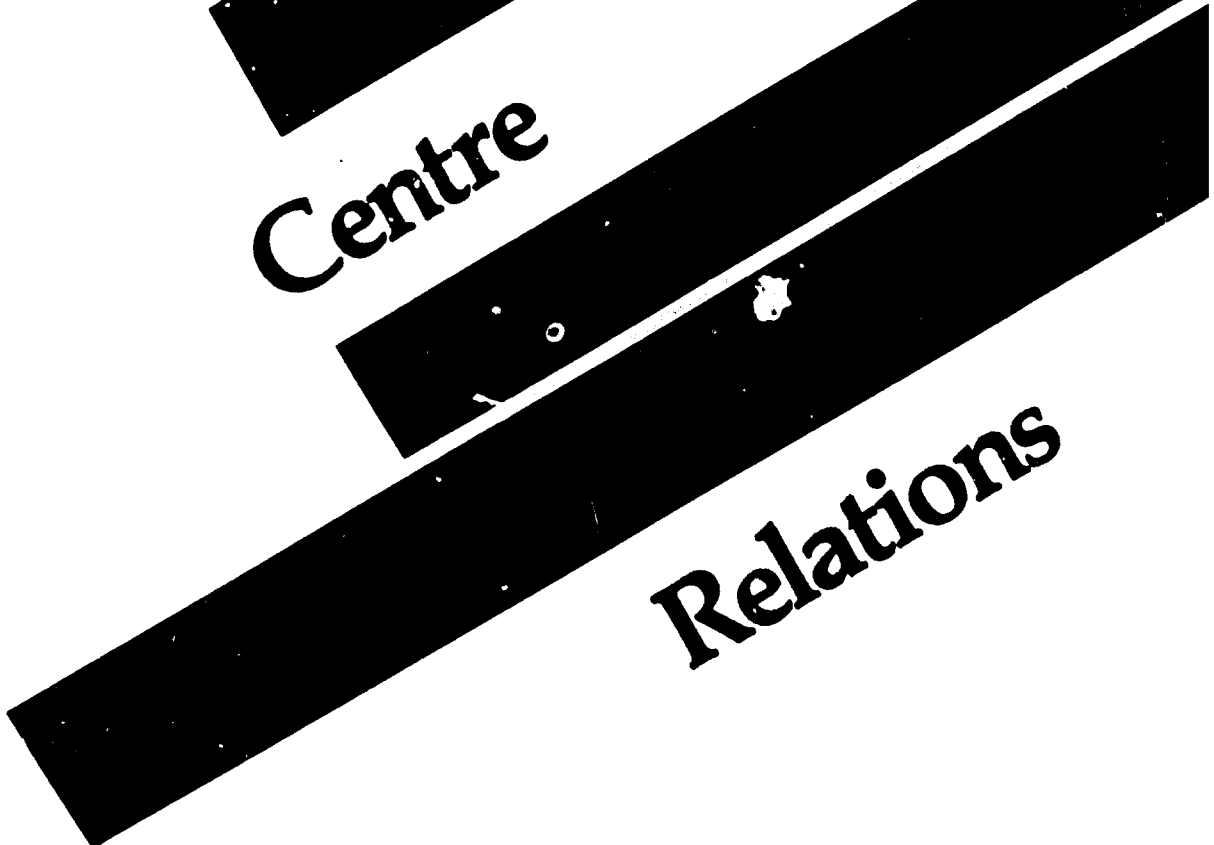


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**TOWARD ARMAGEDDON: THE PROLIFERATION OF
UNCONVENTIONAL WEAPONS AND BALLISTIC
MISSILES IN THE MIDDLE EAST**

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The United Nations Conference on Disarmament (UNCD) has long attempted to discourage the proliferation of unconventional weapons. It is the body through which both the Treaty on the Non-Proliferation of Nuclear Weapons (NPT, 1968) and the Biological Weapons Convention (1972) were steered. The UNCD is also the body through which a new and comprehensive chemical weapons convention is edging its way toward success or failure. These protracted negotiations are running against the clock, for some states seek to acquire chemical weapons just as other states wish to ban them. This development is especially apparent in the Middle East and was dramatized by the use of chemical weapons during the Gulf war. Research, development, and, possibly, the production of biological weapons is also reported from the region.¹ If true, it would clearly contravene the 1972 convention. It is likely that the regional trigger for the spread of unconventional weapons was provided by Israel, which took an early decision to acquire nuclear weapons. Each of these weapons is characterized as a "weapon of mass destruction," a phrase coined by the United Nations in 1947. Where the Middle East leads states in other regions will surely be tempted to follow, for the desire to imitate formidable weapons systems is commonplace in international politics.

Fear of the consequences of the extension of unconventional weapons capabilities, which only a short time ago were the preserve of the great powers, is compounded by simultaneous developments in the nature of

delivery systems. As many as eight states in the Middle East have deployed surface-to-surface missiles capable of carrying unconventional warheads. This is a significant development because of the compression of hostilities within a limited geographical area. It will be recalled that during the Gulf war both Tehran and Baghdad were hit with conventionally-armed SS-1 (or Scud-B) surface-to-surface missiles. It is but a small step to arm these missiles with an unconventional warhead, as is the practice of the Soviet Union. Taken together, the proliferation of unconventional weapons and the proliferation of ballistic missiles makes future conflict in the Middle East potentially catastrophic.

In The Twenty Years' Crisis, 1919-1939, Edward H. Carr described how the wish to impose a structure of government on the disorder of international politics was so strong that the reformers mistook what was desirable for what was practicable.² A parallel situation has developed in the arms-control community today, for it starts with the premise that it is imperative to discourage the proliferation of unconventional weapons. Its chosen means is the extension of international law over these weapons, so that their possession can be outlawed.³ This desirable goal blinds one to the fact that it is already too late, for new and improved conventions may protest these unfortunate developments, but they will not stop or reverse the trend. In this paper I will describe what is actually happening in the Middle East, for the goal of non-proliferation is so strongly held that the reality of the situation risks neglect. I will also place these developments in the context of the failure of the legal and other means of controlling proliferation. The reader must then judge whether what is desirable is also practicable.

It is, of course, difficult to make precise calculations about the proliferation of unconventional weapons in the Middle East, for the proprietors are often reluctant to advertise their capabilities, or they may have capabilities attributed to them which they do not possess. The evidence for the proliferation of biological weapons, for example, is less persuasive than that for nuclear and chemical weapons; but, at most, one is dealing with exaggeration, not fiction, in a field in which offensive capabilities appear to be evolving rapidly. What, in essence, the paper is describing is the democratization of unconventional weapons capabilities and delivery systems. The underlying theme of the paper is that this development appears to have freed states in the Middle East from the leverage of the great powers. Yet, it is surely through the great powers, acting in concert to resolve the political problems that beset the Middle East, that a resolution to the dual problem of proliferation (unconventional weapons and missiles) must first be sought. The strengthening of international law might subsequently follow. Without that initial cooperation, as the Soviet foreign secretary, Eduard Shevardnadze, recently suggested, the Middle East might be witness to Armageddon.⁴

The Catalyst of Israel's Nuclear Weapons Program

For more than 30 years Israel has quietly pursued a nuclear weapons program, yet it chose to be deliberately ambiguous about its status. Israel neither admits to the possession of a nuclear arsenal, nor does it deny possession; it merely asserts that it would never be the first to introduce nuclear weapons into the Middle East. As Israeli spokesmen were aware that the great powers had already introduced nuclear weapons into the area, they also knew that their ambiguity could not be faulted. Few

observers now doubt that Israel possesses a nuclear arsenal and that the initial stimulus came from cooperation with France, which was also anxious to develop and test the atomic bomb. The former head of the French Atomic Energy Commission, Francis Perrin, admitted that France and Israel actively cooperated on the design of atomic warheads between 1957 and 1959.⁵ France exploded its first nuclear device in 1960. France also supplied Israel with the Dimona research reactor, long the centre of suspicion about Israel's nuclear weapons ambitions and which it refuses to submit to the safeguards of the International Atomic Energy Agency. Israel also refuses to commit itself to the Treaty on the Non-Proliferation of Nuclear Weapons, in advance of a peace settlement in the Middle East.

Until recently, expert opinion credited Israel with a relatively small nuclear arsenal. Leonard Spector wrote that "the consensus of most published analyses is that Israel possesses between twenty and twenty-five Nagasaki-size (20-kiloton) devices."⁶ These estimates received a dramatic boost from Mordechai Vananu, a technician at the nuclear establishment at Dimona, who de-camped with some 60 photographs of its operations. In the brief time that Vananu was at large he managed to convince Frank Barnaby, the former director of the Stockholm International Peace Research Institute, and other scientists, that his evidence was genuine. Vananu revealed that the re-processing facility at Dimona was capable of producing 40 kilograms of plutonium a year (four times the previous estimate) and that Israel needed only 4 kilograms of plutonium (half the previous estimate) to detonate a nuclear device.⁷ With a suspected arsenal of 100 to 200 warheads, Israel had vaulted well beyond the ranks of a "nuclear pigmy" to the world's sixth nuclear power.⁸ The most surprising piece of

evidence, accepted by Barnaby, was that Israel was not merely an atomic weapons power, but that it was also capable of producing thermonuclear weapons.⁹

Most Israeli combat aircraft are capable of carrying nuclear bombs. If sent on one-way missions, or if they were re-fueled in the air, Israeli aircraft could reach all Arab capitals. Israel has long had a missile capability, useful both in the battlefield context and in a wider theatre of operations. It possesses 12 dual-capable (conventional or nuclear warhead) Lance missiles, which it purchased from the United States. The Lance is a mobile, battlefield weapon, with a range of about 100 kilometers. It is not renowned for its accuracy, which is to say that its utility is a function of its yield. Israel apparently has the technical capability to down-size its nuclear warheads to the point where they could be carried by the Lance.¹⁰ Israel also possesses a more formidable missile capability in the appropriately-named Jericho, another product of early cooperation with France. The latest manifestation of this weapon, the mobile Jericho 2, is said to have a range of 1500 kilometers.¹¹ The Washington-based trade paper Aerospace Daily reported in 1985 that the Jericho carried a nuclear payload.¹² These developments place all of its opponents in the region and parts of the Soviet Union within range of an Israeli nuclear strike. Public confirmation of Israel's considerable military capability in missile technology came in September 1988 when it launched its first satellite into space.

These extraordinary developments in Israel's nuclear capability were unhindered by a public debate about the purpose to which the arsenal was to be put, since published reflection on these matters is subject to the oversight of the military censors. Instead, it appears that the Israeli

nuclear weapons program was driven by what Barnaby called its inner "technological momentum," especially across the threshold of a thermonuclear capability.¹³ Israel was also trapped by its policy of ambiguity, for a public discussion of the nature of the external threat is unlikely to have endorsed the development of thermonuclear weapons. The program appears to have separated itself from political reality and become an end in itself.

We know from the destruction of Iraq's Osarik nuclear reactor in June 1981 that another component of Israel's attitude to nuclear weapons is its intolerance of the idea that other states in the region might also possess them--even when their intentions, like those of Israel, are shrouded in ambiguity. A likely outcome of Israeli action against Iraq was to deflect those countries in the Middle East anxious to acquire nuclear weapons to the production of a more readily available weapon of mass destruction. Israel is not alone in its intolerance. Other states also wish to discourage their neighbours from acquiring nuclear weapons, as the attack by Iraqi aircraft on an Iranian reactor demonstrated.¹⁴ Libya, perhaps the most openly acquisitive of the potential nuclear powers in the Middle East, faces the profound suspicions of its Egyptian neighbour. Iraq's nuclear ambitions arouse the suspicions of Syria, as well as of Israel. Military pre-emption (Iranian aircraft damaged Osarik nine months before the Israelis destroyed it) will likely conspire with a limited industrial base to delay horizontal nuclear proliferation in the Middle East. Spector concludes that the three states in the Middle East most anxious to acquire a nuclear arsenal, Iran, Iraq and Libya, are not near-term prospects for nuclear weapons possession.¹⁵

The Attraction of Chemical Weapons

These three countries, as well as others in the region, are quite capable of producing chemical weapons. It is this development that lent the sense of urgency to the international chemical weapons conference held in Paris in January 1989. Before examining the spread of these weapons through the Middle East, a comment is in order on the context within which chemical weapons are customarily evaluated and what it is that makes them a desired component of an arsenal.

Once the proscription applied to asphyxiating and poisonous substances by the Hague Peace Conferences of 1899 and 1907 was breached by the Germans in 1915, chemical weapons were quickly absorbed into the battlefield practices of both sides. The powers found that, at a minimum, those weapons disorient or disable, and that they were also frequently lethal. According to Western estimates, disputed by the Soviets, the Russians suffered 475,000 injured and 56,000 fatalities from repeated gas attacks during the war.¹⁶ The fear that these weapons evoked contributed to the early interest of the League of Nations in chemical weapons disarmament and to the ban imposed on the use of these weapons by the terms of the Geneva Protocol of 1925.

The attraction of chemical weapons, nevertheless, proved greater than the repulsion, for the experience of the widespread use of gas on the battlefield and the subsequent flailing of the Geneva Protocol by Italy in its campaign against Ethiopia (1935-36) fed the expectation that chemical weapons would be used in the next major conflict.¹⁷ The Italian actions also suggested that chemical weapons might in future escape their battlefield context and be used against civilian populations now vulnerable to assault from the air.¹⁸ Not surprisingly, the League of Nations'

interest in chemical weapons disarmament evaporated in the approach to war and was replaced by the conviction of the major powers that they must now deter the offensive use of chemical weapons by a matching capability.¹⁹ Deterrence was not general--it could not be after World War II had started --rather, it was a specific, intra-war form of deterrence, appropriate only to the non-first use of chemical weapons. In the event this policy was successful; fear of retaliation in kind was a factor, perhaps the major factor, in the restraint shown by the protagonists during the second world war, for chemical weapons were only used when fear of retaliation was absent. The Japanese used chemical weapons against the Chinese who could not retaliate in kind, but not against the Americans or the British, who could.²⁰ Chemical weapons were a major component of Germany's "final solution" and, as such, were the most devastating demonstration of an unconventional weapon in the history of warfare; but they refrained from using their vast stocks of chemical agents against the Allies, for whom deterrence was an explicit object of policy.

On the major great power fault line in contemporary international politics, the United States seeks to deter the chemical warfare threat posed by the Soviet Union with a matching capability. The United States has undertaken the modernization of its chemical warfare inventory, to correct what it sees as an imbalance between its own and the arsenal possessed by the Soviets. There is another sense in which the legacy of the past informs the present. NATO assumes the selective use of chemical weapons--both by itself, as an adjunct to conventional and nuclear weapons, and also by its Soviet opponent. The Soviets, it is assumed, will use chemical weapons on the battlefield and against other high-value targets.²¹

Implicit in NATO's thinking is the idea that chemical weapons, though instruments of mass destruction, pose significantly less of a threat than nuclear weapons, thus making it impossible for the chemical to deter, by itself, the nuclear. This disposition makes sense in the context of the relationship of mutual deterrence between the United States and the Soviet Union. It is less persuasive in the strictly European context of deterrence where the French believe it possible to deter a Soviet chemical assault with the threat of nuclear retaliation. In any event, the lessons drawn from the experience of the established proprietors of chemical weapons are not necessarily applicable to the new proprietors, who will likely examine the utility of the range of unconventional weapons in the context of their own geography and antagonisms, as well as in the context of the changing nature of chemical weapons themselves.

The toxicity of chemical weapons increased enormously with the invention of the nerve gas tabun in Germany in 1936 and with it the potential for its use against targets beyond the battlefield. By the end of World War II Germany possessed large stocks of tabun, smaller stocks of a companion G agent, sarin, and it had begun experiments with a yet more effective and persistent G agent nerve gas, soman. Even more deadly substances, the persistent V agent nerve gases, were invented in Britain in the 1950s. It is important to understand the attractions and the limitations of nerve gases. Tabun, especially, is relatively easy to produce in any plant capable of producing organophosphorous pesticides. Other G and V agent nerve gases may present more of a challenge to chemical engineers, but they are not insurmountable, especially with the help of the export-hungry commercial enterprises in the industrialized world. A state seeking an unconventional weapons capability, as Libya has so conclusively

demonstrated, will find chemical weapons an infinitely easier challenge to master than nuclear weapons--a built-in incentive to proliferation.

Nerve gases are weapons of surprise, for they are practically colourless and odourless. They are also highly toxic. Protective equipment is essential since a small dose, whether absorbed through the skin or inhaled, will kill quickly. At a minimum, troops will find their combat effectiveness severely hampered by operating in a chemical warfare environment and civilians are likely to find themselves exposed and unprotected. The nerve gas VX, which has the clinging characteristic of thick oil, could, in amounts of only 300 kilograms per square kilometer, persist as a lethal hazard for several weeks.²² Chemical weapons also possess the advantage of ready adaptability to a variety of delivery systems, notably artillery, aircraft and missiles. The Soviet Union, for example, is reported to have attached chemical warheads to at least two of the short-range surface-to-surface missiles which, in their conventional warhead configuration, it exports to the Middle East: the SS-1 (or Scud-B; 300 kilometer range) and the SS-21 (120 kilometer range).²³ The SS-21 is among the most accurate in the Soviet arsenal.

Chemical weapons, nevertheless, have serious limitations. The non-persistent nerve gas, tabun, would have to be distributed in great quantities to assure the death of an enemy, although the other G agents, sarin and soman, and the V agents are more weight-efficient. All chemical weapons are influenced by weather conditions and topography. Even the so-called persistent nerve gases are less effective in hot, windy and cloudy conditions and gas will tend to flow around obstacles rather than over them. As in the case of the fall-out from nuclear weapons, the effect of a

chemical weapons assault is far from predictable for gas is also likely to waft on the wind to unintended places. Yet, if the statements of intention accompanying the proliferation of nuclear weapons is any guide, the possibility of a self-inflicted wound will tend to be discounted when there is the certain prospect of doing greater harm to the enemy.

Notwithstanding the limitations of chemical weapons, the author of a recent book on chemical warfare, Edward Spiers, acknowledges the threat that they pose to conurbations; the contaminants

will persist longer in urban areas than over open ground. Despite the higher surface temperature of built-up areas, the building materials are frequently porous and will absorb and retain liquid chemical agents, while the factors that tend to reduce persistence in open country²⁴ (sunshine, wind over ground, etc.) are of less significance in a city.

Although they have their limitations, the relative ease of manufacture and the increasing refinement of chemical weapons, especially the nerve gases, means that they possess a utility that takes them beyond the limited battlefield context of the past. A generation ago the phrase "poor man's deterrent" was coined, not so much for chemical weapons as for biological weapons. It was not a particularly persuasive idea at the time as so-called "weak countries" seemed more intent on ridding the world of weapons of mass destruction than of adding to them.²⁵ Manifestly the situation has changed, as countries in the Middle East appear determined to offset Israel's nuclear capability and to improve their strategic situation in respect of other regional opponents by the acquisition of chemical weapons.

The Proliferation of Chemical Weapons in the Middle East

Who are the alleged possessors of chemical weapons in the Middle East? The Sipri Yearbook carries a report that Israel began the production and

stockpiling of nerve and mustard gas sometime in the 1970s.²⁶ Israel does not, of course, advertize its offensive chemical weapons capability, but one respected Israeli commentator, Brigadier-General Aharon Levran, editor of The Middle East Military Balance, 1986, observed that "logically, Israel has good reason to develop chemical weapons. You don't want to be in a position where you have to resort to the top of the unconventional weapons [i.e., nuclear weapons] pyramid."²⁷ Israel certainly assumes that its regional opponents possess chemical weapons, and it has undertaken to raise public awareness both at home and abroad of the chemical warfare threat and to take precautions against it.²⁸ Israel's integrated chemical warfare defense doctrine is "based on two principles: survivability and continuance of the mission."²⁹ Survivability includes the protection of the civilian population, the "majority" of whom are issued respirators and filters.³⁰ It should be noted that this reported majority excludes the inhabitants of the occupied territories, who appear to have no protection against such harassing agents as CS gas.

Egypt was probably the first Arab state to use chemical weapons. It is reported to have disinterred and discharged old British stocks of mustard gas to promote the republican cause in the civil war in the Yemen, 1963-67.³¹ Ironically, British forces were fighting with the royalists. Libya is suspected of using poison gas, albeit unsuccessfully, in northern Chad late in 1986; and there is increasing international concern over Libya's determination to develop a nerve gas production capability. Iraq, a signatory of the 1925 Geneva Protocol banning the use of chemical weapons, repeatedly attacked Iranian forces with a variety of chemical agents and, probably because they may have contributed significantly to battlefield success, Iraq appeared impervious to international

condemnation. Iran claims 253 such attacks since 1981.³² The mission in March and April 1988 of the Secretary-General of the United Nations investigating the allegations of the use of chemical weapons during the Gulf war confirmed through medical examinations the widespread use by Iraq of mustard gas, as well as evidence of the nerve gas, tabun.³³ One report suggested that Iraq is also producing the nerve gas sarin in an amount (3,600 kilograms per month) equal to its production of tabun.³⁴

What is remarkable about these developments is not so much Iranian forbearance in the face of chemical warfare, as Iraq's decision to persist with it in the face of Iran's capacity to respond in kind. Iran is listed by the Sipri Yearbook as a possessor or an alleged possessor of chemical weapons.³⁵ Iranian forbearance has limits, for a United States State Department spokesman, Charles Redman, suggested in March 1988 that Iran may already have responded with chemical artillery shells of its own--an allegation that was subsequently confirmed by the United Nations mission.³⁶ In publicly admitting that Iraq had used chemical weapons in the war, the Iraqi foreign minister sought to justify his government's actions as retaliation against Iranian first-use³⁷--a claim for which there is no collaborative evidence. There is every incentive for Iran to develop an offensive chemical warfare capability beyond its likely stocks of mustard gas and phosgene (a choking agent widely used in World War I). Rival states invariably wish to imitate the weapons of an opponent and Iran could readily adapt to the production of nerve gas.

Syria, a rival of Iraq as well as of Israel, is the other state in the region suspected of possessing a range of offensive chemical weapons, including the nerve gas sarin.³⁸ The Syrian threat is of particular

concern to Israel, from whom there were reports that a pre-emptive strike against its rival's chemical weapons production facilities might be warranted.³⁹ The United States and Israel issued similar threats against Libya's newly-revealed capacity.

Fearful of the potential consequences of the spread of chemical weapons a number of industrialized states, prompted by an Australian initiative, formed the so-called "Australian group" to monitor and discourage the export of chemicals and equipment that could be used for weapons manufacture.⁴⁰ They directed their attention first to Iraq, but the group's mandate soon extended to include Iran, Libya and Syria. The exercise is unsuccessful, for it is proving easier for the members of the group to enter into commitments with each other than it is for them to police the activities of export-minded industries in their own countries. It is now known, for example, that German companies contributed significantly to the development of Libya's chemical weapons capability, apparently without the knowledge of the Federal government.⁴¹ The foreign minister of Iraq acknowledges that Europe was the primary supplier to countries in the Middle East and, thus, "to be outraged and shed crocodile tears is pure hypocrisy."⁴² Is it possible that a more formal set of arrangements to inhibit the proliferation of unconventional weapons might succeed where the "Australian group" has failed?

Legal Controls on the Proliferation of Unconventional Weapons

The Treaty on the Non-Proliferation of Nuclear Weapons involved the extension of international law to what was recognized as the most dangerous prospect in international politics, a potentially uninhibited nuclear arms race. As part of the price for discouraging horizontal proliferation, the

nuclear weapon state authors of the treaty (the United Kingdom, the United States and the Soviet Union) agreed to undertake negotiations on "effective measures relating to the cessation of the nuclear arms race at an early date and to nuclear disarmament" (Art. VI). The failure of its authors to live up to their side of the bargain within a reasonable period of time contributed to the erosion of the NPT, for the treaty could increasingly be interpreted as an attempt to create a two-tier international system: of legitimate nuclear weapons possessors on the one hand, and those who were hoodwinked into forswearing the capability on the other. The treaty may also have contributed to the determination to acquire nuclear weapons, for a commodity which is so hard to relinquish may be thought by those who do not possess it to be all the more desirable. Nuclear weapons bring prestige and, their custodians inevitably argue, an increment of security. It is a matter of record that some openly declared nuclear weapon states refused to be party to the treaty (China, France), that some states not party to the treaty conducted clandestine nuclear weapons programs (Israel, Pakistan) and that some parties to the treaty embarked on programs to develop nuclear weapons (Iran, Iraq). It is not so much the existence of the NPT that has inhibited the horizontal proliferation of nuclear weapons as lags created by the sheer scale of the effort required.⁴³

The existing framework of international law as it applies to chemical and to biological weapons appears to be a study in contrasts. The weakness of the Geneva Protocol of 1925, under urgent review for the last decade, was that it merely banned the use of chemical (and bacteriological) weapons in combat, while leaving intact the powers' right to develop and produce these weapons. The strength of the Biological Weapons Convention of 1972

was that, in the words of one observer, it "was the world's first disarmament agreement - in that it banned not just the use but also the production of a whole class of weapons."⁴⁴ At the second review conference on the Convention in 1986 it was affirmed that all relevant scientific developments since 1972 were "unequivocally" included in its original terms.⁴⁵ The convention would appear to be water-tight.

In fact, there is little hope that the present framework of international law will have much influence on the actual behaviour of states in the Middle East in respect of either chemical or biological weapons. Iraq is a party to the Geneva Protocol. The success it had with chemical weapons, in violation of its international obligations, has affirmed their intrinsic appeal as components of a modern arsenal and probably lowered the threshold at which these weapons will be used in other conflicts in the region. According to the defence minister of Israel, Yitzhak Rabin, Iraq's behaviour has "broken a psychological barrier to the use of chemical weapons in a future Middle East War."⁴⁶ Rabin made his comments before the chemical assault on Halabja, in March 1988, where another line was crossed: between the battlefield use of chemical weapons and the deliberate targeting of civilians. Iraq's behaviour, together with the evidence of the use of chemical weapons by other parties to the Geneva Protocol--Egypt in the Yemen, Libya in Chad and Iran in response to Iraq--signals not only the proliferation of chemical weapons throughout the region but an almost cavalier attitude to their use. These developments will be encouraged by the knowledge that, in the absence of a new and comprehensive convention on chemical weapons, international law is powerless to restrain the development, proliferation and even the use of these weapons in war. The long history of violations of the Geneva

Protocol is yet another example of an enduring problem of international politics, that when an international obligation collides with a national interest it is by no means certain that the international obligation will triumph: a problem that will likely bedevil any future chemical weapons convention.

Many doubts have been raised about the status of the Biological Weapons Convention, as it seeks to suppress weapons whose military utility and, hence, attractiveness has greatly increased since 1972 and where the line between research for defensive purposes, permitted by the Convention, and for offense is inevitably blurred.⁴⁷ If this is part of the general problem of biological weapons, there is a specific problem in the context of the Middle East. Israel is not a party to the Convention. Egypt, Iraq and Syria have signed but not ratified the Convention and, by the terms of Article XIV, they are not yet bound by its obligations. All four states are bound by the prohibitions, on the use of bacteriological weapons, contained in the Geneva Protocol and which now forms part of customary international law. But, if one reflects politically rather than legally on the Protocol and the Convention and, indeed, on the Nuclear Non-Proliferation Treaty, one is struck by the inability of the great power authors of these agreements to extract meaningful commitments from their clients and friends in the Middle East. I am reminded of a question posed by Hedley Bull and appropriate to the spread of unconventional weapons throughout the region: "Is the 'progress' of international law in our own times, perceived by the international lawyers, anything more than its heightened protest against the facts of international politics?"⁴⁸ Unconventional weapons are now an entrenched feature of political realities

in the Middle East. It will be difficult, perhaps impossible, to outlaw their possession.

The Proliferation of Missiles in the Middle East

In this paper I will comment only on the proliferation of missiles in the Middle East, for they represent the most dramatic innovation in vehicles capable of carrying unconventional weapons. The modernization of other elements of armed force, notably the aircraft and artillery capability of Iraq and Syria, cannot be ignored in any summary of war-fighting potential, particularly as it pertains to chemical weapons. Missiles, however, represent a weapon against which there is yet to be an effective defence.

The destructive potential of combining the atom bomb and the missile was recognized in the immediate aftermath of Hiroshima.⁴⁹ The destructive potential of combining chemical warheads with missiles has largely been discounted, because their great power possessors had more formidable nuclear arsenals. It is, however, a potentially deadly combination, especially if targeted on cities. The Secretary-General's mission to Iran in 1988 reported that "we became aware of widespread concern among Iranians, officials as well as the average citizen, over the possible use of chemical weapons against their cities."⁵⁰ This concern was well-founded, for the Secretary-General's mission of 1987 confirmed the use of surface-to-surface missiles armed with chemical warheads.⁵¹

There are four ways in which surface-to-surface missiles have spread throughout the Middle East. First, they have been exported from outside the region. Second, there are transfers of missiles within the region. Third, countries have sought to develop their indigenous capabilities of missile production. Fourth, they have entered into agreements with other

parties to develop missiles.

In respect of the acquisition of missiles from outside the region I have already mentioned the Lance, a short-range missile which Israel acquired from the United States in the early 1980s. The most generous of the external suppliers is the Soviet Union or its allies who exported a short-range missile, the Frog-7, to Algeria, Egypt, Iraq, Libya, South Yemen and Syria. The more formidable Scud-B was also exported to each of these countries.⁵² Iraq reportedly launched 200 Scud-Bs against Iran in the first half of 1988,⁵³ although it is probable that their first use in combat occurred during the October 1973 Yom Kippur war when both Egypt and Syria fired the Frog-7 at Israeli targets and Egypt also launched one of its Scud-B missiles at Israel.⁵⁴ Iran, anxious to meet the Iraqi challenge in kind, purchased about 100 Scud-B missiles from North Korea in June 1987, in the aftermath of an even larger Iraqi purchase of these missiles from Czechoslovakia.⁵⁵ Iraq is reported to be seeking to replenish its depleted stocks of Scud-Bs with a Brazilian equivalent, the Avibras SS-300.⁵⁶

Of pressing concern to Israel is the updating of the surface-to-surface missile capability of its regional opponents, especially Syria. The Soviet Union began the supply of the SS-21 to Syria in 1983. It now possesses up to 24 SS-21 launchers, each with three to four missiles. The utility of this missile extends beyond such counter-force targets as enemy airfields for it is accurate to within 100 meters, whereas the relatively inaccurate Scud-B is limited to such counter-value targets as cities.⁵⁷ Early in 1988 it was reported that Syria had developed nerve gas (including VX) warheads for each of the three types of Soviet missiles in its possession.⁵⁸ Iraq may possess the SS-12, a conventionally-armed though

nuclear and chemical capable, missile that can strike at Israel.⁵⁹

China has emerged as the most recent exporter of ballistic missiles to the Middle East. Over vigorous objections from Israel, up to 70 CSS-2 intermediate-range ballistic missiles were exported to Saudi Arabia. The utility of this elderly, inaccurate vehicle appears at first glance to be questionable since the Saudis promised to retain its conventional warhead configuration. There are reports, however, that Israel had earlier helped China improve the guidance system of the CSS-2, unwittingly contributing to its export-appeal.⁶⁰ Frustrated in its attempt to acquire the Soviet SS-23, Syria is reported to be negotiating the purchase of the new Chinese M-9 missile, whose 600-kilometer range means that its rocket forces could for the first time reach any target in Israel.⁶¹ Iran also wishes to purchase this missile.⁶²

An active secondary market exists for the transfer of missiles within the region, although most of these are of the surface-to-air type which the Polisario front used to destroy an American aircraft over the Western Sahara in December 1988. During the course of the Gulf war, however, both Libya and Syria attempted to make-up for the Iranian shortfall of Scud-B missiles by supplying Iran from their own stocks of these weapons.⁶³ Future conflicts in the Middle East can be expected to reactivate intra-regional transfers of this type, especially as the stocks become more abundant.

If Israel's missile capability encouraged its opponents to follow suit, the demands of the Iraq-Iran war prompted the further refinement of these vehicles. The Iraqi al-Husayn missile (650-kilometer range) saw its first action during the so-called "war of the cities" early in 1988. It is probably a variant of the Scud-B, and employed North Korean, Egyptian and

East German technical assistance. Iraq is also testing the al-Abos missile (900-kilometer range), another Scud-B variant.⁶⁴ A national priority of Iran is the development of its surface-to-surface missile capability, so that it can be freed from dependency on imports. What the Iranians call the Oghab missile is a large unguided rocket, modelled on the Chinese Type 83 artillery rocket. It was used extensively in the "war of the cities," as many Iraqi targets were within its 40-kilometer range. Potentially more formidable is the Iran-130 (the numerals refer to its range), an indigenously-produced missile whose teething problems were not overcome before the ceasefire in the Gulf. Iran also claims the capability of producing a direct copy of the Scud-B from its own resources.⁶⁵

The two significant instances of extra-regional cooperation in respect of the design, development and testing of surface-to-surface missiles are the Israeli Jericho missile which at various times appears to have elicited the support of France, Iran and South Africa, and the collaborative agreement between Argentina and Egypt to develop the 600-kilometer range Condor II surface-to-surface missile.⁶⁶ This project has elicited Italian and West German technical assistance.⁶⁷

Predictably, a number of the powers capable of supplying missiles or their components to the Middle East became belatedly concerned about this particular expression of proliferation. After four years of negotiations, the United States, Canada, France, Italy, Japan, the United Kingdom and West Germany agreed, in April 1987, to a new set of export regulations designed to restrain the proliferation of missiles capable of carrying unconventional warheads. These negotiations overlapped with the sale by the United States of Lance missiles to Israel. It is unlikely that the new

regime will have much success, for great power interest in controlling the proliferation of missiles in the Middle East is not uniform. The United States gave Israel a nod and a wink in the early stages of the development of the Jericho 2. The Soviet Union cannot be expected to deny its clients in the Middle East surface-to-surface missiles equivalent to those in the possession of Israel. If the Soviet Union chooses to exercise restraint, China may well supply what the Soviet Union denies, for it is emerging as a potentially significant exporter of missiles. Neither the Soviet Union nor China have shown any inclination to participate in the new regime. It also appears that countries in the region are rapidly acquiring the capability to develop their own surface-to-surface missiles aided, if necessary, by other third world countries anxious for technical collaboration and export sales, or by industrial enterprises in the West not wholly appraised of the anxiety of their governments.⁶⁸ We must, therefore, not only learn to adjust to the existence of unconventional weapons in the Middle East but also to the existence of the missiles upon which these weapons might be transported.

Conclusions: Some of the Consequences of Proliferation

It is probable that unconventional weapons and their associated delivery systems will form a permanent part of future political and strategic calculations in the Middle East. Short of the prospect of mass destruction and annihilation, it is useful to reflect upon some of the possible consequences of this situation. These consequences can conveniently be divided into three classes: intra-regional, inter-regional and extra-regional, respectively.

There is no doubt that Israel, driven by the need for security,

precipitated the proliferation of unconventional weapons and the proliferation of surface-to-surface missiles in the Middle East. It will now be driven to secure itself from the new threat to its security posed by its regional opponents. The next step for Israel, beyond its ability to detect from space the military capabilities and dispositions of its neighbours, is the need to destroy incoming missiles. It is reported that Israel is developing, with United States assistance, two hypervelocity antiballistic missile systems to meet this threat.⁶⁹ Israel is an enthusiastic supporter of the Strategic Defense Initiative for, as one Israeli commentator observed, the "SDI program gives Israel a unique opportunity to develop its own anti-missile technology with US financial support."⁷⁰ Israel might possibly emerge as a more enthusiastic supporter of the SDI than the United States itself. Anti-missile defences would likely accelerate the regional arms race as other countries seek to possess the instruments to swamp Israeli defences with incoming missiles. With one important difference, there exist the conditions in the Middle East for a microcosm of the unrestricted strategic arms competition that was, until recently, the feared consequence of the SDI program in the United States. The difference is that it is probably easier to control an arms race when there are only two significant parties to it, than an arms race in which regional antagonisms multiply beyond the simple Arab-Israeli axis.

The phrase, the "poor man's deterrent" and the "poor man's atom bomb" re-entered the public consciousness at the Paris conference on chemical weapons in January 1989, as Arab countries, in particular, challenged Israel's policy of nuclear ambiguity. Israel never wished to convey the impression that it did not possess nuclear weapons. It was concerned,

th ough ambiguity, to create uncertainty as to its true status. The policy is no longer believable, yet it cannot abandon ambiguity for fear of offending the United States and inviting sanction under the Nuclear Non-Proliferation Act (1978). The United States, in turn, cannot now condemn Israel for possessing unconventional weapons when its client's regional opponents possess them. Two of the main parties to the debate on controlling the proliferation of unconventional weapons are trapped, in public at least, by an elaborate pretense. If there are any doubts that American leverage on Israel is weakened by public constraint one might contrast the concerted international pressure that accompanied the suspected South African preparations for a nuclear test in the Kalahari in 1977, which resulted in the dismantling of the site, with the mute voice of successive American Administrations on Israel's nuclear status. The irony of the situation, however, is that public pressure on governments to restrain their nuclear weapons ambitions contributes to their decision to disguise rather than abandon their programs, as has happened in the case of both South Africa and Pakistan, while silence contributes, as in the case of Israel, to the unfettered pursuit of an unconventional weapons capability. It is a no-win situation for the United States, or for any other actor wishing to discourage proliferation.

The most significant extra-regional consequence of these developments in the Middle East may be the further complication of great power arms-control negotiations, for it is surely artificial to segregate unconventional weapons into distinct baskets when protagonists in the regions see them as functionally similar and contributing to a situation of mutual vulnerability. Our past fixation on the growing nuclear, chemical and even biological weapons capability of the superpowers fed the

perception that the arsenals were distinct, for the Americans and the Russians, reacting to each other, were equally capable of rapidly matching the opponent's innovations. This is not an option within the grasp of the Arab opponents of Israel, for they cannot directly match Israel's nuclear capability. They must look instead to substitute one capability for another. The superpower practice of pursuing arms control by types of weapons systems, understandable in the context of their historic relationship, may be increasingly irrelevant in the context of the horizontal proliferation of unconventional weapons and their associated delivery systems. One suspects that developments in the Middle East in respect of the cross-fertilization of unconventional weapons will set a standard for antagonistic states in other regions to follow, with rather depressing ramifications for the future of arms control.

Unfortunately, each of these developments may pale before the suspicion that states in the Middle East must first learn from their own mistakes before agreeing to a ban on unconventional weapons. It is not enough that the great powers may have learnt that lesson. According to F. H. Hinsley, the increasing deadlines of weapons and destructiveness of war meant that

At the end of every war since the end of the eighteenth century, as had never been the case before, the leading states made a concerted effort, each one more radical than the last, to reconstruct the system on lines that would enable them, or so they believed, to avoid a further war.

The destructiveness of nuclear weapons is such, Hinsley suggests, that the great powers will henceforth likely "abstain from war with each other."⁷² To the re-discovery by the United States and the Soviet Union of their obligations under the NPT to reduce the level of their nuclear arsenals

must now be added the desire expressed by President Bush and Foreign Secretary Shevardnadze to the General Assembly in September 1989 to reduce, if not entirely eliminate, their chemical weapons stockpiles in advance of a global ban. It is possible that lesser powers will learn from the evidence of the great powers' behaviour, although that contradicts much of what we know of the psychology of decision-making in international politics.⁷³ It is also possible that an expanded form of mutual deterrence will operate in the Middle East, along the lines of Morton Kaplan's "unit veto international system," shaped by "the possession of all actors of weapons of such a character that any actor is capable of destroying any other actor that attacks it even though it cannot prevent its own destruction."⁷⁴ In the absence of a meaningful framework of international law such a development would be a final line of defence against catastrophe. What is necessary, though not necessarily sufficient, is that the United States and the Soviet Union, as the two external powers with potentially the greatest leverage, work together toward the resolution of the underlying causes of conflict in a region marked by more than a generation of competition between them.

Notes

¹ Egypt, Iran, Iraq and Syria are said by the author of one recent study to possess a biological warfare capability. See W. Seth Carus, "Chemical Weapons in the Middle East," (Washington, D.C.: The Washington Institute for Near East Policy), pp. 5-6 and 15. On Iraq's biological warfare capability, see Jane's Defence Weekly, 9 January 1988, p. 3; and Ibid, 27 February 1988, p. 336.

² Edward H. Carr, The Twenty Years' Crisis, 1919-1939, 2d ed. (London: MacMillan, 1962), pp. 5-9.

³ See, for example, Jozef Goldblat, "Chemical Disarmament: from the ban on use to a ban on possession," Background Paper no. 17 (Ottawa: Canadian Institute for International Peace and Security, February 1988). For the position of the Government of Canada, see The Department of External Affairs, "Disarmament Bulletin" (Ottawa, Summer-Fall 1987), pp. 7-9.

⁴ Eduard Shevardnadze, cited in The Globe and Mail, 24 February 1989, p. 1.

⁵ Interview in The Sunday Times, London, 12 October 1986, p. 3.

⁶ Leonard Spector, The New Nuclear Nations (New York: Vintage Books, 1985), p. 138.

⁷ Report of the Insight team, The Sunday Times, 5 October 1986, pp. 1-3.

⁸ Ibid, p. 2.

⁹ Ibid, p. 3; and Frank Barnaby, "The Nuclear Arsenal in the Middle East," Technology Review (May/June 1987), pp. 29-31.

¹⁰ Peter Pry, Israel's Nuclear Arsenal (Boulder, CO: Westview Press, 1984), pp. 92-94.

¹¹ Jane Hunter, Supplement to Israeli Foreign Affairs no. 4 (Sacramento, CA, January 1988).

¹² Aerospace Daily, Washington, D.C., 23 May 1985, p. 3.

¹³ Barnaby, "The Nuclear Arsenal," p. 32.

¹⁴ Jozef Goldblat, "The third review of the Non-Proliferation Treaty," World Armaments and Disarmament: Sipri Yearbook, 1986 (New York: Oxford University Press, 1986), p. 472.

¹⁵ Leonard Spector, The Undeclared Bomb (Cambridge, MA: Ballinger Publications, 1988), pp. 203-4, 213-4 and 224.

¹⁶ Cited in Edward M. Spiers, Chemical Warfare (Basingstoke, Hampshire: Macmillan, 1986), p. 32. Soviet sources downplay the number of chemical warfare casualties for all the combatants during the first world war: no more than 11,000 Russian deaths out of a total of 39,000 victims from all sides. See B. Uralis, Wars and Population (Moscow: Progress Publishers, 1971), pp. 79-85.

¹⁷ Spiers, Chemical Warfare, pp. 89-97.

¹⁸ Ibid, p. 58. The British were the first to use chemical bombs in aerial warfare, during the Archangel campaign in 1919. Approving its use, the Secretary of State, Winston Churchill, wrote, "I should very much like the Bolsheviks to have it." Andy Thomas, Effects of Chemical Warfare: A Selective Review and Bibliography of British State Papers (London: Taylor and Francis, 1985), pp. 37-39.

¹⁹ Spiers, Chemical Warfare, p. 60.

²⁰ Ibid, pp. 97-104. See also Sipri, The Problem of Chemical and Biological Warfare, vol. 1, The Rise of CB Weapons (Stockholm: Almquist and Wiksell, 1971), pp. 302-316.

²¹ International Institute for Strategic Studies, Strategic Survey, 1987-1988 (London, 1988), pp. 56-59.

²² Spiers, Chemical Warfare, pp. 6 and 203. See also Sipri, The Problem of Chemical and Biological Warfare, pp. 84-87.

²³ The Aspen Strategy Group, Chemical Weapons and Western Security (Lanham, MD: University Press of America, 1987), p. 12.

²⁴ Spiers, Chemical Warfare, pp. 8-9.

²⁵ The idea of the "poor man's deterrent" is discussed in Sipri, The Problem of Chemical and Biological Warfare, vol. 2, The Prevention of CBW (London: Almquist and Wiksell, 1971), p. 101.

²⁶ Sipri Yearbook (New York: Oxford University Press, 1987), pp. 110-111.

²⁷ Aharon Levran quoted by the Reuter Library Service, 13 February 1987.

²⁸ Ibid.

²⁹ Drs. Y. S. and R. S., "Deterring the Threat of Chemical Warfare," IDF Journal, vol. 4, no. 2 (Spring 1987): 49.

³⁰ Ibid, p. 52.

³¹ Spiers, Chemical Warfare, p. 104.

³² Reuter Library Service, 1 June 1988.

- ³³United Nations Security Council S/19823 (25 April 1988), p. 11.
- ³⁴Associated Press Wire Service, 24 March 1988. Spiers notes that "four thousand kilograms of sarin, if sprayed across wind over 6 kilometres, could wreak havoc upon an enemy 5 kilometres downwind." Spiers, Chemical Warfare, pp. 7-8.
- ³⁵Sipri Yearbook, 1987, p. 110.
- ³⁶Associated Press Wire Service, 24 March 1988; United Nations Security Council, S/19823, pp. 13-17.
- ³⁷Statement by Tariq Aziz, The Times, London, 2 July 1988, p. 5.
- ³⁸Drs. Y. S. and R. S., "Deterring the Threat," p. 47.
- ³⁹Strategic Survey, 1987-1988, p. 60.
- ⁴⁰Trevor Findlay, "Chemical Weapons: A Spector Returns," Pacific Research, Canberra, November 1988, pp. 3-4.
- ⁴¹The Times, 21 January 1989, p. 7.
- ⁴²Tariq Aziz, cited in Carus, "Chemical Weapons," p. 11.
- ⁴³See Leonard Spector, Going Nuclear (Cambridge, MA: Ballinger Publications, 1987), pp. 327-332.
- ⁴⁴Erhard Geissler (ed.), Biological and Toxic Weapons Today (Oxford: Oxford University Press, 1986), vol 9.
- ⁴⁵Jozef Goldblat, "The review of the Biological Weapons Convention," Sipri Yearbook, 1987, p. 410.
- ⁴⁶Reuter Library Service, 13 February 1988.
- ⁴⁷The threat to the Biological Weapons Convention is analysed in Geissler, Biological and Toxic Weapons, particularly chs. 1-5; and Peter Gizewski, Biological Weapons Control (Ottawa: Canadian Centre for Arms Control and Disarmament, 1987), p. 5 and pp. 15-18.
- ⁴⁸Hedley Bull, The Anarchical Society: A Study of Order in World Politics (London: MacMillan, 1977), p. 151.
- ⁴⁹An editorial entitled "The Atom" appeared in The Economist, 10 November 1945. It stated that "gigantic rockets can be fired over considerable distances with considerable accuracy. We know that immense destructive power can be compressed into very small space. The two facts have only to be put together."
- ⁵⁰United Nations Security Council, S/19823, pp. 12-13.

⁵¹United Nations Security Council, S/18852 (8 May 1987), p. 31. The surface-to-surface missile was fired from a 122 mm multiple rocket launcher. The UN Mission also confirmed the use by Iraq of 90 mm air-to-surface missiles, aerial bombs and artillery.

⁵²Dore Gold, "Ground-to-ground missiles: The Threat Facing Israel," IDF Journal, vol. 4, no. 3 (Fall 1987), p. 34; Spector, The Undeclared Bomb, pp. 60-61.

⁵³Spector, The Undeclared Bomb, p. 28.

⁵⁴Gold, "Ground-to-ground missiles," p. 31.

⁵⁵W. Seth Carus and J. S. Bermudez, "Iran's growing missile forces," Jane's Defence Weekly no. 10, 23 July 1988, p. 130; Foreign Report, London, 24 March 1988, p. 1.

⁵⁶"World Missile Directory," Flight International, London, 1 October 1988, p. 37.

⁵⁷Gold, "Ground-to-ground missiles," pp. 34 and 62.

⁵⁸The Washington Times, 8 April 1988, p. 9.

⁵⁹Spector, The Undeclared Bomb, pp. 60-61.

⁶⁰Jane Hunter, Israeli Foreign Affairs, no. 4, June 1988, p. 3.

⁶¹"World Missile Directory," p. 37.

⁶²Carus and Bermudez, "Iran's growing missile forces," p. 126.

⁶³Ibid, pp. 127 and 130.

⁶⁴"World Missile Directory," p. 37.

⁶⁵Carus and Bermudez, "Iran's growing missile forces," pp. 126-131.

⁶⁶For the evidence of cooperation with France on the development of the Jericho, see Peter Pry, Israel's Nuclear Arsenal, p. 95. A former Iranian defence minister, Hassan Toufanian, admitted that flight testing of the Jericho occurred over Iran. See The Globe and Mail, 3 February 1986, A9. For the evidence of South African (and Taiwanese) cooperation with Israel, see Ronald W. Walters, South Africa and the Bomb: Responsibility and Deterrence (Lexington, MA: D.C. Heath, 1987), p. 45. Walters claims that Israel sold Jericho missiles to South Africa, p. 36; see "World Missile Directory," p. 37.

⁶⁷Spector, The Undeclared Bomb, p. 42.

⁶⁸See "Delivering the Bomb," in Spector, The Undeclared Bomb, pp. 25-66.

⁶⁹W. Seth Carus, "Missiles in the Middle East: A Threat to Stability," Washington Institute for Near East Policy, no. 6 (June 1988), pp. 8-10.

⁷⁰Gold, "Ground-to-ground missiles," p. 63.

⁷¹F. H. Hinsley, "The rise and fall of the modern international system," Review of International Studies 8 (January 1982): 4.

⁷²Ibid, p. 8.

⁷³Robert Jervis writes that "The amount one learns from another's experience is slight, even when the incentives for learning are high and the two actors have much in common and face the same situation." Robert Jervis, Perception and Misperception in International Politics (Princeton: Princeton University Press, 1976), p. 242.

⁷⁴Morton A. Kaplan, System and Process in International Politics (New York: Wiley, 1957), p. 50.