical weapons in their inventories, controlled by their military and ready for use." So said Richard A. Clarke, the new Assistant Secretary of State for Politico-Military affairs of the United

States, when speaking as leader of the U.S. delegation on the opening day of the recent Government-Industry Conference Against Chemical Weapons (Canberra, September 19-22, 1989). His words seemed pretty clear, reflecting, it was to be supposed, the resources and competences of U.S. foreign-intelligence machinery. He did not, it was true, identify the 22 countries, but one felt that the reasons for his reticence lay in a desire to preserve diplomatical proprieties, or perhaps to protect intelligence sources and methods. Yet the following day, his deputy, William Rope, was to be heard--as he himself was two days after that--taking questions from the press about the 22 nations suspected of either having chemical weapons or being capable of possessing them. Suspected? Capable? The matter was evidently not clearcut after all. In fact, the U.S. portrayal now seemed no clearer than the smudgy language which the British Foreign Office had been using for the previous two years and more: "It is believed that between 15 and 20 countries either possess or are actively seeking to acquire chemical weapons" was the formulation given to the House of Commons on January 18, 1989. Was that what capable should be taken to mean, then?--actively seeking to acquire, not just having an industry that was able, in principle, to provide the weapons, with or without a positive desire or governmental decision that it should? Or did the difference between the American 22 and the British 15-20 betoken some other meaning or, alternatively, different degrees of confidence in the numbers? And how much confidence anyway did either of the assessments warrant: could the

possessor/capable status of those unidentified countries be regarded as confirmed? Or probable? Or merely possible--no more than guesswork not incompatible with whatever hard data, if any, happened to be available?

There are several further layers of ambiguity. Not always have the implicated countries remained unidentified. In the U.S. Congress on February 22, 1989, Rear Admiral Thomas A. Brooks, the Director of Naval Intelligence (DNI) gave the following testimony to the House Armed Services Committee: "In addition to Iraq, quite a few Third World states are developing or have achieved [chemical-weapons] capabilities: Iran, PRC, North Korea, Taiwan, Burma, India, Pakistan, Syria, Israel, Egypt, Ethiopia, and Libya." Add in France and the two countries that make no secret of their CW weapons--the Soviet Union and the United States--and that comes to 16 nations. But what, then, is one to make of the formal statements of non-possession issued in intergovernmental fora recently by the governments of (among at least 62 others) the PRC, North Korea, Burma, India, Pakistan, Egypt and Ethiopia, as well as France? The Burmese, Indian and Pakistani statements disavowed even the intention of possessing the weapons, meaning that non-development was being declared as well as nonpossession. Do these contradictions reflect deficiencies in the veracity of those governments or, alternatively, in the quality of the U.S. Navy's intelligence? Or do they instead reflect a deeper analytical problem: that of determining whether an observed quantity of CW agent with or without associated delivery and dissemination devices

is properly to be regarded as a "chemical weapon"--and not as, say, a research tool for assessing CW threats or for developing anti-CW protection, or as an obsolete remnant of some earlier period of history, no longer in any significant sense integrated into the possessor-country's force structure, and therefore hardly describable as a "weapon"?

Observe, also, that by subsuming both development and possession, the DNI's formulation implied that foreign programs for developing CW weapons posed a degree of threat comparable to actual procurement or stockpiling. If it is the medium- or long-term future which is of primary concern, then that is perhaps reasonable. But if the concern is with the present or the immediate future, the two things might need to be treated differently. About 20 nations have chemical-weapons capability, Ronald F. Lehman II, the Director of the U.S. Arms Control and Disarmament Agency told the Senate Foreign Relations Committee on January 24, 1989, but, apart from the United States and the USSR, "no more than a handful, five or six," actually possess a stockpile of the weapons.

Moreover, a program for developing CW weapons (assuming that such an activity can be clearly differentiated from a program for developing antichemical defensive capability) does not necessarily mean a commitment to acquiring offensive CW capability, though the existence of the program would certainly facilitate such a decision and might even, depending on the circumstances, imply that it had been taken. For the analyst attempting to assess the threat posed

by a development program, there would be a quantitative side to the question as well. Developmental quantities of CW weapons might be capable of killing many people, but how large would they have to be before acquiring real military significance? Again that would depend on the circumstances, meaning that (in contrast to the "MSQ" of the nuclear non-proliferation régime) there is no general rule. One may observe, however, that the U.S. stockpile of CW weapons in the Federal Republic of Germany has often been described by Pentagon spokesmen as a token supply, one which, although in "excellent" and fully usable condition, only barely if at all has military significance or deterrent value. That stockpile, we were reliably informed by the Washington Post on October 15, 1989, contains 435 tons of GB and VX nerve gases.

And what should the analyst of CW proliferation regard as a CW agent? In one sense virtually all weapons are chemical, for high explosives, propellants, flame agents, incendiary and smoke-generating compositions, etc., are chemicals, even fissile materials and substances such as lithium deuteride. A demarcation line needs to be drawn somewhere. One thought is to put it around just those chemicals that are toxic. Actually, all chemicals are toxic in sufficient quantity so one would have to add in the awkward qualification that the chemicals are intended for use in weapons whose target-effects depend on toxicity. Such a demarcation would exclude the flame agent triethylaluminium, for example, while embracing mustard gas, binary-munition chemicals, nerve gases and the rest of them: chemicals on one side of the

line, "CW agents" on the other, the basis for differentiating, as the present paper does, "CW weapons" from "chemical weapons." This is roughly the way the definitions go in the draft Chemical Weapons Convention whose negotiation is now approaching completion in the multilateral Conference on Disarmament in Geneva. That demarcation, it should be noted, would also embrace irritant agents, such as the tear gases, and chemical herbicides as well, for it is through the property of toxicity that these chemicals can function as weapons no less than the nerve gases can or psychochemicals such as BZ. The CW-proliferation analyst will of course be quite capable of understanding the distinctions just outlined; but will the data which he or she has to work from be fine enough to accept them?

This is a key question. It impinges at different levels of analysis. For example, in the military lexicons of different countries, "chemical weapon" can mean different things, often considerably broader in scope than that which the analyst would understand by "CW weapon"--as in the USSR, where it embraces smoke-laying devices. Another, and much more problematic, example is this: given the fact that most commercial chemicals can serve a multitude of purposes, including CW purposes, with what confidence is the analyst going to be able to determine the intent that underlies, say, a particular shipment of chemicals from country A to country B? The worldwide trade in chemicals is enormous and growing, now that the center of gravity of production of basic and many commodity chemicals is moving away from the old industrialized

countries. So the background against which the analyst would be observing the shipment is one rich in North-to-South transfers of civil chemical technology--transfers which are inevitably increasing the capability of the recipient countries to make CW weapons whether they wish to do so or not.

These, no doubt, are some of the considerations that underlay the following comment which William Webster, the Director of the U.S. Central Intelligence Agency, made during an address to the Washington World Affairs Council on October 25, 1988: "Assessing the proliferation of chemical and biological weapons is one of the most difficult challenges we face in the intelligence community--now and into the next decade." He had been speaking of the matter with particular reference to the Middle East. He went on: "It is also one of our most important tasks, for these weapons may well represent one of the most serious threats to world peace in the coming years."

A precise definition of what "CW proliferation" means is not necessary for the present paper, only an appreciation that, as commonly used, the term is dangerously imprecise. It suffices here to recognize that capabilities for waging CW are spreading to more and more countries; and that, while a part of the spread is indeed due to the conscious desire of some states (e.g., Iraq) actually to wield such capability, another part is an unfortunate side-effect of a process that is otherwise beneficial and anyway impossible to stop: the diffusion of competence in chemistry and chemical technology from the rich to the poor parts of the world.

The real concern about "CW proliferation" lies in the fact that the diffusion is taking place within what seems to be an environment of diminishing restraint.

Maybe that, in the end, is actually the best way of defining the term. The report of a 1986 Washington study group on CW policy issues (Roberts, 1987) put it like this: "Chemical proliferation is best thought of as the growing trivialization of a variety of technical, legal, and political constraints that have historically quite powerfully influenced the ability and will to produce and use chemical weapons."

The Usefulness of Chemical Weapons

A class of weapons that has apparently remained unused in all but seven of the last 200 or so wars (see Table 1) is evidently a class of weapons that is deficient in general military utility. It is easy to see why CW weapons have limitations. Psychological and cultural factors engendered by the unique mode of action of the weapons--poisoning--translate into legal and political constraints on use. Technical constraints reside in the peculiarity that most CW weapons work, not through direct action on their targets, but indirectly, by polluting the environment of the target. Military constraints, too, stem from this factor because it demands special operational skills, the provision of which must inevitably impose opportunity costs upon overall military capability, and because the indirectness of attack means poor predictability of outcome, inimical, therefore, to tight forward planning and the concerting

of force in the field. So what might the characteristics of CW weapons be which could ever have conferred a usefulness sufficient to outweigh those manifold costs and penalties?

One may think first of the characteristic ascribed to CW weapons by the United Nations in its early days, that of being--like atomic, biological and radiological weapons--"weapons of mass destruction." What might that actually mean? Against buildings, fortifications and materiel generally, weapons that work by toxicity cannot, of course, cause any destruction, in which case their military usefulness is severely circumscribed. Against people, in contrast, they can do damage on a massive scale; and have done so. The most powerful CW agents today, the organophosphorus cholinesterase-inhibitors known as "nerve gases," are of such a deadliness that about five tons, which is perhaps a hundredth of a percent of what today's arsenals contain, would furnish enough lethal doses, individually administered, to kill everyone in the world. How deadly the most modern nerve gases would be in practice, when used as a weapon of war, is fortunately still a matter of conjecture. It would depend on the assumptions that are made about the means of agent delivery, the prevailing weather conditions and the state of protection afforded to the target. The last of these would be crucial, for, in contrast to other weapons, it is possible to ensure a high degree of protection relatively easily against CW weapons.

The five tons of nerve gas, loaded into munitions capable of disseminating them fairly efficiently, would take perhaps two

Phantom-type strike aircraft to deliver, or maybe 10 Scud or 25 SS-21 missiles. According to one of the more widely used atmospheric-dispersion models, 5 tons of nerve gas, say Sarin, thus released into the air would threaten 50-percent casualties over some four square kilometers, multiplied or divided by a factor of three or four depending on the weather, provided the occupants of the area had no special protection. That would be for open terrain. In the different meteorology of an urban environment, the equivalent area would be smaller, maybe only half as great. There would be casualties further downwind, in diminishing numbers and of diminishing severity. From data gathered after the atomic-bomb attack on Hiroshima, it is estimated that, for a relatively small air-burst fission bomb (10-15-kiloton yield), the 50-percent casualty contour would encompass some 30 square kilometers.

In other words, CW weapons could be comparable in killing power to the smaller sorts of nuclear weapons. Or, under different circumstances, they might cause no great damage at all. The parallel could be the Bhopal disaster of December 1984, when some 30 tons of methyl isocyanate--toxicologically equivalent to perhaps two-thirds of a ton of Sarin--vaporized within a densely populated area under meteorological and other conditions that came near to maximizing harm to the population; it seems that more than half of the inhabitants of an area of 60-70 square kilometers were affected, with much mortality in the 10-15 square kilometer upwind part of that area, thousands dying. Alternatively, the parallel could be with Hamburg in May 1928, when phosgene in a quantity

toxicologically much the same as the Bhopal isocyanate escaped from a ruptured storage tank but apparently killed no more than 11 people; here the meteorological conditions saved thousands of lives.

So the potential mass-destructiveness of CW weapons is real enough, but it is a highly uncertain one. It is reducible, moreover, by civil-defense measures of a relatively straightforward kind, such as Israel has recently been adopting. That, nevertheless, there is major political significance in the characteristic is clear: people continue to take seriously not only the idea of CW weapons as the "poor man's atomic bomb," but also, in the Middle Eastern context, the notion of linkage between Arab CW weapons and Israel's nuclear capability.

Yet that political significance, and therefore its potential influence on events, of course rests on perceptions which are hardly immutable and in which reason and emotion are not in balance: considered dispassionately, that linkage, for example, can hold together only if the first use of CW is contemplated. What then of the military significance? Based on past experience, poison gas is not a war-winning, nor even a battle-winning, weapon. "Gas achieved but local success, nothing decisive: it made war uncomfortable, to no purpose"; so wrote one of the British official historians of World War I. But what about military benefits available from gas when used as a special-purpose weapon under those evidently rare circumstances to which its aggressive properties are well suited? Here, the experience of at least two

of the episodes noted in Table 1 is that, when CW weapons do have that usefulness, it stems from their combining a force-multiplying effect with an assault on adversary morale.

The potential effects of CW weapons on morale, noted earlier, reside in that great dread of poison which most people, across cultures, seem to share: an innate fear, some say, and for that reason an especially rich source of demoralization and panic. The "force-multiplier" effect is determined by the protection available against it. If there is no protection, the multiplication results from the economy of force available from an area weapon, especially one which can reach inside fortifications (as is the case with CW weapons that work by creating airborne hazards) or remain active for periods of days or weeks (as with some of the contact-effect agents). If there is protection, this effect may be much diminished, even lost, in comparison with that available from other types of area weapon, as Table 2 shows. Or it may take on a different and less dependable form: the degradation of combat efficiency imposed by the burden of the protection itself.

This is not the place to embark upon a close discussion of how significant these effects may be. It is sufficient to note only that the situations in which they can display themselves are bound to be rather tightly circumscribed. For example, weapons whose effects may be impossible to confine to their targets either in space or in time may prove unusable in situations where collateral damage must be minimized. Again, there will often be strict technical requirements that must be satisfied before any force-

multiplication becomes available, let alone worthwhile. The weight of attack, in particular, must be judged properly, for poisons are dosage-dependent in their effects: too little, and nothing at all may result; too much, and the justifying economy-of-force may be lost, so that the field commander might better have used a less objectionable or easier type of weapon.

Such calculations, it is worth observing here, may involve technicalities strange to non-specialists. There is plenty of evidence of commentators today becoming confused. Take, for example, page 90 of the U.S. Defense Department's Soviet Military Power 1987, which has been much quoted or otherwise relied upon in commentaries on the CW potential of ballistic missiles. The page contains a diagram showing a set of dosage isopleths calculated for a CW agent disseminated from the warhead of a Scud-B missile; another diagram superimposes the isopleths, described as a "ground contamination pattern" but left uncalibrated, on a representation of a military airbase. The largest of the isopleths, representing a dosage field four kilometers long and about two square kilometers in area, fits neatly down the entire length and breadth of the main runway. This is the origin of something that has been much repeated in newspapers and even defense journals[4] but which Soviet Military Power 1987 itself carefully did not say: that a single Scud CW warhead can contaminate more than 4,000 meters of runway, putting an airbase out of action. Now a Scud warhead can deliver a good half-ton of nerve gas if it is of the bulk-filled rather

[4] For example, *Defence, Communication & Security Review*, No. 27, pp. 13-16.

than the multiple-submunition variety; and CW-agent contamination from such a warhead could indeed be detectable over that two-square-kilometer area if the warhead did not burst at too great an altitude and if its payload of CW agent was of sufficiently high viscosity and low vapor pressure. But the deposition of payload over that area would inevitably be uneven--as, indeed, the isopleths indicated. If the deposition were even, simple arithmetic shows that the density of contamination would be about 0.25 grams of agent per square meter of airfield. Even for CW agents as powerful as the nerve gases VX or Soman, that is well below the level needed to establish a major casualty-threatening contact hazard (see Table 3). In other words, a single Scud warhead would be incapable of doing more than a small fraction of the damage so widely inferred from that Soviet Military Power 1987 diagram.

It seems that the degree of threat to which each of the isopleths in the diagram corresponded was a matter considered improper for open publication. The best that unclassified sources provide is to be found in the International Institute for Strategic Studies (IISS) The Military Balance 1988-1989, where, on page 248, one can find another set of isopleths calculated for a Scud CW warhead, but this time calibrated (albeit under slightly different operational assumptions). The agent considered is Soman, evidently thickened; the isopleth reaching out to four kilometers is said to correspond to an airborne dosage of one mg-min/m^3. For Soman, such a dosage is the inhalation threshold for "mild effects." The area

of severe effects by inhalation including some fatalities is bounded by the one-kilometer isopleth, about 0.55 square kilometers, defining airborne dosages exceeding 15 mg-min/m^3; and out only to some 250 meters, an area of maybe 0.04 square kilometers, does the surface contamination density exceed three grams per square meter. The IISS isopleths suggest, further, that to contaminate a four-kilometer runway even to one-thirtieth of that density, a minimum of four Scud warheads would have to be opened over it, each one accurately positioned. In actual practice, a very much greater number of missiles would have to be fired if there were to be a high probability of that effect being achieved, on the order of hundreds of missiles, for the CEP of the Scud is said to be at least 900 meters.

There are numerous published statements about the power of CW weapons which should be treated with the greatest scepticism, for example: "A single [Scud nerve-gas] warhead can spread deadly contamination over a 25-mile radius and render any of Israel's major cities completely uninhabitable for 24 hours after an attack."[5]

What about technological change? There are missiles more accurate than the Scud; and for countries with access to next-generation guidance technologies a marriage of CW warheads to the larger types of guided missile could conceivably provide weapons whose military value did not reside primarily in terrorizing effects. Yet in comparison with weapons using other varieties of

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[5] Leonard Glickman in *Journal of Defense & Diplomacy*, January 1988, p 58.

warhead, their cost-effectiveness seems unlikely to become much less unattractive than it is now. Novel CW agents of greater aggressiveness than the nerve agents might conceivably emerge, but people have been actively looking for them for decades. So, too, have people long been searching for CW agents that can defeat antichemical protection. The laws of physical chemistry, however, are stacked against them, and it seems that, in the way of mask-breakers, the organofluorine chemical PFIB is about the best they have been able to find. It takes a smaller quantity of PFIB than of nerve gas to saturate the charcoal filter of a gas-mask to the point where no more of it will be retained by the charcoal. But it takes a larger quantity of PFIB than of nerve gas to produce a casualty; and PFIB cannot, as the nerve gases can, attack through the skin. The fact of the matter is that, as far as providing weapons for regular warfare goes, CW armament is mature technology: diminishing returns have long since set in. Larger and larger investments in R&D are now required if the probability of worthwhile novel agents emerging is to be maintained significantly above zero.

But for unconventional, irregular forms of warfare--ones in which it is not the cost-effectiveness of CW weapons in comparison with other types which matters, but the uniqueness, or at least the singularity, of what CW weapons can do to certain types of targets --it cannot be said that the technology has reached such a state of maturity. It is in this domain that the scenarios for technological surprise may have an altogether greater plausibility.

CW Armaments in the Middle East

It has only been within the last four or five years that any sort of overview of Middle Eastern CW armament has become available in the open literature to augment what little the Stockholm International Peace Research Institute (SIPRI) had been able to provide a decade previously (SIPRI, 1973). The change came with the emergence of CW proliferation as an issue and the associated concern, correct or incorrect, that the Middle East was the region in which the proliferation was chiefly concentrated. However, even the present picture is neither clear nor complete; far from it.

There had long been unofficial commentary, even warning, about the spread of CW weapons;[6] but it was not until April 1984, just after the Iraqi use of poison gas in the Gulf war had been verified, that minatory governmental statements about CW proliferation began to accumulate in the public record. The U.S. Defense Intelligence Agency started it all with testimony to the U.S. Senate: "most of the threat," Mr Dominic Gasbarri told the Senate Armed Services Strategic and Theater Nuclear Forces subcommittee on April 26, 1984, "has been with the Soviets, but we now have evidence that indicates other countries want chemical weapons." The details, such as whether/how the wants might be being satisfied and who was thought to have them, furnished by Captain Sylvia Copeland, were deleted from the published testimony. But investigative reporting of CW proliferation commenced in the

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[6] For example: Robinson, 1974; Finan, 1975; Robinson, 1981; Vachon, 1984; and Roberts et al., 1984.

news media shortly afterwards,[7] stimulated by leaked official papers and unattributable official briefings, sustained by and sustaining a motley collection of academic and political commentators.[8] The U.S. Congress continued to be briefed by the Reagan and then the Bush administration, but the testimony which it published continued to be heavily "sanitized." The resultant body of literature--conspicuous gaps, largely undocumented, much of it clearly tendentious and speculative, rarely critical, often contradictory, and beset in any case by the ambiguities noted earlier in this paper--is quite unreliable as a source of factual information about the spread of CW weapons, however accurate parts of it may in fact be. The same of course goes for what it says about the state of CW armament in the Middle East, even for that part of it which is focused specifically on the region.[9]

This does not mean, however, that we are obliged to be agnostic. Clearly, within the secret domains of government in many different countries there are ordered arrays of information on the subject, at least some of it of high quality. That much we are able to infer from, especially, the development over the years of national export-control regulations aimed expressly at inhibiting the spread of CW weapons. The regulations seek to deny particular

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[7] Above all: Halloran, 1984; Anderson, 1984; Ember, 1985, 1986; Oberdorfer, 1985; Toth, 1986; Harris & Woolwich, 1986; Smolowe, 1988; Fialka, 1988; Wright, 1988; and Thatcher, 1988.

[8] For example: Roberts, 1984; Robinson, 1985, 1986, 1987, 1988; Douglass & Livingstone, 1987; Harris, 1989, 1989/90; McGeorge, 1989; Tesko, 1989; and McCain, 1989.

[9] Such as: Carus, 1986, 1988, 1989; Levran, 1987; Gold, 1989; Ezz, 1989; Jacchia, 1989; and Jones & Müller, 1989.

intermediate chemicals ("precursors") and types of production equipment to particular countries. Such controls are, it scarcely needs saying, not costless politically to governments imposing them upon large domestic chemical industries, meaning that they will be kept to a minimum; and meaning, too, that they can reasonably be correlated with the existence of high-grade intelligence information. So when we see the expanding range of controls imposed by Australia Group members on exports to Iran, Iraq, Libya and Syria, in addition to the erga omnes controls, we can stand in little doubt that those four countries currently have, most probably, active CW-weapons acquisition programs.

We cannot, it is true, draw additional inferences about other such programs in countries which members of the Australia Group do not feel menaced by--notably the Israeli and Egyptian programs remarked, as noted above, by Commander Captain Frederick W. Levin, the U.S. Director of Naval Intelligence. That those programs exist, subject to the ambiguities of interpretation and portrayal discussed earlier, we may safely assume that the DNI believes to be true, for he was writing attributably for the record as a witness before the U.S. Congress. And on the Israeli program, the open literature now reportedly includes a declassified paper from the U.S. Defense Intelligence Agency indicating that CW warheads are among those held for the Jericho I ballistic missile.

Much more than that cannot, from open sources, be said with good confidence about Egyptian and Israeli CW armament. However, on the programs of those other four countries there is rather more

in the way of reliable information, even if the sources for it are restricted solely to cognizant governmental officials speaking attributably for the public record. The primary source of this type is the prepared statement of William Webster, the Director of the U.S. Central Intelligence Agency, for his testimony before the Senate on February 9, 1989. The main points he conveyed about the CW armament of Iraq, Syria, Iran and Libya were as follows (Webster, 1989):

Iraq. Production and stockpiling of CW agents began in the early 1980s and still continues, even after the Gulf war cease-fire, with several thousand tons by now having been made. Initially the production program was heavily dependent upon the assistance of West European firms, which supplied technology and precursors. That dependence is now much reduced, complete independence being the Iraqi objective. Mustard gas, Tabun and Sarin are produced at Samarra. There are ancillary production facilities elsewhere. The agents are filled into bombs, artillery shells and rockets.

Syria. Production of a variety of CW agents and munitions began in the mid 1980s with assistance from West European firms, and are stockpiled for battlefield missions. Some Syrian weapons systems can now deliver nerve gas.

Iran. Production of CW agents, including mustard, blood and nerve gases, began at a factory in the vicinity of Tehran in the mid-1980s with assistance from West European and Asian firms. The Iranian program is expanding. Agent-filled bombs and artillery

shells are being stockpiled for battlefield missions.

Libya. A factory for mustard and nerve gases is being built, with an associated munitions-filling plant, at Rabta. It is not yet ready for large-scale production and will remain dependent on the assistance it has been getting from West European and Asian firms. Its projected capacity, on the order of tens of agent-tons per day, probably makes it the single largest CW production facility in the Third World, although it is smaller than the combined Iraqi capacity.

Mr. Webster did not say, in his testimony, that any of these countries were producing CW warheads for ballistic missiles; he warned of the possibility, however. In an earlier statement, on September 25, 1988, Webster had said: "And with the increase of ballistic missiles in the Third World, we must be alert to attempts by Third World nations to arm these missiles with chemical warheads. Virtually every city in the Middle East would be subject to such an attack, if these two types of weapons are combined."

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Authenticated Episodes of Poison-Gas Warfare Since World War I

Table 1

Period	User	CW Weapons Used
1919	British forces intervening in the Russian Civil War	Mustard-gas artillery, etc.
1925	Spanish forces in Morocco	Mustard-gas aircraft bombs
1934	Soviet forces intervening against Muslim insurgents in Sinkiang	Mustard-gas aircraft bombs
1935-1940	Italian forces in Ethiopia	Mustard-gas aircraft spray-tanks and bombs
1937-1945	Japanese forces in China	Mustard & lewisite aircraft bombs, etc.
1966-1967	Egyptian forces intervening in the [North] Yemeni Civil War	Phosgene & mustard aircraft bombs
1983-1988	Iraqi forces in the Gulf War	Mustard & tabun aircraft bombs, etc.

Source: Sussex/Harvard Information Bank on Chemical and Biological Weapons (CBW) Armament and Arms Limitation.

Table 2. Nerve-gas, high-explosive and fragmentation projectiles compared

Volleys of 155-mm battalion fire for 30 percent casualties over a platoon-sized target (150 m radius) in open terrain 10 km distant.

Type of projectile	Antichemical protection of target personnel	Target personnel on the attack	Target personnel in defence
Air-burst high explosive	[irrelevant]	4	51
Fragmentation submunition	[irrelevant]	1	4
Sarin (GB) nerve-gas	Unprotected	1	1
do.	Carrying masks but not wearing them at start of attack	2	66
do.	Wearing masks throughout but not protective clothing	74	74
do.	Wearing masks and protective clothing throughout	[30% casualties unattainable]	[30% casualties unattainable]

US Army data, in Sussex-Harvard Information Bank on CBW.

It is assumed that, at the start of the first volley (18 rounds per volley), half of the target population is prone and the other half upright when on the attack, or sheltered in foxholes when in defence; thereafter all attackers are prone and all defenders are in foxholes. It is also assumed that people on the attack would be breathing 4-5 times faster, in terms of minute volume, than people on the defensive, and that they would take twice as long -- 20-30 seconds -- to don their gas-masks once the projectiles had started to fall. For the nerve-gas shell, the number of volleys required would vary over at least an order of magnitude according to the weather; the figures here are mid-range ones, for a cool, dry, heavily overcast day with a gentle breeze.

J. P. Robinson

Table 3. Potency of some prominent CW agents, estimated for man

Agent	Percutaneous median lethal dosage, LD50, bare skin, *grams per man*	Percutaneous median lethal dosage, LD50, summer uniform, *grams per man*	Weight of attack for 30–50% casualty levels implicit in the firing tables for representative agent-filled munitions at mid-range meteorological conditions, *agent-tons per sq kilometre*
Phosgene	..	..	40 (inhalation)
Mustard-gas vapour	..	..	5 (eye damage) 28 (skin burns)
Mustard-gas droplets	1.4 – 7	22	22 (skin burns)
Sarin	1.7	..	1.2 (inhalation)
Soman	0.35 – 0.5	1.4 – 2.1	..
VX	0.01 (*8 hr contact*) – 0.2 (*1 hr contact*)	0.1 (*8 hr contact*) – 1.4	2 (percutaneous absorption)

US Army data, in Sussex-Harvard Information Bank on CBW.

Note (a): The exposed surface area of a prone man is about 1 m^2. One g/m^2 is the same as 1 tonne per km^2.

Note (b): For VX, the median incapacitating dose in man is estimated to be about 0.5 of the LD50, with the threshold for symptoms about 0.2 of the LD50.

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