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Inaugural Lecture Series 89

**WAR AND PEACE IN OUR TIME: ON THE
POLITICS OF NUCLEAR SYSTEMS**

By

OYE OGUNBADEJO
Professor of Political Science



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INTRODUCTION

It is a great honour to be called upon to deliver the first inaugural lecture of the Department of Political Science here at the Obafemi Awolowo University, formerly known as the University of Ife.

Although supporting courses had been available in political science ever since the University was founded in 1962, it was not until the 1967/68 session that a full-fledged Department of Political Science came into existence. The Department has gone through many difficulties, but today, we have cause to be proud.

With regard to student preference and enrolment in the Faculty of Social Sciences, the Department of Political Science is next only to the Department of Economics. In this academic year, for example, in spite of the cut in student enrolment on university-wide basis, the Department has enrolled in the two programmes it runs - Political Science (Major), and Politics, Philosophy and Economics (PPE) - 41 students in Part I, 68 in Part II, 65 in Part III, and 90 in Part IV. We also have postgraduate students who are currently working towards their M.Sc. and Ph.D. degrees. In addition, we teach students from the Faculties of Arts and Education who offer political science as an area of specialisation in combined honour's degree programmes.

In terms of staff strength, the Department has 5 Lecturers, 2 Senior Lecturers and 2 Professors. The Department of Political Science is certainly alive and doing well.

Background Analysis

Most scholars of contemporary international conflict will readily concede that there is an inevitable relationship between war and politics. But critical analyses on this relationship are by no means new. Indeed, the relationship has been brought out in varying degrees, in the writings of professional military theorists, philosophers, moralists, historians and social scientists. Three early but popular names that spring to mind here are: Immanuel Kant (1724-1804), George Wilhelm Friedrich Hegel (1770-1831), and Carl Von Clausewitz (1780-1831).¹

Of these three names, let us consider the relevance of the views of Clausewitz. The preferential treatment for him is necessary, since his seminal work, *On War*, is today, still regarded by several defence academies throughout the world as an all-time major contribution to strategy.² Certainly, it will not be an exaggeration to argue that the General's greatest contribution to military thought is his understanding of the primacy of politics. Clausewitz sees war as the continuation of politics by other means. That is, war is, and properly should be, an instrument of policy.

By implication, Clausewitz at one level, emphasises the limitations on violence. For, if war is an instrument of policy, then it is a serious business, which can only be undertaken for a reason. Besides, if war is an instrument of policy, then it is a means to an end, and must be used only to the extent that it is an appropriate means. The attainment of peace as a goal must, therefore, be carefully weighed side by side with the option of going to war. In the language of Clausewitz:

No war is begun, or, at least, no war ought to be begun, if people acted wisely, without first finding an answer to the question: what is to be attained by and in war? The first is the final object; the other is the intermediate aim.³

At another level, Clausewitz is also associated with a seemingly contradictory viewpoint. He is regarded as an apostle of total war, especially in the context of his definition of war as the unlimited use of violence in the service of the state. To this end, scholars of strategy are divided into two main schools. The first school maintains that the latter argument merely constitutes a part of dialectical unity in Clausewitz's military thought. According to the argument, war in itself is essentially unlimited violence; and since in reality, war is always undertaken to serve the aims of policy, the conduct of war is thus subordinated to the larger considerations of policy.⁴

On the other hand, the second school contends that the apparent contradiction is in fact, a real one, and not completely a dialectical one. Clausewitz is therefore seen as not identifying two aspects of one phenomenon, war, but rather, two separate phenomena, viz. limited, political war, and total war.⁵ In recent times, we can identify the Vietnam war as an example of limited political war;⁶ and the two world wars as efforts to lend weight to the doctrine of the use of total violence to achieve ideological ends.

Clausewitz is often criticised by the liberal moralists who take the view that wars can be avoided, and so insist that wars are not a necessary feature of international intercourse. In their view, war is not a continuation of policy, but rather, a sign that policy has failed. Thus, a commitment to use war as an instrument of policy is an automatic assumption of a stance of bad faith. For his part, Clausewitz assumes that sooner or later war is bound to arise in international relations. His major preoccupation then is how to use war rationally. With the benefit of hindsight, and bearing in mind the trends in contemporary

international political system, it would seem that Clausewitz's posture has stood the test of time.

Admittedly, at the time that Clausewitz wrote his master-piece, high technology, in military terms, meant horse cavalry. Even so, many concepts in the book still remain fresh today. The lesson of the Clausewitzian maxim that the continuation of politics by other and often violent means does not entail the subordination of political reasoning to military action was well brought home to the Americans in Vietnam. During that conflict, it will be recalled that the United States government broke an important Clausewitzian principle by trying to fight a war without trying to mobilise public support.⁷ Nowadays, wars are won more by winning at home, through overwhelming public support. Other ideas of Clausewitz that are still relevant, include the need to be bold, as well as the need for flexibility, and the relationship between offensive and defensive action.

Nor must we forget the Clausewitzian concept of friction, the fact that in war even the simplest things are difficult. In an age of high technology, it is tempting to argue that war can be managed. Yet, if we consider all the relatively recent wars, from Vietnam to Afghanistan, from Uganda to Lebanon, and right through the current conflict between Iran and Iraq, experience shows that war still involves more uncertainty than certainty. This element of uncertainty is perhaps best illustrated in our time, by nuclear war. Given the often stated magnitude of the destructive potential of nuclear weapons to the human race, the politics surrounding these range of weapons - whether between the superpowers, or the great powers, or even between the Third World nuclear or near-nuclear states - constitutes an important dimension of world peace.

Thus, no modern nuclear war has been fought. However, the depth of emotions and personal loss over the detonation of nuclear devices on Hiroshima and Nagasaki, constantly remind us amongst other things, of the inherent dangers of the nuclear age. While it is not my intention here to reargue the various ramifications of President Truman's decision to conclude the second world war with those devastating concussions, the need to contain both the spread of nuclear weapons and the nuclear arms race is arguably the most important item in the quest for world peace.

Today, I want to address myself to this important subject. In doing so, I am aware of the fact that aside from being overburdened by weapons of mass destruction, the world economy is also overburdened by poverty and debt. The logic of my decision can be visualised somewhat if we bear just five random points in mind. First, since 1960,

world military expenditures have increased faster than the world's product (aggregate GNP) per capita. In other words, these military expenditures have outpaced the economic expansion on which a rapidly growing population depends for improved living conditions. Indeed, the gap between the pace of the arms buildup and the growth in GNP per capita has become more pronounced in the most recent years, to the detriment of human welfare.⁸

Second, in 1960, world military expenditure of \$344 billion (constant 1983 dollars) were 194 million times the world's average annual income per capita. By 1985, having climbed faster than per capita income, world military expenditure of \$770 billion were equivalent to 266, million man-years of income. The burden of the world economy, measured in terms of the population required to support the arms race, had increased by 37 percent.⁹ Third, by 1986, the International Year of Peace, global military expenditure had reached a phenomenal figure of \$900 billion.¹⁰ Fourth, at the cost of less than half an hour's world military outlay, the United Nations Food and Agricultural Organisation (FAO) destroyed a plague of locusts in Africa, saving enough grain to feed 1.2 million people for a year.¹¹ And lastly, weapons of mass destruction now hold all of humanity hostage. Enough nuclear weapons are scattered over the globe to kill everyone on earth at least 12 times over.¹²

In essence, the politics of nuclear systems deserves a special attention, especially if we recall the words of Thomas Jefferson, who as the third president of the United States had argued in 1809 that: 'The care of human life and happiness, and not their destruction, is the first and legitimate object of good government.'¹³ In considering the subject under focus, I intend *inter alia*, to zero in on four main issues: nuclear balance; superpower interventionist policies, as a filip to nuclear arms race; threats to the nuclear regime, and ways of reducing the risk of nuclear war in our time.

BALANCE OF NUCLEAR FORCES

In 1945, the world's stockpile of nuclear weapons was just three: one was test-fired, and the other two were dropped on Japan. Since then, the stockpile has steadily grown. By 1986, it had reached well over 60,000. Agreed, the ability to deploy these weapons is always dependent on the available launchers, such as missiles, planes or ships.¹⁴ Even so, 49,390 nuclear weapons were actually deployed in the latter year. Of these, 21,290 were strategic weapons, with many of them capable of travelling as far as 16,000 kilometres on their own power, and the balance of 28,100 were tactical weapons. See Table 1.

All in all, today's nuclear arsenals contain the equivalent of more than one million Hiroshimas; and represent 2,700 times the explosive energy that was released in World War II, when 38 million people died.¹⁵

Table 1: Nuclear Weapons Deployed, 1985.

Nuclear Weapons States:	Strategic	Tactical
U.S.A.	12,000	15,000
U.S.S.R.	9,000	12,000
France	176	250
United Kingdom	96	550
China	18	300
	<hr/>	
Total	21,290	28,100
	<hr/>	

Source: Adapted from Chart 19 in R.L. Sivard, *World Military and Social Expenditures, 1986* (Washington, D.C.: World Priorities, 1986).

Although USA, USSR, France, United Kingdom and China constitute the major 'open' nuclear weapons states, the first two countries are, by far, the most formidable of the lot. True, the total population of the United States and the Soviet Union is less than eleven per cent of the world population. Nonetheless, in 1985, they accounted for 23 per cent of the world's armed forces, 60 per cent of the military expenditures, more than 80 per cent of the weapons research, and 97 per cent of all nuclear warheads and bombs.¹⁶ As Ruth Leger Sivard has argued, not only are they the undisputed leaders in military strength but, 'with an enormous investment of resources, they have steadily pushed the frontiers of technology to new levels of destructiveness, escalating the dangers of conflict throughout the world.'¹⁷

The number of weapons at the disposal of each of the nuclear states hardly gives the full picture of the enormous devastation inherent in them. Over the years, continual testing has increased the accuracy, range, and yield of nuclear weapons as well as the efficacy with which they can be delivered. The consistent improvement in accuracy deserves an emphasis. Whereas, for example, the Hiroshima bomb, otherwise known as the 'Little Boy', was a freefall bomb, wholly dependent on the accuracy of the plane's positioning and aerodynamic forces, the self-propelled Inter-Continental Ballistic Missiles (ICBM's) of the early 1960s had a Circular Error Probable (CEP) of 3,000 to 8,000

feet. With the advent of the MX missile and submarine launched Trident II, the CEP has since been reduced to some 300 feet. See Table 2 below.

For obvious strategic reasons, the two superpowers tend to place a lot of premium on the accuracy of their intercontinental delivery of nuclear warheads. Yet, such accuracy might, *inter alia*, strengthen the confidence or reinforce the logic of the ever-present strategy to be the first to use nuclear forces before they could be fired. In any case, even the sheer multiplication of nuclear systems in the arsenals of the United States and the USSR, increases the danger of the weapons being used by accident, miscalculation, misperception, or other form of inadvertence.

Table 2: Comparisons of the Hiroshima Bomb and the MX Missile.

	Little Boy (Hiroshima bomb)	MX Missile (10-Warhead ICBM)
Accuracy	Gravity Bomb	CEP of 300 ft.
Weight (lbs.)	9,000	800
Yield/Weight ratio	1 KT to 600 lbs.	1 KT to 2.4 lbs
Area of destruction (sq. mi.)	3	234

Source: Sivard, *World Military and Social Expenditures, 1996*, p.14.

Admittedly, both superpowers continually emphasise the effectiveness of their existing command and control systems. To remind ourselves, the command and control system is the means by which the American president, or his Soviet counterpart, can use strategic nuclear forces. This system, which often is referred to as the strategic C³I system (where C³I stands for command, control, communications, and intelligence), includes sensors (such as ground-based radars and space-based telescopes) to detect an attack; command centres to evaluate the information; decision makers authorised to order the use of nuclear weapons; a communications network connecting these elements and the strategic nuclear forces; and intelligence resources to gather, analyse, and communicate information on the status of the adversary's war-making capabilities.¹⁸ All the same, such arrangements cannot be 100 per cent foolproof; precisely because a statistical probability always exists that an unintended nuclear exchange could occur.

This probability would increase with the number of nuclear weapons deployed, since such deployments would simultaneously increase the number of decision making centres that could release these weapons. The United States Department of Defence, for example, had listed 32 serious accidents that involved nuclear weapons of various types, between 1950 and 1980.¹⁸ No doubt, more accidents must have occurred since then. In any case, it is tempting to argue that the deployment of more nuclear weapons would heighten the possibilities of more accidents in future.

For now, in spite of the general fears often expressed about the reliability of the C³I measures, and in spite of the technological advances in the production of nuclear systems, the world has not experienced a full modern nuclear war. Broadly speaking, the post World War II relative global peace could be explained, ironically, in terms of the nuclear weaponry parity amongst the superpowers. The parity not only constitutes a form of international balance of power,¹⁹ but it also promotes global peace through mutual deterrence. In the context of our analysis, 'parity' refers to the relationship between the quantity and quality of nuclear weapons which the superpowers possess; and 'deterrence' refers to the feeling of restraint generated by this parity in weapons.

Simply put then, there has been no general world war between the Americans and the Soviets, along with their respective camps (the North Atlantic Treaty Organisation (NATO) and Warsaw Treaty Organisation (WTO), otherwise christened simply as Warsaw Pact) in the nuclear age, largely because armed conflict has been avoided through sheer fear ('Balance of Terror' and rational self interest ('Mutually Assured Destruction (MAD)).²¹ The idea of self-interest here rests on the simple assumption that the greater the capability of two or more parties to destroy one another, the less likely they are to engage in combat.

Mutual deterrence, therefore, as Walter Jones and Steven Rosen have correctly pointed out, boils down to a clear message to any potential adversary that: 'Before you strike me, you had better consider that I will strike you back, and I will do more damage to you that will justify your attack on me'.²² MAD, in other words, presupposes mutual superiority; since the idea of mutual deterrence is built upon the twin abilities of first attack, and of surviving first attack to be able to launch a retaliatory attack of insufferable proportions.²³ Where either or both parties can achieve a first-strike capability which in simple language, means a capacity to destroy the adversary's strategic arsenal by surprise attack, there is no mutual deterrence. The possession of secure

second-strike forces that can survive any surprise attack is a *sine qua non* for a stable deterrence.

The system of keeping the peace by mutual threat of destruction in our time, or rather, through the application of the theory of mutual deterrence, has, however, been criticised at different levels. Some of the major criticisms often advanced by scholars include the following points: first, that deterrence strategy, rather than being based on actual study of decision-making during conflict, is essentially predicated on anticipated behaviour. Second, that there is a fundamental contradiction in its underlying logic. Whereas, the objective of the policy is to make situations safer, the theory is preoccupied with the strategic value of showing a willingness to increase the risks of military policy.

Third, that rather than paying great attention to the potential value of compromise, an undue emphasis is placed on punishment. And fourth, that whereas policy makers could, in real terms, launch an attack through misunderstanding or misinterpreting the intentions of the adversary, the logic of deterrence suggests that nuclear weapons would be used in anticipation of an attack from the other party.²⁴

In spite of the merits or demerits of these criticisms, it is nonetheless a truism that in our time, nuclear stability depends on a belief in the mind of the potential aggressor that, as a state, it will suffer retaliation at an unacceptable cost. It is the potential level of this unacceptable loss, in both human and material terms, that has led some analysts to question the Clausewitzian thesis, namely, that war is essentially a policy instrument. Typical of the attacks on Clausewitz is the argument advanced by Senator Fulbright. According to him:

There is no longer any validity in the Clausewitz doctrine of war as a "carrying out of policy by other means". Nuclear weapons have rendered it totally obsolete because the instrument of policy is now fully disproportionate to the end in view. Nuclear weapons have deprived force of its utility as an instrument of national policy . . . so long as there is reason - not virtue, but simply reason - in the foreign policy of great nations, nuclear weapons are not so much an instrument as an inhibition of policy.²⁵

In a simple language, the thrust of Senator Fulbright's argument is that in Clausewitzian terms, war no longer pays, precisely because what can be achieved by war is negated by the means used in war.

It is of course arguable, if Clausewitz can be considered as totally obsolete. As we have earlier indicated, the General did not recommend an indiscriminate recourse to war. On the contrary, it is on

Clausewitzian grounds that war is to be avoided. He insisted that 'war is only a part of political intercourse, therefore by no means an independent thing in itself'.²⁸ Moreover, war, including total war, is, in reality, often limited by questions of policy, as well as by technical factors such as the superiority of the defence and, to quote Clausewitz once again, the natural inertia and friction of (war's) parts, all the inconsistency, the vagueness, and the timidity of the human mind.

If we accept the basic Clausewitzian proposition that it is policy that creates war; then, by extension, we have to accept that it is policy that creates or makes available the weapons of war, including nuclear systems. If we do, then we have to carefully reflect on Clausewitz's argument in chapter 3, book eight, of his work, *On War*, to the effect that 'the probable character and general shape of any war should mainly be assessed in the light of political factors and conditions'. It could thus be argued that policy, if it is to be meaningful in the context of our analysis, is not to be conceived in the abstract. Policy then will have to be taken in its widest and encompassing sense, so that policy, as Clausewitz has contended, becomes 'the guiding intelligence and war only the instrument, not vice versa'.²⁹

No other possibility exists, if contemporary world leaders are rational, than to subordinate the military point of view, including whether or not to deploy and use nuclear weapons to the political. In other words, even though military considerations could from time to time, suggest that nuclear weapons should be used in particular instances, policy, that is, overall political considerations, will decide whether to go ahead or not. This is the obdurate reality of war and peace in our time.

In any event, even if we concede that it is always irrational to fight nuclear war, it may not be irrational to risk one, or, better still, to seriously contemplate waging a nuclear war. Given the fact that the Soviet Union is relatively a closed political system, we may not know much about their real, as opposed to speculative, nuclear intentions. But, as far as the United States is concerned, de-classification of public records as well as interviews and published memoirs of former presidents, buttress our contention in this regard. While mindful of the scale of devastation inherent in nuclear war, several American leaders Presidents Eisenhower, Kennedy, Nixon and Carter - have had occasions to contemplate nuclear first use to back their hands in crisis - manoeuvring.³⁰ That the United States perceive the Soviet Union and China as the aggressor in the major crises of the first half of the postwar era (in particular, over Berlin, Korea, the Taiwan Straits, and Cuba), suggests that its nuclear threats could be sensible tactics.³⁰

Moreover, since the theory makes the balance of nuclear forces irrelevant, it suggests that parity should not negate the option. Thus, even after the acknowledged attainment of effective parity between the two superpowers, muted nuclear threats were still resurrected twice by the Americans: the DEFCON-3 alert of the Strategic Air Command (SAC) in October 1973, under the Nixon administration, and the several leaks in early 1980 about using nuclear options by the Carter regime to counter further Soviet advances toward the Persian Gulf.³¹ Ironically, the balance of resolve theory by its non-emphasis on the state of nuclear forces, unwittingly, lends credence to the Clausewitzian thesis of regarding war as an instrument of policy.

On the whole, in the context of superpower nuclear equation, it seems that the 'balance of resolve' theory is more useful for explaining the American decisions to attempt nuclear leverage than it is for explaining USSR's reactions to the ploy. Moreover, as there is no conclusive evidence to prove that the Soviet Union saw itself as the aggressor in all the crises over which Washington threatened nuclear attack and that the stakes of the Americans in the disputes were, in fact, greater than those of the Soviets.

Agreed, the United States in the post-parity era had still engaged in the use of nuclear threats. Nonetheless, it could be argued that since Moscow was not forced to concede anything, the American threats were not tested to the same degree of some of the earlier ones. In 1973, for example, both sides achieved what they wanted - a truce without either further Israeli advance or Soviet intervention. Even in 1980, there was no evidence that the Soviets had intended to march beyond Afghanistan. In all, therefore, the 'balance of resolve' thesis has not offered as much persuasive reason to assume either that the American leaders in the future will desist from attempts to use nuclear leverage or that their Kremlin counterparts will react as favourably as in past cases.³²

In concrete terms, however, given the current level of high technology, nuclear balance and the awesome Soviet retaliatory capability,³³ it is doubtful if American leaders, under rational conditions, can effectively or vigorously issue and pursue their nuclear threats; especially, in these days of relatively improved superpower relations. Indeed, many American scholars now focus their analyses on the more prevalent view that declaratory policy should not diverge far from action policy. That is, that leaders should seriously caution themselves against getting their countries to the brink of war if they are bluffing, and that the credibility of a threat ought to rest on the plausibility of following through at acceptable cost.³⁴

USA-USSR INTERVENTIONIST POLICIES AND THE NUCLEAR ARMS RACE

A major contributing factor in the nuclear arms race between the United States and the Soviet Union is the impact of their respective interventionist policies on each other. It is a generally acknowledged fact that each superpower not only has what it considers to be its own sphere of influence, but that it also tries as much as possible to preserve the status quo in the relevant territories. The two principal collective defence alliances, NATO and the Warsaw Pact, assist the superpowers in that endeavour, particularly in Europe and North America.²⁵

In Europe, both superpowers base their strategy on conventional warfare in the first instance. Accordingly, the conventional forces of both NATO and Warsaw Pact are impressive by any standard. As can be seen in Table 3, they show the extent of the reliance that both sides place on their combat-readiness. All the same, a recourse to a possible nuclear attack in the second instance, known as a policy of 'flexible response' in NATO's parlance, has been an integral part of the war strategy of the United States.

The likelihood of nuclear warfare in Europe was heightened when, between 1979 and 1983, both superpowers - first, the USSR then the United States, deployed several short and medium nuclear systems in the area. While the Soviets deployed the SS series, the Americans deployed MX and Pershing II. True, with the Intermediate-range Nuclear Missile (INF) treaty, which President Reagan and Soviet leader Gorbachev signed in Washington on December 8, 1987, both superpowers are now expected to eliminate all their nuclear missiles with a range of 500 to 5,500 kilometres.

Table 3: Conventional Forces of NATO and Warsaw Pact

	NATO	Warsaw Pact
A. Land-Based:		
Total ground forces deployed in Europe	1,858,000*	2,704,000
Main battle tanks	20,314	46,610
Artillery	8,974	24,035
Other ground force equipment**	9,508	23,357

B. Sea-Based:		
Submarines	183	191
Carriers, cruisers, destroyers, frigates	321	126
C. Air-Based:		
Bombers	259	410
Fighters	569	1,075

* Spain not included

** Includes antitank guns and guided weapons launchers, antiaircraft guns, SAM launchers, SSM launchers, armed helicopters, and mortars (over 120 mm); some are estimates.

Source: International Institute of Strategic Studies, *The Military Balance, 1986-87* (London: IISS, 1986).

Nonetheless, other categories of nuclear missiles that were not covered by the INF treaty, notably the long-range, have not eliminated the possibility of an outbreak of nuclear war in Europe. Indeed, the long-range nuclear weapons in the arsenals of NATO and Warsaw Pact are quite sizeable. So too, are the nuclear-capable delivery vehicles. See Table 4 for the necessary details for 1986.

The major European governments contend that the politics of nuclear systems, particularly in the context of an arms race, can best be understood as the anchor of peace. To these governments, the fact that Europe has enjoyed peace for two generations (its longest period of peace in this century)³⁶ is not a paradox of the nuclear age; rather, it is a direct result of the unprecedented destructiveness of the atom bomb. The very threat of nuclear war, as well as the risk that a conventional war might escalate uncontrollably into a nuclear conflict, is considered as suicidal. And so, once again, the logic of 'deterrence' resurfaces in our analysis.

We should perhaps point out at this stage that in the pre-nuclear parity era amongst the superpowers, deterrence in Europe as viewed in the West, focused on conventional aggression. Indeed, terms like 'active', 'extended'; or 'Type II' were, and are still used, to denote the deterrence of conventional attack.³⁷ Once the USSR attained effective nuclear parity with the United States, especially in the second-strike capability, 'passive', 'basic' or 'mutual' deterrence which refers to deterrence of nuclear attack, became popular. And, deterrence in both senses have remained policy options.

Table 4: Nuclear-Capable Delivery Vehicles, World-Wide.

		(Launcher Totals)	
		NATO	Warsaw Pact
1.	Land-Based:		
	Long-range	1,010	1,398
	Medium-range	326	923
	Short-range	<u>6,864</u>	<u>14,689</u>
2.	Sea Based:		
	Long-range	384	628
	Medium-range	580	587
	Short-range	1,736	1,534
3.	Air Based:		
	Long-range	227	790
	Medium-range	4,854	3,684
	Short-range	1,420	1,380

Long-range: over 5,500 kilometres

Medium-range: 500-5,500 kms.

Short-range: under 500 kms.

Source: International Institute of Strategic Studies, *The Military Balance, 1986-1987* (London: IISS, 1986).

While it is true that Western policy in Europe calls for first use of nuclear weapons, should NATO forces face defeat by the Warsaw Pact's superior conventional forces, the American nuclear guarantee of Europe's security, and with it, the credibility of deterrence of war, now appear to be in question. From the European standpoint, three reasons can be advanced to buttress this argument. First (and with the 1987 INF treaty in mind), is the perceived trend toward denuclearization of Europe. Second and third, are political and financial pressures in the United States to withdraw the country's troops from Europe and reduce American engagement there. Such a development would cut costs, free the superpower's hand for unilateral interventions elsewhere in the world and, for some American politicians,²⁹ teach Europe to pay for its own defence.

The INF treaty in particular and the stated commitment by the superpowers to further reduce their strategic nuclear forces in future negotiations, have driven a new sense of security to the Europeans. Major states like West Germany, France and United Kingdom increasingly consider the possibility of renewing the quest for a

European Defence Community, an idea which France had unceremoniously vetoed in the 1950s. For sure, the evolution toward a new European cooperation, as a way out of the nuclear dilemma, will take sometime to mature. Nevertheless, there is a greater readiness amongst the leading European powers to recognise that the American dominated security system of the past thirty years or so cannot go on for ever. Simply put then, the task of achieving peace in our time in Europe will increasingly rest more with the Europeans themselves than with the Americans.

It could be argued that the recent USA-USSR success in the field of arms control and their pledge to make further progress in that direction constitute a major fillip to global peace in general, which in turn would help the quest for peace in Europe. Even so, the advent of the INF treaty does not mean that the United States will abandon its European allies altogether; or that the underlying logic of deterrence will no longer hold. On the contrary, so long as the soviet Union still fears that in the passion and fog of war the West might commit the irrational act of nuclear escalation, this could effectively deter any conventional attack as well as any attempt to convert Soviet conventional superiority into political intimidation.

In any case, the Americans themselves have assured Europe that the INF treaty only affects a small part of the spectrum of nuclear weapons and the removal of the relevant items from the areas would not erode the sturdy nuclear deterrence of conventional war in Europe. This argument is by no means limited to Washington alone. Indeed, it has found acceptance even in Europe. Thus, for example, French President Francois Mitterand and Sir James Eberle, NATO's former Command-in-Chief of the English Channel and present director of the Royal Institute of International Affairs in London, have both argued along the same lines.²⁸

As we all know, the dangers of possible superpower interventionist policies go beyond Europe, and extends far and wide throughout the entire globe. For a long time, the American policy makers based their strategic doctrine on the '2 1/2 war' strategy. In a less esoteric language, it assumes that the United States should be prepared to simultaneously fight a major war in, say Europe, as well as another major war in Asia, and a 'half war' somewhere else, possibly in Africa or Latin America.

The heart and soul of this policy is, of course, conventional arsenal. But in real terms, the United States has tended to rely far more on nuclear deterrence than on conventional weaponry. This is largely because nuclear bombs, and even the missiles, bombers and submarines that deliver them, are far cheaper than maintaining a big

army, a big navy and a big air force, all of which would be necessary if $2\frac{1}{2}$ wars must be fought.

The cornerstone of the Reagan government's defence policy had, amongst other things, been geared towards redressing this situation and in calling to question the $2\frac{1}{2}$ - war doctrine. The emphasis of the Reaganites is on total deterrence. In rationalising this policy, Caspar Weinberger, the Administration's Defence Secretary, argued that a total war might be global in scope, which could 'go nuclear' at any point and which could involve every element of the American armed forces. He further contended that since a total war could escalate so swiftly that the United States might have no time to expand its arsenal, whatever weapons were deployable at the outbreak of hostilities would probably be decisive for better or worse. In such an eventuality, Weinberger reasoned: 'You can't say it is a $1\frac{1}{2}$ war [scenario] or a $2\frac{1}{2}$ war [scenario], because it's a global war if and when it starts'.⁴⁰

It was little wonder then that the Reagan regime embarked upon a massive conventional and nuclear weapons buildup. By early 1986, that is after five years in office, more than a trillion dollars had been spent on all manner of military hardware, bases and facilities, ammunition and supplies, and pay, and perquisites for uniformed personnel.⁴¹

While the Reagan government has substantially increased the budget for strategic nuclear weapons, its real emphasis has, rather significantly, been on conventional hardware. The result is now a bewildering array of new, sophisticated and extremely expensive weapons systems. By 1986, the United States army had 3,000 M1 tanks on hand and 2,000 more on order; a new armoured personnel carrier, the M2 Bradley infantry vehicle; a new rocket-artillery system; new helicopters, and air-defence missiles. The navy, the big winner in the interservice scramble for funding, in that year too, had sixty two new combat surface vessels and twenty two new attack submarines. In addition, 100 more surface ships and twenty more attack submarines were authorised. The air force, on its part for the said year, was authorised to get the B-1B bomber, more than 300 new F-15 fighters and 1,000 additional F-16.⁴²

To enable us to have a vague idea of the enormous cost of these materiel, let us ponder very quickly over the price tag on one of the most basic of them, the M1 tank, which costs \$2.4 million each.⁴³ Assuming we are able to peg the exchange rate at four naira to the United States dollar, the equivalent local price is N9.6 million for just one modern high-technology tank. The existing weapons systems are just as expensive. For instance, the Navy's F/A-18 fighter/attacker had,

by 1986, skyrocketed to \$33 million each, a 58 per cent increase over its 1981 price,⁴⁴ which at the earlier exchange rate of four naira to the dollar, works out at roughly N132 million a piece.

The Congressional Budget Office (CBO) has argued that a major reason why some of these weapons are expensive is that official purchases are usually less than the lowest rate of production efficiency. Whereas, according to the CBO, the minimum annual rate of production for the F-15 fighter is 120, the air force has only been able to buy forty-one a year over the last five years. Similarly, whereas the army has bought 99 cruise missiles a year, the lowest economic rate is 120.⁴⁵

Given the United States recent huge deficit, Weinberger's successor, Frank Carlucci,⁴⁶ was forced to order the military to cut about \$33 billion from the budget that begins in October 1988 - a cut of more than 10 percent.⁴⁷ As it is to be expected, the military does not share Carlucci's interest for budget reduction. Consequently, the results at the time of writing, were 'close to insubordinate'.⁴⁸ While the navy's cuts at first amounted to \$1 billion less than Carlucci requested; the air force suggests cancelling the Midgetman missile, an action that it knows that Congress would not approve; and the army proposes to stretch out weapons purchases, a measure it had been told specifically to avoid.⁴⁹

These uncooperative responses to Carlucci's order reflect the basic problem of trying to change the legacy of Weinberger's tradition of huge expenditure on procurement of weapons. Interestingly, Weinberger had argued before he left office that the Reagan administration would only slow down the buildup when 'the Soviets, in a totally verifiable way, disarm and let us know they can be deterred at much lower levels of armaments'.⁵⁰ With the INF treaty behind us, perhaps there may, after all, be a ray of hope in that direction. If that ray of hope becomes a reality, perhaps there will be a ray of hope, too, for world peace in our time. Hitherto, the philosophy of the two superpowers seems to have been firmly premised on that old adage, 'if you want peace, prepare for war'. It is no exaggeration to say that, if anything, the two superpowers, in the quest for the so-called total deterrent have been more than overprepared for war.

Whatever might have been the extent of the American buildup or even that of the Soviet Union, none of the superpower military buildups has succeeded in restraining either side from engaging in global interventionist policies. The list is there for all of us to see:⁵¹ from USSR's open intervention in Afghanistan, to the United States role in Vietnam, to the indirect Soviet intervention through Cuba⁵² in Angola,

to less open American aid to Jonas Savimbi's National Union for the Total Independence of Angola (UNITA) in Angola, and the non-communist insurgents in Cambodia led by Son Sann and Prince Norodom Sihanouk.⁵¹

For good politics, American and Soviet leaders often advance doctrines to back up their respective interventionist policies. Let us briefly, but randomly, take just two of these doctrines. First, the Brezhnev doctrine made popular after the Soviet invasion of Czechoslovakia in 1968, committed the USSR to defend and uphold through the use of force if need be, communist achievements in the international system.⁵² Second, the Reagan doctrine in plain language, supports anticommunist insurgencies across the Third World.⁵³ In the words of President Reagan, 'those who struggle for freedom look to America'.⁵⁴

The Reagan doctrine naturally lends itself to several criticisms. First, it makes little distinction between American vital interests and less vital ones. Second, it implies open-ended commitments to situations in which the Soviets or their allies may be able to raise the stakes, by sending in their own troops or vast shipments of arms, either directly or through proxies. Third, it includes covert operations that have a way of becoming embarrassingly overt, even to the American government and Congress. An example is the messy entanglement of the Reagan administration in the celebrated Iran-Contra affair, with the sale of arms to Iran and using the proceeds to further arm the Contras in Nicaragua.⁵⁵ Fourth, the policy offends and, indeed, alienates what is often tagged 'progressive' opinion in the Third World; thus, promoting anti-Americanism in some states.⁵⁶ And, fifth, only few if any of Washington's proteges seem likely to win an outright victory. At best, their sacrifices may force the communists to compromise; at worst, they may have to be abandoned eventually.

While it is true that the Reagan doctrine forces Moscow to pay a price for its interventionist role in the Third World, it is equally true that it exacts a price from the Americans by making them play the same interventionist policies too.⁵⁷ In any case, to the degree that progressive public opinion in the Third World often supports USSR's interventions especially as they tend to support wars of national liberation - the Soviets are seen by this group not as interlopers, but as allies in the war against colonialism and neo-colonialism as well as unjust world order.⁵⁸

For the purposes of our analysis, while these superpower interventions constitute a distinct category of warfare, they promote cold war mentality in both Washington and Moscow. Moreover, by

promoting a mutual sense of insecurity, the interventionist policies fuel the nuclear arms race and by implication, make the task of attaining world peace in our time more complex.

THREATS TO THE NUCLEAR REGIME

In a simple language, the nuclear regime is governed by the Nuclear Non-Proliferation Treaty (NPT) of 1968. Through its provisions, the treaty bans the transfer of nuclear weapons and technology outside of the original five weapons states and commits these latter states to halt arms race. By October 1987, 137 states had acceded to, and ratified, the NPT,⁴¹ thus theoretically subscribing to the international nuclear regime. In practice, however, several signatory states do not respect these provisions. Moreover, some states refused to be party to such provisions, and so are free and, indeed, have been free, to pursue their nuclear ambitions. In addition, some states only sign the NPT, but decline, delay, or tacitly avoid, accession to the essential safeguards provisions. By implication, these states are equally free to surreptitiously embark on the nuclear path, since the International Atomic Energy Agency (IAEA), the body charged with ensuring compliance with the NPT provisions, cannot inspect their reactors and other nuclear installations.

Arguably, threats to the nuclear regime constitute in our time, a major danger to international peace and an important factor in the war capabilities and policies of certain states, most notably in the Third World. With all sense of humility, I would like to point out that I have, in previous studies, discussed the economic, political and strategic ramifications of nuclear proliferation and the consequences of these factors for regional as well as world order. Specifically, I have zeroed in on Africa, the Middle East, and some parts of Asia. Perhaps, the most important contribution in this regard to-date is my book, *The International Politics of Africa's Strategic Minerals*, which, in spite of its title, critically discusses threats to the nuclear regime, with special reference to the use of uranium in that enterprise.

I, therefore, have no intention to recycle my previous arguments in this section. What I want to do, with your kind indulgence, is to briefly update my work on nuclear proliferation.⁴² Since my book was first published in 1985, the fog that surrounded the South African and Israeli nuclear development seemed to have cleared somewhat. When for example I argued in 1984, at the MIT and Harvard Joint Summer Teaching Programme on Nuclear Weapons and Arms Control, in Cambridge, that Israel had quietly become a nuclear weapons state, and that South Africa was quietly taking bold strides too, albeit on a

relatively modest scale on the nuclear ladder. I was attacked by some rightwing intellectuals. It was convenient for several of these participants to consider my arguments as baseless.

Since that time, my so-called 'baseless' assertions have, much to my delight, gained wider currency and, indeed, outright credibility. I am by no means arrogating to myself the credit for being the sole early researcher on the Israeli and South African nuclear capabilities. On the contrary, a year or so before I finished my first manuscript on the subject, entitled 'Africa's Nuclear Capability' and subsequently published in *The Journal of Modern African Studies* of March 1984, some Jewish scholars, notably Shai Feldman, in his study, *Israeli Nuclear Deterrence: a Strategy for the 1980's?* (New York: Columbia University Press, 1983) and Amos Perlmutter, Michael Handel and Uri Bar-Joseph in their joint work, *Two Minutes Over Baghdad* (London: Corgi, 1982) considered the subject, too.

That said, let us take a close and up-to-date look at Israel.⁶³ This is essential for at least four reasons. First, Israel is right at the centre of the endemic Middle East conflict, a major war situation in our time. Second, Israel is an important nuclear proliferator; and so has been violating international norms in its desire to build an effective nuclear deterrent. Third, in the last few years, an important debate has come to the fore on Israel's nuclear dilemmas: ambiguity versus disclosure and the choice between covert and overt nuclear postures.⁶⁴ The debate has been greatly influenced by lack of adequate knowledge about the correct status of Israel's nuclear capability. And, fourth, the Jewish state is South Africa's leading nuclear mentor. It is my view that if Africa must be squeezed from the north and south by these two eminent nuclear proliferators, we might as well know the details.

Israel has for long, violated a promise of 'peaceful use' of nuclear material that it gave to Norway in 1959, by producing plutonium for weapons with the imported 20 tons of Norwegian heavy water. It has equally violated a similar pledge to the United States, in respect of the 3.9 tons of superpower. Nor must we forget France, from where the Israelis received an unknown amount of heavy water in the early 1960s.⁶⁵ In this regard, the recent authoritative revelations of the Israeli nuclear technician, Mordechai Vanunu, who had previously worked for nine years at the classified Dimona reactor and nuclear reprocessing plant have been quite instructive.

In October 1986, Vanunu gave a detailed interview to London's *Sunday Times* about Israel's nuclear capabilities.⁶⁶ From the information, diagrams and photographs that he supplied, the newspaper concluded that Israel has between 100 and 200 nuclear warheads and

ranks as the world's sixth nuclear power.⁶⁷ Its bombs were produced from secretly acquired enriched uranium and from plutonium produced indigenously at its Dimona nuclear research centre. His account shows that the Jewish state has a rapidly enlarging programme, including advanced weapons design, thermonuclear-bomb mastery, and computer-simulated testing. Specifically, he maintained that the Dimona reactor produces about 88 pounds of plutonium annually, (enough for 8 to 10 bombs) as well as other nuclear materials for use in thermonuclear weapons.⁶⁸

Vanunu certainly knew what he was talking about. While at Dimona, he had worked in the Machon 2 building, where 'the components of nuclear weapons are produced and machined into warhead parts'.⁶⁹ In any case, his account had been found to be authentic by several international experts who subsequently examined it. Dr. Theodor Taylor, for one, argued that:

There should no longer be any doubt that Israel is, and for at least a decade has been, a fully fledged nuclear weapons state. The Israeli nuclear weapons programme is considerably more advanced than indicated by any previous reports or conjectures of which I am aware. The information obtained from Vanunu's statements and photographs as presented to me are entirely consistent with a present Israeli capacity to produce at least five to ten nuclear weapons a year that are significantly smaller, lighter, and more efficient than the first types of nuclear weapons developed by the US, USSR, UK, France and China.⁷⁰

The British nuclear specialist, Professor Frank Barnaby, on his part, was deeply shocked by photographs of a component machined in lithium deuteride. Both he and Dr. Taylor maintained that Vanunu's photographs showed beyond doubt that Israel's devices were not 'a simple bomb but a thermo-nuclear bomb'.⁷¹ Similarly, the *Sunday Times* itself insisted that the senior and expert scientists that it approached on the subject had concluded 'that Vanunu's testimony cannot be faulted'.⁷²

Largely on account of Vanunu's courageous revelations, many American specialists now accept that Israel not only possesses 'significant' nuclear weapons but that it also has modern delivery systems.⁷³ Indeed, such is the progress of the Jewish state in nuclear technology, that it has, *inter alia*, reportedly developed a new version of the nuclear-capable missile, Jericho 2, which, with a 1,440 kilometre (900 mile) range, could reach as far afield as the Soviet Union.⁷⁴ This

new delivery system is, of course, a marked improvement on the previous two types of the Israeli-French made Jericho, that I identified in my book, viz. the MX 660 with a range of 450 kilometres, and the MD 620 with a longer range and better navigation system.⁷⁵

On the whole, the developments surrounding the Israeli nuclear capability are particularly disturbing, if we bear in mind that Israel has refused to sign the NPT and to accept international safeguards at all of its nuclear facilities. The developments are disturbing too, because Israel often goes out of its way to stress the desirability of making the Middle East a non-nuclear weapons zone. Indeed, this stance was articulated by the Israelis after they had bombed Iraq's Osirak reactor in 1981. The statement was subsequently enlarged in the declaration of Foreign Minister Shamir to the United Nations General Assembly on October 1, 1981. On the latter occasion, the Minister reasoned that since Iraq had 'acquired a complete fuel cycle and is openly bent on the destruction of Israel, it will not balk at going ahead with its programme, whether or not it is a party to the NPT'.⁷⁶

Shamir then used the opportunity to reiterate his country's policy. According to him, Israel

will not be the first country in the Middle East to introduce nuclear weapons into the region. Faced as it is with the stark realities of the Middle East, Israel must insist on distinguishing between spurious and genuine safety. The only genuine way to remove the nuclear threat to the Middle East can be found in the establishment of a nuclear weapon-free zone, freely and directly negotiated among the countries of the region, and based on mutual assurances, on the pattern of the Tlatelolco Treaty of Latin America.⁷⁷

Yet as we have indicated, and in spite of all the assurances to the contrary, Israel has gone right ahead to become the very first country in the Middle East to introduce nuclear weapons into the region.

Viewed from Israel's standpoint, the country has its own reasons for developing nuclear capability. Let us go through these reasons, strictly from the Israeli perspective. First, save for Egypt, the Arab states do not recognise Israel's right to exist, are continuously preparing themselves to undermine it, and are mostly opposed to negotiating with it. Second, a number of Arab states have added reservations with regard to Israel, to their signature of disarmament treaties or of the NPT. Third, at least ten Arab states, as well as Pakistan, are not party to the NPT. And, fourth, a number of Arab

signatories to the NPT have not fulfilled their obligations in accordance with it. On all these grounds, the Israelis probably have some points in their favour.

Be that as it may, Israel has subverted United Nations ideals for international peace and security by secretly amassing nuclear weapons while using the world body as a forum to pontificate about the ideals of making the Middle East a nuclear weapon free zone. Interestingly, the Jewish state itself had argued that restraints of a technical or institutional nature alone could hardly protect the area from nuclear proliferation. In the event, the country, as Ken Coates has pointed out, seemed to have given an unusually compelling kind of proof for the statement by appealing for the creation of a nuclear free-zone, whilst at the same time secretly building a major stockpile of nuclear weapons.⁷⁸

Israel has clearly emerged as a major threat to world peace in our time. In a sense, countries that supplied heavy water to Israel share part of the blame for their irresponsible behaviour in not monitoring the use of these supplies. Neither the United States nor Norway has ever inspected the water to verify the peaceful-use pledge. True, American officials have pointed out that the United States does not have a peaceful nuclear cooperation agreement with Israel; ostensibly, because the Jewish state has not been party to the NPT provisions. Even so, how about Norway, a supposedly peace-loving state and promoter of international order in all its ramifications?

After the recent upsurge of international interest in Israel's nuclear capability, the Norwegian government eventually asked the Jewish state to allow IAEA to inspect the heavy water. Naturally, Israel turned down the request. It argued, during the 1987 Norwegian-Israeli talks, that the Vienna-based agency would be 'biased'.⁷⁹ And, for good measure, it seized the opportunity to assure its heavy water suppliers that the water's use had been consistent with the various agreements signed. However, in the course of the talks, Israel privately admitted using the heavy water at Dimona and of producing plutonium with it.⁸⁰

Theoretically, Norway has the right to inspect the water, test to see if it has been used to produce plutonium, and, if the tests are positive, demand to see the plutonium produced from it. Theoretically too, Norway would, if any weapons had been made with the plutonium, have had the right to have them dismantled. But, in concrete terms, it is doubtful if Norway is ready to take such a step. If anything, the Norwegians seem intent to preempt such a drastic step by arguing, in the interim, that identifying Norway's heavy water would be a difficult task, since the Dimona reactor is said to be operating not just the one

from Norway but a combination of the three heavy water supplied by Norway, USA, and France.

We cannot conclude our analysis on Israel's nuclear capability without considering the link with South Africa. To remind ourselves, the two countries signed a secret nuclear cooperation in the 1970s, including a common effort to develop a neutron bomb. There has been a measure of division of labour between the two sides. While South Africa provided uranium and testing space, Israel provided expertise. The various nuclear tests so far carried out have been joint efforts between the two sides.⁸¹ So, too, have been the reported tests of Israeli-developed neutron bomb.

Once again, even the most doubtful of the American analysts about previous analyses on Israeli-South African nuclear collaboration now concede the argument. Leonard Spector, a non-proliferation specialist at the Carnegie Endowment for International Peace think tank, for one, says Israel's close cooperation with South Africa in conventional military lends credence to reports of nuclear cooperation between the two countries.⁸² Mark Gaffney, for his part, fully accepts the nuclear collaboration thesis and dismisses the American efforts to cover up previous Israeli-South African nuclear blasts as disingenuous.⁸³ Since I myself have fully discussed elsewhere, the reality and various dimensions of the nuclear cooperation between South Africa and Israel, including the implications for black Africa in general, and the frontline states as well as Nigeria in particular, I will have to make my analysis quite brief here.⁸⁴

Aside from Israel and South Africa, there are, of course, other states that pose serious threats to the international nuclear regime. Let us at this juncture, briefly take a general, as opposed to detailed country-specific view of the problem. In doing so, we will as we go along, consider the main ways to view proliferation. First, if we analyse proliferation by counting the number of new countries that have openly tested or announced possession of nuclear arms, there are none in recent years. However, with the benefit of our analysis so far, at least two states, Israel and South Africa, can be identified in this regard.

Second, if we consider proliferation in terms of the spread of the world's industrial base that may be useful to the production of nuclear weapons, the outlook seems grave. True, the dramatic rise and fall in world oil prices, the resulting economic shocks, and the continued slow growth in demand for electricity in the industrialised countries have all put nuclear power at a disadvantage. True too, these factors have, by implication, reduced international nuclear commerce and relieved pressure on uranium resources. Nevertheless, there is a growing

concern about the spread of the sensitive nuclear technologies used for reprocessing and enrichment. The more so, as their commercialisation can provide non-weapons states with access to weapons-grade materials, be it uranium 235 or plutonium.

Reprocessing, which is the key industrial step in separating plutonium from irradiated uranium, remains a thriving enterprise in the West. While France has been improving the operation of its large existing facility, Britain has continued to expand its commercial plant. Similarly, while Japan is planning a commercial scale facility, West Germany is due to begin the construction of a reprocessing plant. This trend is significant in the sense of boosting nuclear proliferation. In any case, some Third World countries have even taken some bold steps on the nuclear ladder. In 1986, Brazil announced that it had mastered the laboratory techniques to produce plutonium.⁸⁵ Since then, Argentina has decided to complete and begin operating a large pilot plant, and while India still continues to operate several small plants, Pakistan has completed one major plant.

The same level of progress is evident in the spread of enrichment capability. Aside from South Africa which has completed its new plant at Valindaba and which can produce weapons-grade uranium, Pakistan's much publicised plant is operable, and Argentina and Brazil have recently announced some laboratory capacity. In the interim, work has continued on laser isotope separation in the United States, Europe, and Japan, which, if successful, could provide a new enrichment technology. The technology is widely expected to be more efficient than the current one and could increase proliferation risks.

By and large, many countries now have an industrial base that can, in varying degrees, produce materials for nuclear weapons, and others are approaching the capability. Indeed, way back in May 1983, Hans Blix, director general of IAEA, had ruefully concluded that

We must face the fact that the scientific knowledge and skills needed to make nuclear weapons are within the reach of almost any state which has a reasonable industrial base.⁸⁶

By 1986, six countries - Argentina, Brazil, India, Israel, Pakistan, and South Africa had developed more industrial base to make nuclear weapons than the United States did at the outset of the Manhattan Project in 1942. So as to give us an idea of the world's nuclear industrial base, Table 5 indicates the major capabilities of 20 non-weapons states as of 1986. Since Israel and South Africa are known to be weapons states, they are omitted from the table. A close look at

the table shows that Blix's warning should be given some weight.

The third and final way to view proliferation is to assess the balance of forces that can push a government toward, or away from nuclear weapons. If momentarily we look at the high number of states that have so far given formal non-weapons commitments by voluntarily subscribing to the NPT regime, it is tempting to be overly optimistic about the possibility of containing nuclear proliferation. In concrete terms, however, the major potential proliferators still refuse to sign the NPT. For instance, Argentina and Brazil still continue to reject the idea of international inspection. Besides, the two countries are yet to become active parties to the Latin American Nuclear Free Zone Treaty. So as to have a more balanced view of the 20 open non-weapon states listed in Table 5, their corresponding non-proliferation commitments are given in Table 6.

In terms of how nuclear or near nuclear states assess their national security, a worrying axis seems to be the Pakistan-India-China one. Pakistan considers its nuclear activities as an important security measure against India; just as how the latter engages in the same nuclear calculations over Pakistan. Moreover, India has quietly stepped up its nuclear programme because of the way it feels threatened by China and the impact of the United States aid to Pakistan. It is noteworthy that the Reagan administration continued its economic and military assistance to that country. In effect, Reagan's administration has chosen to jettison its nuclear nonproliferation rules as they would have applied to Pakistan,⁵⁷ since the country is regarded as a highly invaluable strategic ally to Washington.⁵⁸

As for Israel, we have already shown how it has clandestinely become the first country to introduce nuclear weapons to the Middle East. It is conceivable that after their war, Iran and Iraq might fully revive their previous nuclear activities. It could even be argued that the war between the two countries would heighten their interest and resolve in such nuclear enterprise. South Africa's active nuclear programme continues to arouse serious concern; largely because it is committed to perfecting and broadening its range of nuclear arsenal so as to be able to have the deterrence in coping with the substantial internal unrest as well as the increasing external pressure to end its apartheid policy.⁵⁹

Finally, the national security pressures that are likely to push the two key Latin American states toward nuclear weapons appear, for the time being, to have diminished. Argentina and Brazil have both reinstated representative governments and have engaged in bilateral talks over their nuclear activities. Yet, it is pertinent to state that the

Brazilian press often discusses the idea of building nuclear-powered submarines.⁸⁰ All said, the dangers of nuclear proliferation, tend to raise our consciousness about the possibility of nuclear war and so, psychologically at least, move us further from global peace.

REDUCING THE RISK OF NUCLEAR WAR

Given the formidable nuclear arsenals of the United States and the Soviet Union as well as the nuclear forces of the other weapons states, on the one hand, and the growing threats posed to the international nuclear regime by the proliferators on the other, it is hardly surprising that fears are usually expressed about the heightened risks of nuclear war in our time. To this end, eight possible scenarios are often advanced for the outbreak of nuclear war, viz. surprise attack, limited attack on the enemy's missiles, pre-emptive strike, escalation from conventional war, tragic accident, regional nuclear conflict after proliferation, catalytic war (in which a minor nuclear power precipitates war between the superpowers) and nuclear terrorism.⁸¹

Nuclear analysts and strategists differ, as to which of these scenarios are most dangerous or imminent for mankind at any point in time. See the left margin of the manuscript in time. In 1982, for example, Thomas Schelling advanced his famous prognosis on nuclear terrorism. In his view:

Sometime in the 1980s an organization that is not a national government may acquire a few nuclear weapons. If not in the 1980s then in the 1990s. The likelihood will grow as more and more national governments acquire fissionable material from their own weapon programs, their research programs, their reactor-fuel programs, or from the waste products of their electric power reactors.⁸²

Whatever may be the real (as opposed to imagined) prospects of nuclear terrorism,⁸³ along with the other aforementioned seven scenarios, any serious analysis of nuclear war, is usually complicated by the differing American and Soviet attitudes to the subject. For, while the United States goals in war are often phrased in terms of 'damage limitation', 'escalation control' and 'war termination', the Soviet Union speaks of the quick defeat of the enemy.⁸⁴ The complication arises, *inter alia* because these perspectives affect each superpower's interpretation of the other's war preparations and policies.

Table 6: Nonproliferation Commitment of Twenty Nonnuclear Weapons States.

Country	Limited Test Ban Treaty	Treaty of Tlatelco	Nonproliferation Treaty	Physical Protection Convention	IAEA Safeguards	Un-Behaved-ness	Agrees to the Nuclear Suppliers Guidelines	Agreement for U.S. Cooperation
Argentina	Signed only	Signed only	Ratified	Signed	Partial	Some	Yes	Inactive
Australia	Ratified		Ratified	Signed	NPT	No	Yes	Active
Belgium	Ratified		Ratified	Signed	NPT	No	Yes	Via Euratom
Brazil	Ratified	Ratified with conditions not yet met		Signed	Partial	Some		Inactive
Canada								
Czechoslovakia	Ratified		Ratified	Signed	NPT	No	Yes	Active
East Germany	Ratified		Ratified	Ratified	NPT	No	Yes	
West Germany	Ratified		Ratified	Ratified	NPT	No	Yes	
India	Ratified		Ratified	Signed	NPT	No	Yes	Via Euratom
Indonesia	Ratified		Ratified	Signed	Partial	Some		Inactive
Italy	Ratified		Ratified	Signed	NPT	No	Yes	Via Euratom
Japan	Ratified		Ratified	Signed	NPT	No	Yes	Active
Libya	Ratified		ratified		NPT	No	Yes	
Netherlands	Ratified		Ratified	Signed	NPT	No	Yes	Via Euratom
Norway	Ratified		Ratified		NPT	No		
Poland	Signed only			Signed	Partial	Some		
South Korea	Ratified		Ratified	Ratified	NPT	No		Active
Spain	Ratified		Ratified		Partial	No		Active
Sweden	Ratified		Ratified	Ratified	NPT	No	Yes	Active
Switzerland	Ratified		Ratified		NPT	No		Active
Yugoslavia	Ratified		Ratified	Signed	NPT	No		Via IAEA

Yet, the attitudes of these same superpowers to disarmament and arms control often gives us a rough indication as to whether the world is moving towards peace or war. Progress in these fields for instance, not only helps to usher in, or concretise, an era of detente amongst the superpowers, but it also facilitates stability in deterrence, arms race, crisis management and verification. This point was highlighted recently after the 1987 INF treaty which diminished the air of cold war between the USSR and USA and also initiated a new era of detente amongst the two superpowers.⁸⁵

Before we go into the specifics of the INF treaty, let us briefly remind ourselves of six of the several seemingly great strides so far taken to curb the arms race.⁸⁶ First, the Hot Line and Modernisation Agreements of 1963 between the United States and USSR, established direct radio and wire-telegraph links between Moscow and Washington to ensure communication between heads of government in times of crisis. The 1971 follow-up agreement provided for satellite communication. Second, is the NPT, which we considered in the last section. Third, the 1972 Antiballistic Missile (ABM) Treaty, between USA and USSR, limited anti-ballistic missile systems to two deployment areas for each superpower. In a follow-up Protocol of 1974, each side was further restricted to one deployment area. The central objective here is to avoid upsetting the stability of the nuclear balance by tempting one superpower to think it could launch an attack and actually win a nuclear war without triggering that unacceptable retaliation from the other.

Fourth, the Strategic Arms Limitation Talks (SALT) I Interim Agreement of 1972, between the United States and USSR, froze the number of strategic ballistic missile launchers and permitted an increase in Submarine-Launched Ballistic Missile (SLBM) launchers up to an agreed level, subject to equivalent dismantling of older ICBMs or SLBM launchers. Fifth, the 1973 USA-USSR Prevention of Nuclear War Agreement requires consultation between the two superpowers if there is a danger of nuclear war. Lastly, SALT II Treaty of 1979 imposed limits on the numbers of strategic nuclear delivery vehicles, launchers of Multiple Independently - targetable Re-entry Vehicle (MIRV'd) missiles, bombers with long-range cruise missiles, warheads on existing ICBMs; and stipulated that as new delivery vehicles are deployed, old ones must be dismantled.⁸⁷

By far, what stands to be one of the most enduring feats among the superpowers was attained in December 1987 when, in a major breakthrough in arms negotiations, the United States and USSR signed

the INF treaty in which both sides agreed to eliminate their land-based intermediate-range and shorter-range missiles in Europe. Altogether, and as can be seen in Table 7, while the Americans are expected to eliminate 436 nuclear warheads, the corresponding figure for the Soviet is 1,575. President Reagan who had earlier excoriated the USSR as an 'evil empire,'⁹⁹ became a proponent of detente.

This could be not so much because of his love for world peace or or anxiety to eliminate some of the American nuclear systems; but, rather, because it was the Soviet Union that yielded most ground on INF.⁹ Apart from giving up its stance to convert its Pershing IIs and cruises to other missiles, the United States had not yielded any of its original positions.¹⁰⁰

By contrast, the INF treaty requires abandonment of several Soviet demands. Moscow agreed, for the first time in any arms control agreement, to destroy weapons and to allow intrusive on-site inspection. Furthermore, Moscow accepted unprecedented asymmetrical destruction of warheads and the principle of equal global numbers for the United States and the Soviet Union (not only in Europe but worldwide), and without compensation for British and French nuclear forces. The Soviets ceded points even on less important issues. They abandoned their insistence that the superpowers should retain 100 residual INF warheads (in Soviet Asia and the United States). The Soviets also agreed to accelerate full destruction of missiles from five to three years.¹⁰¹

Arguably, from the American allies' standpoint, there could be an imbalance in those forces that would remain in Europe once the INF treaty takes effect. The morose, as the Warsaw Pact enjoys considerable superiority in conventional and chemical forces, an advantage not offset by areas of NATO qualitative excellence. Besides, in the opinion of these allies, INF treaty exacerbates certain problems by eliminating the most modern European-based nuclear missiles that are capable of reaching the Soviet Union and closing off the possibility of using these systems with conventional warheads.

However, these arguments cannot be pushed too far, especially if we bear in mind that any agreement that calls for the USSR to eliminate four nuclear warheads for every one that the United States destroys, as the INF treaty stipulates, cannot be deemed to be a sell-out of the Western interests. Even from the strictly American allies' viewpoint, it could be argued that NATO's military capability is better than it has ever been; and the military balance is sufficiently substantial to withstand the effects of the treaty.¹⁰² In any case, and in spite of any reservations by some of the member states, NATO itself has repeatedly endorsed the

treaty, arguing that it was a milestone in the efforts of the alliance 'to achieve a more secure peace and lower levels of arms'.¹⁰³

Table 7: INF Treaty, 1987 (Warheads to be Eliminated)

	Intermediate Range		Shorter Range	
	A		B	Total A + B
USA	i)	108 Pershing IIs with one warhead each = 108	72 Pershing IA warheads stop West German missiles = 72	436
	ii)	64 cruise missiles with four warheads each = 256		
USSR	i)	441 Ss-20s with three warheads each = 1,323	i) 120 SS-12/22s with one warhead each = 120	1,575
	ii)	112 SS-4s with one warhead each = 112	ii) 20 Ss-23s with one warhead each = 20	

Source: Adapted from *Time*, December 14, 1987, pp. 8,9.

There is no doubt that, if faithfully adhered to by the superpowers, the INF treaty will make an important contribution towards global peace in our time. It will not only reduce the risks of an outbreak of nuclear war in Europe, but it will also pave the way to a further elimination of battleground nuclear weapons in the future.

Apart from the various meetings on disarmament and arms control, the superpowers have their own ideas as to how best to reduce or even eliminate the outbreak of a nuclear war. Specifically, each superpower has what is popularly styled 'Star Wars' programme. Christened as strategic Defence Initiative (SDI) by the Reagan administration, the American programme hopes to render nuclear systems obsolete by making any nuclear war unattractive.¹⁰⁴ In the event of a nuclear attack on the United States by the Soviets, for example, the missiles would all be destroyed in five minutes. See Table 8.

In other words, if the United States ever deploys a 'star wars' defence, its commander in some future crisis might have less than 60 seconds to reach one of the most fateful military decisions ever made. The need for fast response by 'star wars' defences stems from the fact that shooting down attacking nuclear missiles in the first stages of

light is critical. Just after launch, attacking missiles would be rising relatively slowly, with their bright booster flames as an easy target for the infrared sensors of defensive weapons. This vulnerable boost phase lasts five minutes at most.

Table 8: How SDI would Work: A Five Minute Process.

Time	Expected Action	
0	Second	Soviet missile launched
30	Seconds	US sensors detect launch
1	Minute to 3 minutes, 30 seconds	US interceptors launched from space
3	Minutes, 50 seconds	Interceptors begin to hit Soviet missiles
4	Minutes, 40 seconds	Soviet missile boosters burn out

Source: Strategic Defence Initiative Organisation (United States Defence Department)

Within this limited time, the American space-based interceptor rockets, the United States weapons that would be firing back in any initial deployment of defences, would take $2\frac{1}{2}$ minutes or more to reach their targets. That means that 'star wars' battle managers, both human and electronic would have only a small slice of time to decide that an attack really was taking place. They would then have to tell numerous space-based weapons what their targets were, and order them to fire; all in seconds.

While an SDI time line calls for interceptors to be launched about 58 seconds after attacking missiles begin rising from their silos, the United States sensors are not likely to register a soviet attack until about 30 seconds after it has begun to take place, leaving 28 seconds for the American commander to decide to switch on a space shield. The time window could be widened, of course, if the defence system used laser weapons, which would then arrive at their targets at the speed of light.

If from this brief account on SDI you conclude that defence against nuclear missiles under 'star wars' programme would, essentially, amount to strategic beat-the-clock affair, you may be right. Indeed, critics have long claimed that response would have to be so fast that the system would be automatically controlled by computer, without the overriding guidance of human reason. However, an amendment to the 1988 United States defence authorisation bill passed late last year,

requires that human beings, as opposed to computers, would have to initiate the firing of any strategic defensive system.¹⁰⁵

I should perhaps point out that under most crisis scenarios, the commander of strategic defences would have seen signs for days, or even weeks, that an attack might be imminent. The signs could be through such things as rising political tensions or movement of conventional military forces. Thus, it is highly unlikely that even in the event of an attack by the Soviets, the Americans would have only a few seconds to react to a complete surprise.

I should also add that beyond the decision to push the 'star wars' button, it is not yet clear exactly what people would do in directing a defensive battle. Moreover, the hardware that would be needed for 'star wars' command has yet to be sketched. The computers, display screens, and complicated graphics that defence commanders would use are still vague concepts.¹⁰⁶ All the same, our analysis on SDI here is quite relevant; at least, in so far as no lecture on war and peace in our time would be adequate or even up-to-date if it ignores this all-too-important subject.

One does not have to be an expert in futurology to know that, for better or for worse, the issues of war and peace in our time, especially in the context of relations between nuclear weapons states, will continue to be influenced by any marked progress or technological breakthroughs in the 'star wars' programmes of the superpowers. For now, the Reagan administration in its last year in office, has not relented in its enthusiasm for the SDI. Indeed, in February 1988, the United States launched its most complex and costly 'star wars' test to date when it sent an advanced military satellite into space. The research craft successfully tested a variety of sensing devices that are designed to track nuclear missiles in flight.¹⁰⁷

Reportedly, the \$250 million, 12-hour missile defence test produced so much data that it took ten days to send them all to Earth. The satellite released 14 mock enemy targets, each stimulating a Soviet missile, warhead, or decoy in flight. The satellite was rapidly rotated to record how the targets appeared against the backgrounds of Earth, deep space, and the Earth's horizon. As might be expected, the tracking was done through lasers, radars, optical devices, infrared and ultraviolet sensors.

The official reason for this major test was to enable the Americans to know more about space, particularly against the background of the enemy nuclear weapons systems that might be attacked. As a United State Army spokesman has put it:

One of the things that we don't know is what it is we are trying to attack. What are the objects, what do they look like, in what context will the background be? The data [just gathered] will allow us to understand the operating arena.¹⁰⁹

In spite of the Reagan administration's doggedness in keeping the SDI afloat, it has not been able to fully convert the rank and file of the American people to embrace the programme to the hilt, especially in its formative years. True, there has been a steady increase in the American support for SDI. All the same, it is clear that the rate of increase in support has been relatively slow. This was highlighted in the four polls that were conducted by Gallup Organization Inc. Between September 1984 and December 1986. See Table 9 The polls showed that a sizable American public opinion (at least 40 per cent of those interviewed in December 1986) were opposed to the programme.

In the context of superpower strategic relations, 'star wars' issue has assumed an important position in the realm of arms-control as well as that of the interpretation of the ABM treaty. While it is true that the Reagan regime, in a bid to keep the SDI programme alive, has reaffirmed its adherence to the treaty, the Administration has, nevertheless, been pursuing the very sort of nation-wide missile defence system that the 1972 treaty prohibited. Furthermore, it seemed determined to unilaterally alter the terms of the treaty, to which it had pledged itself anew in 1982, by taking a broad interpretation of the provisions.

Table 9: American Public Opinion and the Strategic Defence Initiative

Question: Some people feel the United States should try to develop a space-based 'Star Wars' system to protect the country from nuclear attack. Others oppose such an effort because they say it would be too costly and further escalate the arms race. Which comes closer to your view? (Gallup)

	September, 1984	August, 1985	January, 1986	December 1986
Should develop	41%	45%	47%	52%
Should not develop	47	47	44	40
Don't know	12	8	9	8

Source: Adapted from *National Journal*, January 31, 1987.

This would allow more latitude for the testing and development of SDI programme. yet, the traditional interpretation of the treaty which had been followed by every United States Administration since 1972, does not permit the testing, development, or deployment of exotic space-based defensive systems - the very antimissile weaponry now being researched as part of the SDI programme.¹⁰⁸

Although the USSR has sharply contested United States' new understanding of the ABM treaty, the latter has not paid much attention to this largely because it contends that the Soviets have their own 'star wars' programme. Moreover, the United States Defence Department's SDI Organisation has argued in its 1987 annual report to Congress that there are areas that are not defined in the ABM treaty, such as precisely what ABM 'components' are and what testing in an 'ABM mode' really means. It has therefore justified planned tests on SDI devices by asserting that they 'will have no ABM capability' or 'will not be tested in an ABM mode'.¹¹⁰

It seems to me that the way out of the 'star wars' problem under the ABM regime is not the exploitation of the grey areas. Rather, and bearing in mind that high technology has advanced since 1972, both the United States and USSR need to take a new look at the provisions of ABM treaty and come up with a workable agreement on the subject. Specifically, there ought to be high-level discussions between the superpowers that could determine a list of devices whose launch into space for the purpose of testing or deployment would be prohibited.¹¹¹

This approach would not only establish a joint understanding of the treaty's provisions but would also eliminate any possibility of different interpretations.¹¹² Any consensus reached by the superpowers on the exact meanings of ABM key provisions as well as the elimination of different interpretations of the treaty, would, I submit, lead to a better understanding of the problems of war and peace in our time.

CONCLUSIONS AND RECOMMENDATIONS

The politics of nuclear systems remains a wide and fast growing sub-field in political science. What I have done in this lecture, in the spirit of the ongoing structural adjustment programme in Nigeria, is to offer, in a metaphorical sense, a main course meal in the sub-field without an elaborate aperitif and dessert. It is impossible in a relatively brief time of an inaugural lecture to adequately cover all the dimensions of the politics of nuclear systems. I can only hope that the main course meal has strengthened us to see more clearly beyond the cloudy vista of the balance of forces amongst the nuclear weapons states; the linkage between the global interventionist policies of the superpowers

and nuclear arms races; the threats to the nuclear regime; and the major efforts, as well as policies, that have been embarked upon in recent times to reduce the risk of a nuclear war.

It is significant that under the aegis of the awesome atom, there has been no general war between the United States and the Soviet Union, along with the respective collective defence systems that they head: NATO and the Warsaw Pact. True, each of the superpowers has, at different times, anchored its nuclear policy to the underlying philosophy of either the hawks, who view weakness as a cause of war; or of the doves, who see provocation as dangerous; or of the owls, who are concerned about non-rational factors and loss of control.¹¹³ Nonetheless, at all times, the superpowers, and the other major nuclear weapons states, have engaged in nuclear arms race; not simply for the fun of it, but essentially because of its perceived value in securing peace through deterrence.

On the present showing, it seems that nuclear war would not result from a deliberate act but from the un-intended consequences of a crisis or conventional war. To avoid such a possible development in future, the psychological of deterrence has to be kept alive. The nuclear weapons states would have to consciously strive to maintain a balanced strategy, in which threat and reassurance are carefully blended according to the best estimate of the needs, fears, and goals of an adversary. In particular, a central objective of the policy should be the prevention of dangerous crises between the superpowers.

A balanced deterrence then, if nuclear war is to be avoided and peace assured in our time, would be an admixture of accommodation and coercion.¹¹⁴ For such a policy to be effective, the major nuclear weapons states, especially USA and USSR, would have to devote more energy to the task of arms control. To be sure, their leaders and policy makers need to draw up and be firmly committed to a workable list of guidelines that would address pressing arms control issues and strengthen the arms control regime,¹¹⁵ including as we have just argued in the last section, the ABM treaty.

Politics as Stanley Hoffman has maintained; is wholly psychological. Be that as it may, proposed solution to what may be regarded as importantly psychological problems of war and peace must be wholly political.¹¹⁶ This is precisely why emphasis is placed on the word 'workable'. Proposed solutions must be situated firmly within the cognitive context of the policymakers, who must agree that their proposals will help to solve what they regard as real problems of war and peace, of deterrence and reassurance; not proposals that are based on 'perceptual distortion' or 'paranoia' or other psychological problems

in contemporary international relations.¹¹⁷

Agreed, there is a general fear of nuclear destruction among citizens of the world, heightened perhaps by the enormous figures often advanced as the possible number of deaths that may arise from any nuclear war.¹¹⁸ Such general fear has not necessarily led to a consistent nuclear policy. Rather, governments engage in disarmament and arms control talks if, and when, domestic political problems dictate such a stance. It is a well-known fact, for example, that a major reason why the Reaganites pursued the INF accord with the Soviets as to shore up the Reagan administration from the debilitating effects of the Iran-Contra affair. In my view, what is needed as a complement to a policy of balanced deterrence, and as an additional safety valve for world peace is a framework for negotiating arms control and major conflicts that would survive governmental changes in Washington.

For now, certain features persist that do not augur well for peace. Conventional weapons still proliferate; governments in the West continue to use military spending as winch for pulling their economies out of recession, and as a competitive ware for foreign trade, nuclear equipment that could be utilised to spread militaristic use of the atom is still being exchanged for political and economic advantage. Moreover, in a stated bid to render nuclear weapons obsolete, both the United States and the Soviet Union have energetically embarked on, and are vigorously pursuing multi-billion dollar versions of 'star wars' defences, exploring the use of satellites and lasers and other technologies once seen as items of science fiction.

With the magnitude of the arsenals of the well-known nuclear weapons states as well as those of the secret nuclear weapons states such as Israel and South Africa, it is not an exaggeration to speak of the nuclear revolution in our time. The revolution is given more weight if we bear in mind that there are, many threats to the nuclear regime in the making. Yet, unless a state has first-strike capability, it is hard to see how having 'the advantage at the uppermost level of violence' helps.¹¹⁹ Indeed, it is even hard to tell, in real terms, what that advantage means, because, as Robert Jervis has rightly contended, 'the side that is ahead is no more protected than the side that is behind'.¹²⁰

This is why from the strictly military sense, new nuclear or nuclear-aspiring states that lack the first-strike capability cannot be taken quite seriously in the nuclear equation. This is why, nearer home, the debate about the need for Nigeria to acquire a 'Black Bomb' hardly adds up to anything significant; nor does it help Nigeria's strategy towards its perceived leading enemy, South Africa. Even if Nigeria must go nuclear, given the assertive role it may consistently wish to play in African

affairs and given its status as a regional power, its leaders do not have to harp on the country's intentions.

After all, while successive regimes, especially the Shagari administration, have literally pontificated about the nuclear option,¹²¹ there is nothing concrete as of now to show for our efforts. If anything, a physical as opposed to a theoretical 'black bomb' still remains a distant dream. In the interim, while we have been identifying South Africa as our main reason for going nuclear, it has solidly emerged as a serious secret nuclear power, which is in possession of necessary delivery systems to launch an attack on any target in black Africa. Similarly, South Africa's nuclear mentor, Israel, has moved beyond first-strike to second-strike capability.¹²²

To the degree that one should be objective enough to accept the obdurate reality that regardless of what one may advance as the virtues of safeguarding and, indeed, tightening the NPT regime, particularly in the context of promoting world peace in our time, the fact remains that nuclear proliferation cannot be totally eliminated. If we are bold enough to accept this unpalatable fact as, indeed, the IAEA's Director Blix admitted in 1983, then what can we do about it?

My answers here are two-fold. First, IAEA's emphasis on nonproliferation should be slanted in favour of the promotion of the use of reactor types which are advanced over the present light water reactors. One such example is the nonproliferative light-water thorium-core concept. The thorium reactor will not only achieve the goal of adequate energy supplies for the foreseeable future, but it will do so in a much simpler, safer and cheaper way. Since this type of reactor would be nonproliferative, it would be acceptable for worldwide deployment, especially to the Third World countries, which, for lack of oil or coal may genuinely be in great need of nuclear energy. True, the possibility of utilising thorium rather than uranium, for nuclear energy has intrigued scientists ever since the Manhattan Project, but a workable thorium reactor has never been in wide use.

If we bear in mind that thorium is several times more abundant than uranium, the utilisation of this reactor concept would ensure ample nuclear fuel supplies for several centuries. Besides, a thorium reactor's plutonium production rate would be less than 2 percent of that of a standard reactor, and the plutonium's isotopic content would make it unsuitable for a nuclear detonation. The fissile uranium generated in the thorium would nearly all be burnt in place. In any case, the small residue would be denatured by being mixed with several times as much nonfissile uranium so that it can be used for weapons.

The cores would, of course, be suitable for backfitting in the pressure vessels of existing nuclear power plants, thus conserving multi-billion-naira or dollar investments, and would have inherent safety improvements that greatly reduce the possibility of a meltdown. also, there would be a considerable saving in fuel cycle costs, the generation of high-level and low-level radioactive wastes would be much reduced, and the storage of spent fuel simplified.¹²³

My other suggestion centres on the need to step up the pace of international nuclear allergy. In recent years, peace and anti-nuclear movements have proliferated in Europe, North America and the Pacific. There is no doubt that these movements form distinct constituencies, in terms of mounting pressure on the democratic regimes in the West, as well as mounting campaigns to educate fellow-citizens about the inherent dangers of nuclear war.

True, decisions on nuclear weapons - disposal of nuclear waste, reactor safety or industrial pollution, to cite a few examples - may be too complex and technical for the average citizen.¹²⁴ All the same, the new communications technology can be mobilised by the various movements, or even anti-nuclear governments,¹²⁵ all over the world to raise the level of public knowledge and understanding of the dangers of nuclear arms races and nuclear proliferation. Modest as the outcome of these efforts might be, particularly on the known major weapons states including the superpowers, they represent a potential avenue for reducing the risks of nuclear war, and thereby promoting peace in our time.

In advancing the last two recipes for global peace, I am not by any stretch of imagination a self-indulgent moral absolutist, who sees nuclear deterrence as unquestionably wicked and so assumes either a unilateralist or abolitionist stance. All the same, I believe that domestic as well as international public policy should not only be influenced by moral principles, but that policy makers should also be influenced by moral philosophy.

In this respect, the teachings of the Kantians, with their rule-oriented arguments, and the utilitarians or consequentialist, with their act-oriented perspectives, need to be pondered over. Three essential dimensions of sound moral reasoning that ought to be constantly and carefully weighed by leaders, nuclear strategists and citizens alike are: ends (or motives), means, and consequences (likely results). As we saw much earlier, even a top-flight military strategist like Clausewitz sees virtue in these three dimensions. And in spite of his remarks about war as the use of unlimited violence in the service of the state he does not recommend an indiscriminate recourse to war; at least, not without

considering the ends, means and the consequences of such ultimate steps.

NOTES

1. For some analyses and/or translations of the works of these writers, See among several others, D.P. Verene, 'Hegel's Account of War', in Z.A. Pelczynski, ed., *Hegel's Political Philosophy: Problems and Perspectives* (Cambridge: Cambridge University Press, 1971); I. Kant, 'Conjectural Beginning of Human History', in L.W. Beck, ed., and E.E. Fackenheim, trans., *On History* (Indianapolis: Bobbs-Merrill, 1963); I. Kant, 'Perpetual Peace', in H. Reiss, ed., and H.B. Nisbert, trans., *Political Writings* (Cambridge: Cambridge University Press, 1970); Steven B. Smith, 'Hegel's Views on War, the State, and International Relations', in *American Political Science Review*, vol. 77, no. 3, September 1983, pp. 624-632; Bernard Brodie, 'Clausewitz: A Passion for War', *World Politics*, vol. 25, no. 2, January, 1973; Michael Howard and Peter Paret, eds. and trans., *Carl Von Clausewitz: On War* (Princeton, New Jersey: Princeton University Press, 1976); and William James Booth, *Interpreting the World: Kant's Philosophy of History and Politics* (Toronto: University of Toronto Press, 1986).
2. For example, a recent handbook of the United States War College notes that the work is still 'the most important single book in [our] academic curriculum]. Note that the War College is like a graduate school for Colonels. It offers promising mid-career officers ten months of advanced study in subjects that range from battle strategy to budget management.
3. Clausewitz, *On War*.
4. Note that some of Clausewitz's admirers dismiss his talk of total war as the product of a personality link. See for example, Brodie, 'Clausewitz: a Passion for War'.
5. See Peter R. Moody, Jr., 'Clausewitz and the Fading Dialectic of War', *World Politics*, xxxi, 3, (1979), 417-433.
6. See, for example, Stephen Peter Rosen, 'Vietnam and the American Theory of Limited War', *International Security*, 7, (2), (1982), 83-113.
7. C. *ibid.* Also, see among several others, Kathleen J. Turner, *Lyndon Johnson's Dual War: Vietnam and the Press* (Chicago, Ill.: University of Chicago Press, 1985); and Truong Nhu Tang, *A Vietcong Memoir* (San Diego, C.A. Harcourt, Brace Jovanovich, 1985).

8. Ruth Leger Sivard, *World Military and Social Expenditures, 1986* (Washington, D.C.: World Priorities, 1986).
9. *Ibid.*
10. *Ibid.*
11. See *ibid.*
12. *Ibid.*
13. Quoted in *ibid.*, p. 1.
14. For background analyses on the military utility, or otherwise, of nuclear weapons, See Robert S. McNamara, 'Misperceptions', *Foreign Affairs*, vol. 62, no. 1, Fall 1983, pp. 59-80; and Michael Nacht, *The Age of Vulnerability: Threats to the Nuclear Stalemate* (Washington, D.C.: The Brookings Institutions, 1985).
15. These figures are all taken from Sivard, *World Military and Social Expenditures, 1986*.
16. *Ibid.*
17. *Ibid.*
18. For some recent analyses on C³, see Bruce G. Blair, *Strategic Command and Control: Redefining the Nuclear Threat* (Washington, D.C.: The Brookings Institution, 1985); Daniel Ford, *The Button: The Pentagon's Command and Control System - Does it Work?* (New York: Simon and Schuster, 1985); and Daniel Schuchman, 'Nuclear Strategy and the Problem of Command and Control' *Survival*, XXIX, (4) (1987), 337-359.
19. P.R. Chari, 'Non-Alignment and the Nuclear Threat' *India Quarterly*, XXXIX, (2), (1983), 159-171.
20. For a detailed analysis of the concepts of 'power' and balance of power', See Walter S. Jones and Steven J. Rosen, *The Logic of International Relations* (Boston, M.A.: Little, Brown, 1982), 4th ed., especially, chapters 7 and 8.
21. For background readings on 'Balance of Terror' and 'Mutually assured Destruction'. See *ibid.*, chapter 10.
22. *Ibid.*
23. Cf. *ibid.*; and Louis J. Halle, *The elements of International Strategy* (Lanham, MD: University Press of America, 1984). Halle, in particular, ably discusses the key elements of deterrence theory.
24. See *ibid.*
25. J. William Fulbright 'The Foundations of National Security', in Morton A. Kaplan, ed., *Great Issues of International Politics* (Chicago: Aldine, 1974), pp. 255-265, at p. 255.
26. Clausewitz, *On War*.
27. *Ibid.*
28. *Ibid.*

29. See, for instance, Richard K. Betts, 'A Nuclear Golden Age?' in *International Security*, vol. II, no. 3, Winter 1986-87, pp. 3-32; and Samuel P. Huntington, ed., *The Strategic Imperative* (Cambridge, Mass.: Ballinger, 1982).
30. See, among others, Betts, 'A Nuclear Golden Age?'; Robert Jarvis, 'Why Nuclear Superiority Doesn't Matter', *Political Science Quarterly*, vol. 94, no. 4, Winter 1979-80, p. 628; Jarvis, *The Illogic of American Nuclear Strategy* (Ithaca: Cornell University Press, 1984), pp. 134, 153-154; Kenneth Waltz, *The Spread of Nuclear Weapons: More May Be Better*, Adelphi Paper No. 171 (London: International Institute for Strategic Studies, Autumn 1981), p.1; and Richard Ned Lebow, 'The Cuban Missile Crisis: Reading the Lessons Correctly', *Political Science Quarterly*, 98, (3), (1983) 448.
31. Betts, 'A Nuclear Golden Age?'
32. Cf. *ibid.*
33. See Sivard, *World Military and Social Expenditures, 1986; and The Military Balance, 1987-88* (London: International Institute of Strategic Studies, 1987)
34. See, in particular, Betts, 'A Nuclear Golden Age?' Note that the distinction between 'declaratory policy' and 'action policy' was advanced by Paul Nitze in one of the early criticisms of Eisenhower's massive retaliation policy. See Nitze, 'Atoms, Strategy and Policy', *Foreign Affairs*, 34, (2) January (1956), 187-188.
35. For general analyses on NATO and Warsaw Pact, see Arlene Idol Broadhurst, *The future of European Alliance Systems: NATO and the Warsaw Pact* (Boulder, CO: Westview, 1982); Richard A. Gabriel, ed., *Fighting Armies: NATO and the Warsaw Pact: A Combat Assessment* (Westport, CT.: Greenwood, 1983); Daniel N. Nelson, ed., *Alliance Behaviour in the Warsaw Pact* (Boulder, CO: Westview, (1986); David Holloway and Jane M.O. Sharp, eds., *The Warsaw Pact: Alliance in Transition?* (Ithaca, New York: Cornell University Press, 1984); Stanley R. Sloan, *NATO's Future: Toward a New Transatlantic Bargain* (Washington: National Defense University Press, 1985); and Linda Brady and Joyce P. Kaufman, eds., *NATO in the 1980s: Challenges and Responses* (New York: Praeger, 1985).
36. Note that Western Europe has, by 1988, surpassed the 1871-1914 hiatus between wars and enjoyed its longest peace in history.
37. For some early analyses in this regard, see, for example, Robert E. Osgood, *NATO: The Entangling Alliance* (Chicago: University of

- Chicago Press, 1962), pp. 60-61, 132-134; and Herman Kahn, *On Thermonuclear War* (Princeton: Princeton University Press, 1960), pp. 126, 282.
38. Including former national security advisers Henry Kissinger and Zbigniew Brzezinski. See *The Christian Science Monitor*, August 10-16, 1987.
 39. See *ibid.*
 40. *Newsweek*, February 3, 1986.
 41. *ibid.*
 42. *ibid.*
 43. *ibid.*
 44. *ibid.*
 45. See 'The Weinberger Legacy', in *International Herald Tribune*, December 24-25, 1987.
 46. Note that Carlucci assumed office in late 1987.
 47. *The Christian Science Monitor*, December 14-20, 1987.
 48. See 'the Weinberger Legacy'.
 49. *ibid.*
 50. *Newsweek*, February 3, 1986.
 51. For a list of all the major wars in this century as well as the names of the superpowers, or great powers, that intervened in them, where relevant, see Appendix I.
 52. For a list of all the major wars in this century as well as the names of the superpowers, or great powers, that intervened in them, where relevant, see Appendix I.
 52. For a background reading on Cuba's external policies, see, for example, H. Michael Erisman, *Cuba's International Relations: The Anatomy of a Nationalistic Foreign Policy* (Boulder, CO.: Westview Press, 1985).
 53. For some recent analyses on superpower rivalry in the Third World, see Jerry F. Hough, *The Struggle for the Third World* (Washington, D.C.: The Brookings Institution, 1986); and Rajan Menon, *Soviet Power and the third World* (New Haven: Yale University Press, 1986). For specific studies on Africa, See Oyo Ogunbadejo, 'Conflict in Africa', *World Affairs*, 141, (3), (1979), 219-234; Ogunbadejo, 'Soviet Policies in Africa', *African Affairs*, 79, (316), (1980), 297-325; Ogunbadejo, 'Angola: Ideology and Pragmatism in Foreign Policy', *International Affairs* (London), 57, (2), (1981), 245-269; Ogunbadejo, 'Angola's International Economic Relations', *International Studies*, 21 (3), (1982), 323-339; Emmanuel Hansen, ed., *Africa: Perspectives on Peace and Development* (London: Zed, 1987); and Stephen Wright and Janice N. Brownfoot, *Africa*

- World Politics: Changing Perspectives* (London: Macmillan, 1987).
54. See, among several others, Jiri Valenta, *Soviet Intervention in Czechoslovakia, 1968: Anatomy of a Decision* (Baltimore: The Johns Hopkins University Press, 1979); and Karen Dawisha, *The Kremlin and the Prague Spring* (Berkeley, CA.: University of California Press, 1984).
 55. For an extended discussion of the Reagan doctrine, see, for example, Fred Halliday, *Beyond Irangate: The Reagan Doctrine and the Third World* (Amsterdam: Transitional Institute, 1987); and Halliday, *The Making of the Second Cold War*, 2nd ed., (London: Verso Editions and NLB, 1986).
 56. *Newsweek*, December 23, 1985.
 57. See, for example, Wayne S. Smith, 'Lies About Nicaragua', *Foreign Policy*, no. 67, Summer 1987, pp. 87-103; Christopher Madison, 'Flexibility V. Congress's Right to Know: The Iran-Contra Hearings', *National Journal*, July 4, 1987, p. 1727; Jonathan Marshall, Peter Dale Scott and Jane Hunter, *Iran-Contra Connection: Secret Teams and Covert Operations in the Reagan Era* (Boston, MA: South Bend Press, 1987); and John Tower, Edmund Muskie and Brent Scowcroft, *The Tower Commission Report: The Full Text of the President's Special Review Board* (New York: Bantam Books and Times Books, 1987).
 58. Cf. Alvin Z. Rubinstein and Donald E. Smith, eds., *anti-Americanism in the Third World: Implications for U.S. Foreign Policy* (New York: Praeger, 1985).
 59. See, for example, Neil MacFarlane, *Superpower Rivalry and Third World Radicalism* (London: Croom Helm, 1985).
 60. Specifically in Africa. See Oye Ogunbadejo, 'The Soviet Union and Africa', in Colin Legum, ed., *Africa Contemporary Record, 1984/85* (New York: Africana, 1986), pp. A261-285; and Ogunbadejo 'Soviet Policies in Africa'. For a more general Third World Orientation, see Elizabeth Kridl Valkenier, *The Soviet Union and the Third World* (New York: Praeger, 1983).
 61. See Sivard, *World Military and Social Expenditures, 1987* (Washington, D.C.: World Priorities, 1987), p.32.
 62. For my main studies in this area, See Oye Ogunbadejo, 'Africa's Nuclear Capability', in *The Journal of Modern African Studies*, 22, (1), 1984, 19-43; Ogunbadejo, *The International Politics of Africa's Strategic Minerals* (London: Frances Printer; Westport, Conn.: Greenwood Press, 1985); and Ogunbadejo, 'Nuclear Capability and Nigeria's Foreign Policy, in Colin Legum, ed., *Africa Contemporary Record, 1983-84* (New York and London: Africana), pp. A136-

- A151. For the same author's analysis on the implications of the United States nuclear installations in Diego Garcia on Africa's security. See Ogunbadejo, 'Diego Garcia and Africa's Security', *Third World Quarterly*, 4, (1) (1982), 104-120. For references to the impact of Libya's nuclear quest on the country's external relations. See Ogunbadejo, 'Qaddafi's North African Design', *International Security*, 8, (1), (1983), 154-178; and Ogunbadejo, 'Qaddafi and Africa's International Relations' *The Journal of Modern African Studies*, 24, (1), (1986), 33-68.
63. For a fairly recent work on Israel's nuclear capability, See Louis Rene Beres, ed., *Security or Armageddon: Israel's Nuclear Strategy* (Lexington, MA: Lexington Books, 1986).
64. See, for example, the various essays in *ibid.*
65. See Gary Milhollin, 'Heavy Water Cheaters', *Foreign Policy*, no. 69, Winter 1987-88, pp. 100-119; and *The Christian Science Monitor*, December 14-20, 1987.
66. *The Sunday Times* (London), 5 October, 1986, *passim*.
67. *Ibid.*
68. See *ibid.*
69. *Ibid.*
70. *Ibid.*
71. *Ibid.*
72. *Ibid.*
73. See the quotations from various specialists interviewed in *The Christian Science Monitor*, December 14-20, 1987.
74. *Ibid.*
75. See Ogunbadejo, *The International Politics of Africa's Strategic Minerals*, chapter 5.
76. Cited by Ken Coates in a recent unpublished mimeographed paper. I am indebted to him for sending me a complimentary copy of the piece.
77. See *ibid.*
78. *Ibid.*
79. *The Christian Science Monitor*, December 14-20, 1987.
80. *Ibid.*
81. See Ogunbadejo, *The International Politics of Africa's Strategic Minerals*; and Perlmutter, Handel and Bar-Joseph, *Two Minutes Over Baghdad*.
82. *The Christian Science Monitor*, December 14-20, 1987. For a recent analysis on Israel's arms-transfer policy, See Aaron S. Klieman, *Israel's Global Reach: Arms Sales as Diplomacy* (McLean, VA: Pergamon-Brassey's International Defence Publishers, 1985)

83. *The Christian science Monitor*, December 14-20, 1987.
84. For the main contributions, See, in particular, Ogunbadejo, 'Africa's Nuclear Capability'; 'Nuclear Capability and Nigeria's Foreign Policy'; and chapters 5-7 of *The International Politics of Africa's Strategic Minerals*.
85. See 'Brazil Says It Now Produces Small Amounts of Plutonium', *The Washington Post*, 18 December 1986, p. A58.
86. Hans Blix, quoted in Warren H. Donnelly, 'Nonproliferation Policy of the United States in the 1980's', *S&S Review* Summer Fall 1987, pp. 159-179, at p. 160.
87. For an analysis of United States nonproliferation rules, See *ibid.*
88. There are several books on Pakistan's political process as well as the country's defence policies. See, among others, Craig Baxter, ed., *Zia's Pakistan: Politics and Stability in a Frontline State* (Boulder, CO: Westview, 1985); Hassan-Askari Rizvi, *The Military and Politics in Pakistan, 1947-1985* (Lahore: Progressive, 1986); Stephen P. Cohen, *The Pakistan Army* (Berkeley, CA: University of California Press, 1984); and Mohammed A. Khan, ed., *Islam, Politics, and the State: The Pakistan Experience* (London: Zed Books, 1985).
89. See, for example, Ogunbadejo, *The International Politics of African Strategic Minerals*; and Robert S. Jaster, 'Politics and the "Afrikaner Bomb"', *ORBIS*, vol. 27, no. 4, Winter 1984, pp. 825-851
90. Donnelly, 'Nonproliferation Policy of the United States in the 1980s'.
91. Cf. Albert Carnesale *et al* (The Harvard Nuclear Study group), *Living with Nuclear Weapons* (New York: Bantam, 1983).
92. Thomas C. Schelling, 'Thinking about Nuclear Terrorism', *International Security*, vol. 6, no. 4, Spring 1982', pp. 61-77, at p.61.
93. For recent studies on various aspects of conventional terrorism, (see Paul Wilkinson, *Terrorism and the Liberal State* (London: Macmillan, 1986); Noel O'Sullivan, ed, *Terrorism, Ideology and Revolution: The Origins of Modern Political Violence* (Brighton, England: Harvester, 1986); Stephan Segaller, *Terrorism into the 1990s* (London: Michael Joseph, 1986); Lawrence Freedman *et al*, *Terrorism and International Order* (London: Routledge and Kegan Paul for Royal Institute for International Affairs, 1986); Benjamin Netanyahu, ed., *Terrorism: How the West Can win* (London: Weidenfeld and Nicholson, 1986); and Amir Taheri, *Holy Terror: The Inside Story of Islamic Terrorism* (London: Century

- Hutchinson, 1987).
94. See Carnesale *et al*, *Living with Nuclear Weapons*; and Kime, 'The Soviet View of War'.
 95. For a background analysis on recent bouts of cold war and detente amongst the two superpowers, see the 1147-page monumental work of Raymond L. Garthoff, *Detente and Confrontation: American-Soviet Relations from Nixon to Reagan* (Washington, D.C.: The Brookings Institution, 1985).
 96. For a more detailed list, see Appendix 2.
 97. Note that although the Salt II treaty was never ratified by the United States Senate, the Americans have tried, nonetheless, to comply with its provisions. In part, the treaty was never ratified because of widespread concern that the United States would have trouble monitoring soviet compliance as a result of the loss of intelligence posts in Iran, after the revolution there. In part, too, the treaty was not ratified because of the American anger over the Soviet invasion of Afghanistan in 1979.
 98. *International Herald Tribune*, December 24-25, 1987.
 99. See, for instance, 'Moscow Yielded most ground on INF', in *The Christian Science Monitor*, December 14-20, 1987.
 100. *Ibid.*
 101. *Ibid.*
 102. Cf. Richard N. Haas, 'The bottom line on the INF accord: It's not perfect, but it's good enough', in *ibid.*
 103. See 'NATO reaffirms support for INF treaty', *The Guardian*, March 4, 1988.
 104. See, for example, Robert Jastrow, *How to make Nuclear Weapons Obsolete* (Boston, MA: Little, Brown, 1985).
 105. See *The Christian Science Monitor*, September, 21-27, 1987, p. 11.
 106. *Ibid.*
 107. The 6,000-pound satellite was launched into space by a Delta 1B1 rocket, from Cape Canaveral, on February 8, 1988. See *ibid.*, issue of February 15-21, 1988.
 108. See *ibid.* Note that a complete 'star wars' system would include several hundred orbiting battle stations, each having a dozen killer rockets.
 109. See, for example, 'ABM Tightrope', *National Journal*, July 4, 1987.
 110. *Ibid.*
 111. Cf. the arguments of Viktor P. Karpov, Soviet ABM Treaty negotiator, in *Pravda*, May 26, 1987.

112. It is pertinent to point out that Senator Sam Nunn, the conservative Democrat and Chairman of the United States Senate Armed Services Committee, supports this idea in principle. He is even determined, in the interim, to stop the Reagan administration from reinterpreting the ABM treaty. See *The Christian Science Monitor*, September 21-27, 1987.
113. Cf. Graham T. Allison, Albert Carnesale and Joseph S. Nye, Jr., eds., *Hawks, Doves and Owls: An Agenda for Avoiding Nuclear War* (New York: Norton, 1985).
114. In this regard, compare the analyses in *ibid.*, Joseph S. Nye, Jr., *Nuclear Ethics* (New York: Free Press, 1986); and Robert Jervis, Richard Ned Lebow and James Gross Stein (with contributions by Patrick M. Morgan and Jack L. Snyder), *Psychology and Deterrence* (Baltimore: Johns Hopkins University Press, 1985).
115. For a possible list of such 'dos' and 'don'ts', See Allison, Carnesale and Nye, Jr., eds., *Hawks, Doves and Owls*.
116. Stanley Hoffman, 'On the Political Psychology of War and Peace: A critique and an Agenda', *Political Psychology*, 7, (1), (1986), 1-21.
117. See, for example, Richard Ned Lebow in Jervis, Lebow and Stein, *Psychology and Deterrence*; and J.P. Kahan, R.E. Darilek, M.H. Graubard, and N.C. Brown, with assistance from A. Platt and B.R. Williams, *Preventing Nuclear Conflict: What can the Behavioural Sciences Contribute?* (Santa Monica, Calif.: Rand Corporation, 1983).
118. For some of these figures, See Betts, 'A Nuclear Golden Age?'
119. Paul Nitze is reputed to have coined the quoted term. See Robert Jervis, *The Illlogic of American Nuclear Strategy* (Ithaca, New York: Cornell University Press, 1984).
120. *Ibid.*, p. 58.
121. See, in particular, Ogunbadejo, 'Nuclear Capability and Nigeria's Foreign Policy'.
122. See Ogunbadejo, *The International Politics of Africa's Strategic Minerals*.
123. Cf. the arguments of Alvin Radkowsky, a professor of nuclear engineering and chief scientist of the United States Naval Propulsion Programme from 1948 to 1972, in *The New York Times*, May 15, 1984.
124. See, for example, Robert Dahl, *Controlling Nuclear Weapons: Democracy Versus Guardianship* (Syracuse, New York: Syracuse University Press, 1985).

125. Such as the fearless policy of Prime Minister David Lang's government in New Zealand. See his 'New Zealand's Security Policy', in *Foreign Affairs*, Summer 1985. For good measure and contrast, see the reply of Admiral James D. Watkins, the United States Navy Chief of Naval Operations in *ibid.*, Fall 1985, pp. 169-170.



APPENDIX I
Wars With Deaths of 100,000 Or More*

L.	Local	Date	19th Century Identification of Conflict	Deaths
North America:				
	United States	1861-65	Civil War, Confederacy vs. Govt.	650,000
Latin America:				
	Brazil	1854-70	Peru vs Brazil & Argentina	1,000,000
	Columbia	1859-03	Liberals vs Conservative Govt.	150,000
	Cuba	1868-78	Cuba vs Spain & Philippines	200,000
				200,000
Europe:				
	Germany	1870-71	France vs Germany/Prussia	250,000
	Greece	1821-28	Greek revolt against Turkey	120,000
	Turkey	1828-29	USSR vs Turkey	130,000
		1877-78	USSR vs Turkey	285,000
	USSR	1853-56	Turkey vs USSR; UK, Fr., It., invading	267,000
Far East:				
	China	1850-64	Taiiping rebellion; UK intervening	2,000,000
		1860-72	Muslim rebellions vs China	150,000
	Indonesia	1873-78	Achinese vs Netherlands	200,000
	Philippines	1899-02	Philippine revolt against US	215,000
				<hr/>
				5,817,000

*Only the largest wars are shown in these lists but the full record covers 'any conflict which includes one or more governments, involves the use of arms, and causes deaths of 1,000 people or more per year'. Included are both civilian and military fatalities, massacres, political violence, and famine associated with the conflict.

20th Century				
Location	Date	Identification of Conflict	Deaths	
Latin America				
	Bolivia	1932-35	Paraguay vs Bolivia	200,000
	Columbia	1948-62	"La Violencia"; civil war, Libs. vs vs. Conserv. Govt.	300,000
	Mexico	1910-20	Liberals & Radicals vs Govt.	250,000
Europe				
	Greece	1945-49	Civil war; UK intervening	160,000
	Poland	1919-20	USSR vs Poland	100,000
	Spain	1936-39	Civil war; Italy, Portugal & Germany intervening	1,200,000
	Turkey	1915	Armenians deported	1,000,000
	USSR	1904-05	Japan vs Russia	130,000
		1918-20	Civil war; Allied intervention	1,300,000

Europe and Other

1914-18 World War I	19,617,000
1939-45 World War II	38,351,000

Middle East

Iraq	1961-70 Civil war, Kurds vs Govt.; massacre of Christians	105,000
	1982-85 Iran attack following Iraq invasion	600,000
Lebanon	1975-76 Civil war; Muslims vs Christians; Syria intervening	100,000
Yemen, AR	1962-69 Coup; civil war; Egypt intervening	101,000

South Asia

Afghanistan	1978-86 Civil war, Muslims vs Govt., USSR intervening	500,000
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Bangladesh	1971 Bengalis vs Pak; India invad.; famine & massacres	1,500,000
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India	1946-48 Muslims vs Hindus; UK intervening; massacres	800,000
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Far East

Cambodia	1970-75 Civil war, Khmer Rouge vs Govt.; NV, US interv.	156,000
	1975-78 Pol Pot Govt. vs people famine and massacres	2,200,000

China	1928 Muslim rebellion vs Govt.	200,000
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	1930-35 Civil war, Communists vs Govt.	500,000
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	1937-41 Japan vs China	1,800,000
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	1946-50 Civil war, Communists vs Kuomintang Govt.	1,000,000
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	1950-51 Govt. executes landlords	1,000,000
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	1958-59 Tibetan revolt	100,000
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Indonesia	1965-66 Abortive coup; massacres	500,000
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	1975-80 Annexation of East Timor; famine & massacres	100,000
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Korea	1950-53 Korean War; UN intervening	2,889,000
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Vietnam	1945-54 War of independence from France	600,000
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	1960-65 Civil war, Vietcong vs Govt.; US intervening	300,000
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	1965-75 Peak of Indo-China War; US bombing	2,058,000
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Africa

Algeria	1954-62 Civil war, Muslims vs Govt., France intervening	320,000
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Burundi	1972 Hutu vs Govt.; massacres	100,000
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Ethiopia	1974-86 Eritrean revolt and famine	545,000
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Mozambique	1961-66 Famine worsened by civil war	100,000
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Nigeria	1967-70 Civil war, Biafrans vs Govt.; famine & massacres	2,000,000
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Rwanda	1958-65 Tutsis vs Govt.; massacres	108,000
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Sudan	1963-73 Christians vs Arab Govt.; massacres	300,000
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Tanzania	1905-07 Revolt against Germany; massacres	300,000
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Uganda	1905-07 Revolt against Germany; massacres	300,000
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	1981-85 Army vs people; massacres	102,000
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Zaire	1960-65 Katanga secession; UK, Belgium intervening	100,000
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		83,642,000
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Source: Ruth Leger Sivard, *World Military and Social Expenditures, 1985* (Washington, D.C.: World Priorities, 1986).

APPENDIX 2
Formal Agreement for Curbing the Arms Race*

A	Nuclear Multilateral	
	Antarctic Treaty, 1959	30 states ¹
	Bans military uses of Antarctica, including nuclear tests.	
	Partial Test Ban Treaty, 1963	112 states ²
	Bans nuclear weapons tests in atmosphere, outer space, and underwater.	
	Outer Space Treaty, 1967	82 states ²
	Bans testing, possession, deployment of nuclear weapons, and requires safeguards on facilities.	
	Non-Proliferation Treaty, 1968	132 states ²
	Bans transfer of nuclear weapons and technology of five nuclear weapons states. Commits latter to halt arms race.	
	Seabed Treaty, 1971	74 states ²
	Bans nuclear weapons on the seabed beyond a 12-mile coastal limit.	
	South Pacific Nuclear Free Zone Treaty, 1985	3 states ^{2,4}
	Bans testing, manufacture, acquisition, stationing of nuclear weapons. Requests five nuclear weapons states to sign protocol banning use or threat of nuclear weapons and nuclear testing.	
	* As of 1986, see Ruth Leger Sivard, <i>World Military and Social Expenditures, 1986</i> (Washington, D.C.: World Priorities, 1986).	
B	Other Multilateral	
	Geneva Protocol, 1925	120 states ¹
	Bans the use in war of asphyxiating, poisonous, or other gases, and of bacteriological methods of warfare.	
	Biological Weapons Convention, 1972	59 states ²
	Bans the development, production, stockpiling, and use of biological agents and toxins; requires the destruction of stocks.	
	Environmental Modification Convention, 1977	47 states ²
	Bans military or other hostile use of techniques to change weather patterns, ocean currents, ozone layer, or ecological balance.	
	Inhumane Weapons Convention, 1981	26 states ^{1,2}
	Bans use of fragmentation bombs not detectable in the human body; bans use against civilians of mines, booby traps, and incendiaries.	
C	Nuclear Bilateral	
	Hot Line and Modernization Agreements, 1963 US-USSR Establishes direct radio and wire-telegraph links between Moscow and Washington to ensure communication between heads of government in times of crisis. 1971 agreement provided for satellite communication.	
	Accidents Measures Agreements, 1971	US-USSR
	Pledges US and USSR to improve safeguards against accidental or unauthorized use of nuclear weapons.	
	ABM Treaty (SALT I), 1972	US-USSR
	Limits anti-ballistic missile systems to two deployment areas on each side. In Protocol of 1974, each side restricted to one deployment area.	
	SALT I Interim Agreement, 1972	US-USSR

Freezes the number of strategic ballistic missile launchers, and permits an increase in SLBM launchers up to an agreed level only with equivalent dismantling of older ICBM or SLBM launchers.

Prevention of Nuclear War Agreement, 1973

US-USSR

Requires consultation between the two countries if there is a danger of nuclear war.

SALT II Treaty, 1979

US-USSR²

Limits numbers of strategic nuclear delivery vehicles, launchers of MIRV² missiles, bombers with long-range cruise missiles, warheads on existing ICBM's, etc. Bans testing or deploying new types of ICBM's. As new delivery vehicles are deployed, old ones must be dismantled.

Threshold Test Ban Treaty, 1974

US-USSR²

Bans "group explosions" with aggregate yield over 1,500 kilotons; requires on-site observers of explosions with yield over 150 kilotons.

1. Number of accessions and ratifications, as recorded by ACDA, October 1986.
2. Not yet ratified.
3. US has signed but not yet ratified.
4. Nine states signed, 3 ratified; 8 required for ratification.

