ANALYSIS OF SUPERPOWER NUCLEAR STRATEGY:

Compellence as a Competing Paradigm to that of Deterrence

by

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ABSTRACT

This thesis centers on that aspect of superpower strategic nuclear systems that lies beyond pure deterrence. Much has been offered under the rubric of deterrence, but little analysis of compellence has been attempted. Considering the widespread criticisms of deterrence theory, this is surprising. A comprehensive look at nuclear strategy from the conceptual framework of compellence helps clarify the limits of deterrence and indicates that deterrence and compellence are increasingly interrelated.

To demonstrate these assertions, this dissertation provides a quantitative and qualitative analysis of intercontinental nuclear systems. The thesis is that nuclear strategy in the United States and the Soviet Union from 1970-1986 may be described at least equally well by compellence rather than deterrence. By looking closely at technological capabilities, the real capability of these nuclear systems can be more accurately determined. This analysis includes an assessment of how these nuclear systems could interact in combat, based on a Soviet correlation of nuclear forces model. This is the first time in the West that this model has been used for this purpose. It provides a unique Soviet perspective on nuclear strategy.

This dissertation begins with the theoretical basis of deterrence and compellence, and then establishes two models based on these two concepts which provide the conceptual framework for the dissertation. The second chapter examines the theoretical basis for arms control based on each paradigm. The next two chapters address alternately the American and the Soviet nuclear strategies, attempting to draw out the deterrent and compellent aspects therein.
The fifth chapter narrows the focus to the role of arms control in identifying actual nuclear strategy; to what extent are the superpowers attempting to achieve foreign policy objectives in SALT I, SALT II and START? The sixth chapter considers the NATO-Warsaw Pact relationship to determine to what extent the superpowers are using their respective alliance systems in their strategic interrelationship. The next three chapters analyze quantitatively and qualitatively the American and Soviet strategic nuclear force structures to determine a correlation of forces trend and develop some predictions as to the viability of each force structure in supporting its respective strategy.

The paradigmatic analysis of superpower nuclear strategy clearly portrays the limitations of deterrence as an explanation for international strategic behaviour. The compellent paradigm is shown as a reasonable alternative that in many ways better explains what has happened in superpower strategic relations from 1970-1986.
LIST OF ABBREVIATIONS

ABM        Anti Ballistic-Missile
ACDA       Arms Control and Disarmament Agency (United States)
ALCM       Air Launched Cruise Missiles
ASW        Anti-Submarine Warfare
CEP        Circular Error Probable
CMP        Counter Military Potential (See K)
CRS        Congressional Research Service
DIA        Defence Intelligence Agency (United States)
DOD        Department of Defence (United States)
EMT        Equivalent Megatonnage
FBIS       Foreign Broadcast Information Service
ICBM       Intercontinental Ballistic Missile
INF        Intermediate (range) Nuclear Forces
IRBM       Intermediate Range Ballistic Missiles
JPRS       Joint Publications Research Service (U.S. Congress)
K          Measure of the lethality of a nuclear warhead against hard targets
LCC        Launch Control Centers
MARV       Multiple Manoeuvring Re-entry Vehicles
MC         Nato document approved by the Military Committee
MIRV       Multiple Independently-targeted Re-entry Vehicles
MRV        Multiple Re-entry Vehicles (dispersed on one target)
NATO       North Atlantic Treaty Organization
NORAD       North American Air Defence
NSDM       National Security Decision Memorandum
NSDD       National Security Decision Document
NUWEP   Nuclear Weapon Employment Policy
OAR     Overall Reliability
PVO Strany Soviet Air Defence System (Now called Voiska PVO)
RV      Re-entry Vehicle (Carries nuclear warhead)
SAC     Strategic Air Command (USAF)
SDI     Strategic Defence Initiative
SIOP    Single Integrated Operation Plan
SLCM    Submarine Launched Cruise Missile
SLBM    Submarine Launched Ballistic Missile
SNDV    Strategic Nuclear Delivery Vehicle
SRF     Strategic Rocket Forces (Soviet Union)
SSBN    Nuclear Powered Ballistic Missile
SSKP    Single Shot Kill Probability
SSN     Nuclear Powered Attack Submarine
TKP     Terminal Kill Probability
TNW     Tactical Nuclear Weapons
US      United States (of America)
USAF    United States Air Force
USGPO   United States Government Printing Office
USSR    Union of Soviet Socialist Republics (Soviet Union)
WTO     Warsaw Treaty Organization (Warsaw Pact)
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In one way or another, the United States and the Soviet Union, as superpowers, expect to influence other actors in the world society. Since the threat of force has always played a key role in generating expectations of international behavior and perceptions of relative influence, understanding the conceptual basis of nuclear strategy is of fundamental importance.

The key question since 1945 has been to what degree can nuclear weapons actually support political objectives. In practice, each superpower has political goals that in effect provide strategic direction to its armed forces and this highest level of strategic thought is called grand strategy in the United States, or military doctrine in the USSR. Military and nuclear strategy are in fact subsets or lesser orders of strategy imbedded in these higher orders. The military strategies of the superpowers are intended to support their respective national policies and nuclear strategies are designed as their ultimate sanction. This dissertation will examine this complex relationship between security policy and superpower nuclear weapons with primary focus on the years 1970-1986, the period immediately prior to Gorbachev's dramatic and far-reaching reforms.

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2 For an interesting and unique account of the various levels of strategy, see Edward Luttwak, Strategy: The Logic of War and Peace (Cambridge, Massachusetts: Howard University Press, 1987) pp. 69-71. While this dissertation accepts the notion of various levels of military/strategic thought or action, it does not accept Luttwak's breakdown per se.
Deterrence has been the primary rationale for superpower nuclear weapon construction for this period. Both the United States and the Soviet Union in the late 1960's accepted that the conditions of nuclear parity and assured destruction were overriding factors in their strategic inter-relationship, and yet between 1970 and 1986 each superpower created ever more massive levels of nuclear armaments. For example, in spite of a tremendous increase in Soviet nuclear power during this period, the number of United States warheads that could survive a Soviet first strike have increased fivefold.\(^3\) There have been several attempts to explain this phenomenology, but most analysis has been based on deterrent thinking and has been largely unconvincing. This dissertation will provide a paradigmatic approach that will examine the possibility that thinking based on compellence may be playing a far greater role in superpower nuclear strategy than has been generally acknowledged.

A paradigm is a theoretical construct that usually has an enduring group of adherents who explain its subject through a unique set of criteria which assist in puzzle solving. Its power is in its ability to identify a way of thinking about its subject, and different paradigms imply significantly different ways of thinking. This dissertation and its descriptions are therefore concerned primarily with the hermeneutics of deterrent and compellent thought processes, and thus they are not historical explications nor accounts of decision making per se.

This dissertation intends to construct, within the framework of the realist perspective of international relations, two competing strategic paradigms and determine their utility for assessing intercontinental strategic systems and their respective force structures. The deterrent

\(^3\) McGeorge Bundy in his excellent historical account raises this problem but offers no explanation. See his *Danger and Survival* (New York: Random House, 1988), p. 591.
paradigm appears to have been the dominant model for declaratory nuclear strategy in each superpower, but in recent years deterrence has come under increasing criticism as a paradigmatic construct or basis for nuclear strategy. More and more, strategic nuclear systems and policies have moved beyond limits that appear necessary for "pure" deterrence or assured destruction, toward a different paradigm that can be called compellence. An excellent analysis of deterrence has already hinted at this other paradigm's existence:

It is always attractive for diplomatic and foreign policy purposes to insist that the central objective of one's own forces is simply to deter but this cannot obscure the fact that they are available for some or all other uses of arms.

This chapter will establish the deterrent and compellent paradigms then construct a conceptual framework necessary for the paradigmatic analysis of nuclear strategy. The second chapter in fact completes this formulation by examining the theoretical basis for arms control based on each paradigm. Subsequent chapters will proceed to apply this framework to American and Soviet nuclear strategy, the arms control dialogue, alliance nuclear strategy and finally to specific American and Soviet nuclear force construction and deployment patterns. The principle argument of this thesis is that deterrence and compellence may be closely interrelated and that the compellent paradigm may offer a more appropriate explanation of the thinking behind superpower nuclear strategy.

I. HISTORICAL DEVELOPMENT OF MODERN STRATEGY

To account for the shift in strategic thought that began in 1945, one must understand in what conceptual framework earlier strategists were operating. This section will explore the essence of strategic assumptions.

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in the nineteenth and early twentieth centuries with particular emphasis on technology, and will then extrapolate on some continuities and discontinuities that are characteristic of the nuclear era.

Strategy can mean several things, but this study uses the definition provided by André Beaufre; it is "the art of applying force so that it makes the most effective contribution towards achieving the ends set by policy." Beaufre continues by stating that strategy must be considered as the art of the dialectic of two opposing wills either using or threatening to use force to further their political aims. The influence of the international environment inevitably provides certain constraints to this abstract dialectic, and a correct assessment of the international situation is therefore a vital element of strategy. How a given state perceives its milieu, then, largely determines its strategic approach, and in the modern age up to 1945 a "traditional" strategic style can be identified.

Politically and philosophically, the modern age of thought was heralded by Machiavelli who broke with the classical and Christian tradition of "imagined republics" to seek the "effectual truth of the thing." The modern age of thought changed the object of philosophy from abstract contemplation to more immediately practical ends, that of political success in which morality played a significantly reduced role. Thomas Hobbes furthered these notions by conceiving man as being constantly at war with every other man unless a common power exists "to

5 André Beaufre, An Introduction to Strategy (London: Faber and Faber, 1965), p. 22. This is an excellent introduction to the subject.
keep them all in awe." For Hobbes, therefore, a commonwealth or state must logically be in competition or at war with all others even though "battles" might take place infrequently. Furthermore, in such a state of total anarchy, "nothing can be unjust", and the major factor that inclines men toward peace is the fear of death.

After Hobbes, two interpretations in modern thought have increasingly crystallized, and both have had a profound impact in Western political traditions. A tradition of optimism leads to the view of rational historical progress where greater adversity leads to greater expectation that man will overcome it. The opposite tradition of pessimism is however extraordinarily critical of irreversible historical progress through human harmony and rationalism. While the first tradition tends to idealism and utopianism, the latter, when coupled with the Hobbesian notion of perpetual human competition, can lead to pessimism and despair. For the most part, international behaviour has been based upon the latter tradition, and throughout the modern age, strategy has tended to share the Hobbesian assumptions of state competition and anarchy.

International relations theorists have recently established conceptual paradigms as constructs that offer contending explanations of how nations interact. In the traditional or realist perspective, state

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9 *Ibid.,* p. 188.


11 Sir Ian Clark, *Reform and Resistance in the International Order* (London: Cambridge University Press, 1980). To Clark, the tradition of optimism contributes to resistance to reform and the tradition of pessimism contributes to reform of the international system.
security is paramount and remains based on Hobbes' notion that no restraints exist except those based on fear and on Rousseau's notion that areas of common agreement are insignificant and short lasting. Some analysts see no progress or major restructuring of the operative principles of international policies since 1815, particularly in the realm of strategic interaction. Traditional strategy has tended to base its assumptions on those of the realist tradition, and even during the peak of idealistic thought, strategy still focused on state-centric behaviour.

The realist structure was largely put in place by Hans Morgenthau as a reaction to Wilsonian idealism in the United States. Morgenthau's concept of reality was based on the notion that each nation pursued its interests defined in terms of power such that the balance of power was an "inevitable and essential stabilizing factor in a society of sovereign nations." There are two assumptions in this conceptualization, firstly that conflict is a permanent feature of human society and secondly that power is the most important element in structuring the international system. The roots of these assumptions go back to Machiavelli and are so

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13 Ian Clark, Reform and Resistance in the International Order, p. 174.


deep that many still hold them to be universally valid.\textsuperscript{16}

In this framework the emphasis on national interests results in the international community seeking to achieve an equilibrium or a balance that is conceived in terms of power. In the nineteenth century Britain successfully sought to create an effective balance of power in Europe so as to check her strongest rival and prevent any one continental state from becoming too "powerful." Since there is no clear evidence that the state system is in decline, and since a balance of power remains very much a condition of this system, wars in the final analysis only contribute to it.\textsuperscript{17} As each state is ultimately concerned with its own survival and is "unwilling to rely on the power and will of the international community as a whole to protect it," according to a respected historian, raison d'état and self-sufficiency tend to form the basis for strategic behaviour.\textsuperscript{18}

The role of military force in a balance of power system is to contribute to those assets which the state can use to pursue unilaterally its avowed interests. While political power is seldom directly equivalent to military power, there is an obvious linkage between the two, and there is no evidence that this has significantly changed in the nuclear age.\textsuperscript{19} In reality the relationship between theory and practice is often blurred and the notion of national interest links realist theory to traditional


strategy in a very imprecise manner. What is a virtue in politics is not necessarily of great assistance to strategy, and thus military strategy has been primarily a praxis, often left to military experts.

Those "strategists" that studied the application of force before the French revolution tended to reduce warfare to its technical characteristics, so that war was considered to be more an exact science than an art. The legacy of jurists such as Grotius and the human carnage of the Thirty Years' War made limited wars with restrained political aims the norm, but the French revolution and Napoleon once again changed the nature of wars. No longer was manoeuvre in itself sufficient to determine the outcome, but mass armies were required and decisive battles had to be won to achieve more open-ended aims. Clausewitz was the analyst that was best able to capture the essence of modern war. His philosophy emphasized the importance of the moral and political implications rather than the technical. His detailed understanding that the danger and demands of war placed a premium on moral qualities of endurance, resolution and "sang froid," all emanating from the willpower of a leader, had a "sympathetic audience among military men who by temperament have little patience with theoretical strategists."22

The impact of Clausewitz on military strategy has been mixed because his massive and partially finished volumes have been effectively studied by few, yet cited as authoritative by many. One interesting study determined that, had the Germans properly studied and understood

20 Alexander George, "Domestic Constraints on Regime Change in U.S. Foreign Policy: The Need for Political Legitimacy," in Ole Holsti, et al., Change in the International System, p. 234.


Clausewitz, "the First World War might never have been unleashed."

Clausewitz held the view that abstract logic could approach a conceptual purity that reality could never achieve, and thus his heavy and unbalanced emphasis on absolute war and battle was open to misinterpretation. Clausewitz acknowledged the "friction" of war which meant in part that:

The object of war in the abstract...the disarming of the enemy, is rarely attained in practice, and it is not a condition necessary to peace.

The greatest impact of Clausewitz's philosophy of war is its linkage to realist thought, the logical extension of which is the statement, "if you wish for peace, understand (or prepare for) war." While some analysts deny the close relationship of politics and war established by Clausewitzian philosophy, the utility of military power to support a state's political goals became an accepted part of traditional strategic thought by the twentieth century.

In the twentieth century, however, the technological level of weapons produced by the industrial age outstripped the ability of man to cope with their strategic implications. For Sun Tzu and Clausewitz the weapons themselves were not important, but for Fuller and Douhet they had become perhaps the most significant part of strategic thought. In World War I, few military leaders were properly able to appreciate the cycle of


26 Anatol Rapoport rejects the Clausewitzian or political paradigm of war as being the only or best one. He establishes three views of war: political, eschatological, and cataclysmic in his introduction of Carl Von Clausewitz, On War (London: Routledge and Kegan Paul, 1908; Penguin Books edition, 1968), pp. 11-80.
technology, and as a result, strategy was moribund and millions of lives were sacrificed to no effect. In World War II, French strategic thinking based on the power of the defence in 1914-1918 was overcome by new modes of thought that had more appropriately assimilated the modern technology. More than ever in the twentieth century the "development of warfare has been closely related to the process of historical change."27

The concept of strategy has become more complex as kingdoms have grown into nation states, and international competition has expanded to include almost every facet of human endeavour. In the eighteenth century strategy merely referred to the science of "military movement beyond the visual circle of the enemy, or out of cannon shot" - a range that would approximate 1,000 yards.28 The closest concept to our present notion of strategy was that of a "campaign plan" up to the nineteenth century when Jomini described strategy as "the art of properly directing masses upon the theatre of war."29 Strategic thinking has been changing to more closely reflect the increasing power of technology and the greater complexity of state ambitions.

Traditional strategic thought, such as it can be defined, is then really a sum of several threads of thinking deeply rooted in Western intellectual tradition. With the advent of nuclear weapons, however, again technology to a degree preceded strategic thought, and analysts disputed the degree of continuity with what this study has called traditional or pre-nuclear strategy. The marriage of the bomber and nuclear weapons, however, soon made it abundantly clear that the


29 Ibid.
technological discontinuities required a deeper review of strategy to determine what political goals could be achieved by nuclear weapons. The conduct of World War II had demonstrated the propensity for war to "create its own logic" such that war goals expanded and developed their own momentum. It had become evident that nuclear weapons could raise serious challenges to a state achieving the object of war, to achieve "a better state of peace - even if only from your own point of view." If the opponent had nuclear weapons, the prospect of any retaliation made it quite problematic for the initiator to achieve his goals.

Nuclear weapons rendered practicable Douhet's notion that one state could punish another without having first to destroy its traditional armed forces. This created a problem for strategic thought in that the relevance of traditional strategy became extremely problematic. One result is a literature "rich in highly technical analysis of the strategic balance, but relatively weak in empirically based theory dealing with the underlying concepts." Perhaps strategic thought has been pushed by the technological shock of the nuclear age to over-compensate somewhat by focusing unduly on technology lest strategy be left behind once again. The revolution in strategic thought heralded by the nuclear age was summed up neatly by Brodie:


31 Liddell Hart, Strategy, p. 351.

Thus far the chief purpose of our military establishment has been to win wars. From now on its chief purpose must be to avert them. It can have almost no other purpose. \(^{33}\)

II. STRATEGIC PARADIGMS IN THE NUCLEAR AGE

The nuclear revolution has led to the elevation of the notion of deterrence through technology as the ultimate source of state security in the nuclear age. Although the theoretical base of deterrence has a sound deductivist logic, as a strategy for the superpowers it has become increasingly inappropriate, and as a consequence, traditional strategic thought has reappeared:

One reason why the periodic "great debates" about national security policy have been so inconclusive is that the participants often argue from different premises - one side from the point of view of deterrence, and the other side from the point of view of defence. \(^{34}\)

The nature of the above citation from Snyder suggests that there are at least two ways of viewing the security problem and that these views may not be compatible. This section will develop this notion into two paradigms that provide two distinct views of nuclear strategy, one based on deterrence and the other based on compellence. Before describing the nature of each paradigm, however, it is necessary to establish more precisely what a paradigm is and to account in greater detail for the increased emphasis on technology in the nuclear age.

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1. **Paradigms as a Research Tool**

The growth of knowledge has been fostered in part by scientific discoveries, and often these discoveries have been related to scientific revolutions in history, the overturning of existing theoretical beliefs in favour of new ones. Following David Hume, who questioned the validity of positivist induction - the prevalent logic of science - Karl Popper proposed a system of negative induction implying that no longer could science infer from the specific to the general. By claiming that any scientific statement could be subject to falsification by future empirical testing, Popper was in part proposing an alternative paradigm of knowledge. A paradigm is thus a way of structuring thought as well as a coherent set of beliefs that tends to accumulate over time.

According to Thomas Kuhn, major scientific breakthroughs are usually accompanied by paradigm shifts, and his conclusion was that those achieving great discoveries had already shed the limitations to thought established by older paradigms. For Kuhn, a new paradigm must appear to better explain the world, to be aesthetically more suitable to the problem at hand and to offer a mystical kind of future promise. To be accepted as a paradigm, a theory must seem better than its competitors, yet need not and seldom does explain all of the facts with which it is confronted. A paradigm can also precede theory in a sociological sense; it can be concrete and observable as a form of professional or scientific

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36 Ibid., p. 47.


38 Ibid., p. 17.
achievement or accomplishment. Kuhn also described what happens when a paradigm is stretched too far; the results are conceptual inconsistency, absurdity, misexpectation, disorder, complexity and confusion. Eventually, such a paradigm collapses because of the inadequacy of its own structure rather than falsification, and a new paradigm takes its place.

As different paradigms encompass competing ways of viewing the world, they can provide a unique tool that can help the analyst penetrate to the essence of the problem and better explain contending points of view. Strategic thinkers in the nuclear age have been charged with lacking "the rudiments of precision" and in some cases having no relevance. Another criticism of strategic thinking is that it derives from a scientific pursuit of rational considerations and that "its power can be applied only in the solution of problems, not in their formulation." This study intends in part to address these criticisms and will attempt to provide greater precision to the analysis of the nuclear conundrum.

2. The Problem of Technology

In the modern age, scientists and technologists together have become one of the most potent groups in all history.

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40 Ibid., p. 83.


After Descartes based his own philosophy on the discoveries of Galileo, philosophy has seemed condemned to be always one step behind the scientists and their ever more amazing discoveries, whose principles it has striven arduously to discover ex post facto and to fit into some overall interpretation of the nature of human knowledge. The above passage applies equally to the philosophical relationship between strategic thought and the technological advance of weaponry, thus indicating the substantive impact technology has had on our modern society. Since knowing and making have become practically synonymous, "technology is the ontology of the age." Political doctrines of today are driven by the need to be technically efficient, and all is then converted to a technical problem that correct technique can solve. The state therefore exploits doctrines to support its own ends; power is technique, and complex intellectual constructs such as national strategy no longer have any usefulness beyond justification. Particularly in the United States technological mastery for its own sake appears so strong that the men who undertake it "still identify what they are doing with the liberation of mankind."

The implications of this technological momentum on nuclear strategy are profound for they indicate that the strategist is more closely tied to technology than ever. One study suggests that technology is so far ahead

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44 George Grant, "The Computer does not impose on us the ways it should be used," in Abraham Rotstein, ed., *Beyond Industrial Growth* (Toronto: Massey College, 1977), p. 128. This is a brilliant article.


of thought that the ends of products must be adapted to suit the means, a process labelled "reverse adaptation." Operating within the concept that healthy things grow, a given system manipulates the needs it serves and strongly influences the political processes that create and expand missions necessary for its survival and growth. If this were true, in the domain of nuclear strategy, strategists would be seeking uses for products they had never anticipated.

Nuclear strategy for the superpowers is increasingly tied to technological developments, and no immediate alternative appears available. Only non-violent resistance avoids the position where "tout retard technologique risquerait d'apparaître comme une faiblesse stratégique dont l'adversaire pourrait profiter de façon décisive." Advocates of this approach claim that non-violent means of deterrence are more compatible with Clausewitz than nuclear deterrence which mistakenly tends to see war and defence in purely military or technological terms. Clausewitz indeed relegated technology to a lesser order of importance, but, as previously noted, technology has significantly changed the nature of warfare leaving Clausewitz's work somewhat dated. The real problem

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in modern strategy is technological change which prevents a definitive solution in terms of some perceived condition of stasis, which creates strong pressures to pursue technical research as an end in itself. This is the ontological dilemma of technology.

In sum, the technological arms competition between the superpowers has grown to the point that military superiority is essentially a function of national technological supremacy, and some have called this strategic contest a war. While the advocates of technological pursuit strongly favour increased emphasis on technology to overcome the Soviet Union, others abhor the power of the war machine. The increasingly unmitigated reliance on technique has led us to a complicated present, but nihilistic philosophy "tells us very little about what can be done to guide and direct the technological innovation along socially beneficial lines." We are thus trapped in a situation wherein the seriously contradictory views expressed above epitomize two dominant streams of thought within which our strategic paradigms can be found.

3. The Deterrent Paradigm

Essentially this paradigm accepts the premise that nuclear weapons have created a revolution in arms such that traditional strategic thought

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can no longer apply and deterrent thought has replaced it. Because we have no empirical evidence to falsify the tenets of deterrence at the strategic nuclear level, doctrine and beliefs have an increased role in creating reality. As a consequence, any paradigm must be somewhat artificial and subjective, and the following models are not intended to be definitive solutions but heuristic tools designed to improve our understanding of the process of strategic thinking. To construct the paradigm of deterrence, this section will first review the concept, the strategy and the requirements for deterrence. Then, it will address the underlying assumptions and relevant criticisms of deterrence as an explanatory model.

The concept of deterrence is not new, but in the nuclear age its use has been greatly extended. The basic theory of deterrence, however, is simply a relationship involving a distinctive type of influence openly based on the threat of sanctions where one party aspires to prevent another party from initiating a specified action. By threatening to make this action sufficiently costly to the potential initiator, the deterrer hopes to make the costs outweigh the gains and therefore preclude any incentive on the part of the deterree from initiating it. In traditional strategy, deterrence was imbedded in overall military posture, but offensive air power and nuclear weapons now allow such great and unacceptable pain to be inflicted on an adversary that deterrent and


With this separation, the threat of unacceptable damage or deterrence could be applied to a defensive situation rather than forcible military denial by pure defence. This is workable so long as the deterrent is absolutely effective. Nuclear weapons can be an effective deterrent, but because their use would be fatal to so many, military strategy tends to be limited primarily to the threat of their use - the diplomacy of violence.58

The contemporary strategy of deterrence therefore relies on the threat of using weapons of massive destruction without actually having to use them. Should the other side have the same capability, however, the result is a situation where either power can destroy the other. As long as a nation is secure in its ability to retaliate and destroy what the opponent values most, deterrence strategy maintains that both will be deterred from attacking, producing a stable situation known as mutual assured destruction (MAD). Deterrence as a strategy creates a distinction between those weapons intended for defence (first use) and those weapons intended for deterrence (second strike), but modern technology has blurred this distinction over time with smaller and more accurate warheads.59 There is a danger that, as a strategy, deterrence is being driven by technology; the concept of deterrence reigns, but it rules neither


58 Thomas Schelling, Arms and Influence (London: Yale University Press, 1967), pp. 33-34. This is an excellent review of theory.

strategy nor tactics. In its purest form a deterrent strategy simply invokes a sanction of retaliation or retribution if a certain action takes place; the aim is to prevent that action from taking place by threatening to initiate a process in risk-taking that would engulf both parties in mutually devastating nuclear war.

The requirements to achieve a basic deterrent strategy are generally considered to be fourfold; the will to fight, a commitment worth fighting for, the capability to fight and a clear communication to the adversary of all of the above. The will to fight is an important component of a nation's war potential. It is closely linked to commitment in an effort to enhance the credibility that the deterrent will be initiated if a specified action takes place. An unequivocal commitment is generated by having evident interests, troops in place or by unambiguous policy statements such that a given state's intentions are very visible and explicit. At times, however, perhaps "too much attention is given to making commitments credible and not nearly enough to understanding what prompts an adversary to challenge them." The capability to inflict unacceptable levels of damage is essential to supporting an effective deterrence strategy, but this requirement is "not nearly as demanding" as


61 Klaus Knorr, The War Potential of Nations (Princeton, New Jersey: Princeton University Press, 1956), p. 3. See also chapter four where the author suggests that, up to a point, will can be substituted for capability.

some theorists assert.\textsuperscript{63} So long as populations are hostage to the effects of nuclear weapons, a deterrent strategy based on assured destruction does not require thousands of warheads; about four hundred is probably enough.\textsuperscript{64} The communication of the above to the adversary is perhaps the most important requirement, for deterrence essentially operates in men's minds.\textsuperscript{65} As the probability of the outcome is a key variable in calculating projected gains or losses,\textsuperscript{66} a clear perception of the likelihood of retaliatory action is vital to the establishment of effective deterrence.

What the essential requirements for deterrence do not demand is superiority in numbers or even matching the adversary weapon for weapon. In the nuclear age, "the potential deterrent value of an admittedly inferior force may be sharply greater than it was before," and there is a point at which "each unit of additional damage threatened brings progressively diminishing increments of deterrence."\textsuperscript{67} Extended deterrence to protect one's allies however implies a requirement to avoid giving the adversary a position of escalation dominance, the ability to


gain some advantage by threatening higher levels of conflict. While this concept can create nuclear requirements at theatre level, at the strategic/intercontinental level assured destruction remains all that the deterrence strategy requires. As incremental additions to nuclear strategic power only contribute marginally to increased deterrence, the essential requirements of the deterrent paradigm may not be that extensive.

Several underlying assumptions are fundamental to the deterrent paradigm, but the primary one assumes that the power of nuclear weapons precludes major war as a policy option. Deterrence theory has thus replaced the traditional theory of war, and its specific conditions must be assumed wherever deterrence theory is applied. This means that superpower relations are assumed to remain essentially bipolar and relatively static. It is also presumed legitimate to infer from the specific to the general so that immediate or contingent deterrence can apply to general strategy. Another fundamental assumption of deterrence theory is that the capacity to destroy the opponent is a necessary and sufficient condition to prevent him from initiating an aggressive act. The strategy of deterrence further assumes rational decision-making by each nation such that the choice to act or not act is based on sufficient

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information and an accurate assessment of possible gains or losses. Other assumptions of the deterrence model are that population and industry are sufficiently important to warrant threatening them as the means of inhibiting unacceptable activity by an adversary, that the use of any nuclear weapons would probably escalate to strategic war, and that this risk of escalation would deter provocative behaviour.\(^{72}\) These assumptions form the framework of the deterrence paradigm. Since this paradigm has held a dominant position with Western academics and policy-makers for over forty years, ample criticism of it has accumulated.

The major criticism of the deterrence paradigm is that it cannot adequately explain much of what happens in international relations, and it is no longer appropriate either as a theory of state behaviour or as a strategy of conflict management.\(^{73}\) While the essence of deterrence theory is deductive and abstract pertaining to a very narrow range of specific circumstances, it has been expanded as a normative-prescriptive theory, with the result that the theory's prescriptions are limited in scope, utility and accuracy by the simplifications inherent in the number of abstractions in its deductivist methodology.\(^{74}\) The concept of rational unitary actor decision-making has been rejected as an appropriate model for state governments, now considered to be complex bureaucracies which in reality do not necessarily function within the prescribed postulates of

\(^{72}\) Keith B. Payne, *Nuclear Deterrence in U.S.-Soviet Relations* (Boulder, Colorado: Westview Press, 1982), pp. 11-12. In a rigorous attack on the assured destruction paradigm, the author compares the deterrence paradigm to classical strategy.


rationality in deterrent situations. To some, the limitations inherent in the deterrent paradigm are referred to as an "intellectual straitjacket" or "intellectual tranquilizer" imposing a rigid framework on strategic thinking preventing its natural evolution. One dilemma of the deterrence paradigm is that superpower survival depends on mutual interdependence through vulnerability, yet this is "fundamentally at variance" with what is perhaps the central assumption of deterrence, that one's enemy would attack if no deterrent exists. Other criticisms reflect that deterrence is not fully effective and not only could it fail, as a strategy it could result in greater insecurity over time.

Increasingly, deterrence is subject to attack as being dogmatic and based on obsolete assumptions. As these attacks are so widespread, one wonders why an alternative paradigm has not yet been accepted. One


analyst described these criticisms as resembling Thomas Kuhn's puzzles in science "that accumulate until they provoke a paradigm shift."\textsuperscript{81} It is the theme of this dissertation that the compellent paradigm may offer reasonable alternative heuristic criteria to the deterrent model.

4. The Compellent Paradigm

Although this paradigm recognizes that nuclear weapons are significantly different from previous arms, it has strong links to the traditional strategic pattern in that it offers an account for aggressive as well as defensive strategic action. As deterrence relates to defence, compellence relates to offence. Whereas defence and offence form the heart of traditional military strategy based on the use of force if necessary in support of national objectives, deterrence and compellence form the basis for nuclear strategy based on threats and coercion to ensure compliance in support of national goals. This study will focus on the pure compellent aspects of this paradigm to clearly differentiate it from the deterrent paradigm while recognizing both as abstract forms. This section will describe the concept of compellent action, the strategy of compellence, the requirements to fulfil it and then outline the assumptions inherent in this paradigmatic construct.

In theory, the concept of compellence is as simple as that of deterrence. While deterrence threatens a retaliation that hurts to prevent or deter an act that is not desired, compellence threatens pain or force to induce or compel an act that is desired. In general,

\textsuperscript{81} Patrick Morgan, \textit{Deterrence: A Conceptual Analysis}, p. 220. See also Janice Stein who calls for a wholly new paradigm to integrate the political and military dimensions of national security, "Deterrence in the 1980's," p. 53.
The threat that compels rather than deters often requires that the punishment be administered until the other acts, rather than if he acts. This is because often the only way to become committed to an action is to initiate it.\textsuperscript{82} A compellent threat then is used in an aggressive manner; "it is designed to persuade the opponent to give up something of value."\textsuperscript{83} The distinction between compellence and forcible offence is essentially that of threat; "to be coercive, violence has to be anticipated and it has to be avoided by accommodation."\textsuperscript{84} Compellence in the nuclear age can be separated from offensive action in the same way that deterrence is conceptually different from defence.

The strategy of compellence in a situation where both major adversaries are equipped with nuclear weapons logically implies a degree of competition; it is inconceivable that a superpower would knowingly surrender any clear advantage to an opponent in an endeavour as vital as war.\textsuperscript{85} Even though each side has a secure assured destruction capability, a compellent strategy seeks to exploit asymmetries in nuclear arsenals in a way that one analyst compares to a form of strategic mercantilism, the seeking of comparative advantage.\textsuperscript{86} To exploit the shared interest of avoiding mutual devastation in war to induce the adversary to make

\textsuperscript{82} Thomas Schelling, \textit{Arms and Influence}, p. 70. For an earlier version of the same concept, see Schelling, \textit{The Strategy of Conflict}, p. 196.

\textsuperscript{83} Glenn Snyder, \textit{Deterrence and Defence}, p. 40.

\textsuperscript{84} Thomas Schelling, \textit{Arms and Influence}, p. 2.


concessions is a key element in compellent action.87 A coercive nuclear threat that aims to compel a country to do what it is morally at liberty not to do could even be considered nuclear blackmail.88 In Schelling's view, all conflict situations that contain a cooperative element are essentially bargaining situations, and since both sides wish to win and at the same time avoid nuclear war, coercive bargaining is theoretically equivalent to ordinary bargaining.89

When the nature of compellent bargaining is coupled with the notion of anticipated violence, the concept of time looms as a significant element in compellent strategy. While a deterrent commitment can be relatively precise and last indefinitely, a compellent threat tends to be more open-ended and needs a finite deadline to be effective.90 In specific case studies, compellence has proven more measurable than deterrence;91 however, as a result of the constraints of time, a national strategy of compellence comparable to that of deterrence becomes problematic. But even if a state seeks to pursue compellent activity on specific occasions, this strategy would still place similarly high demands on a state's military forces because the greater the probability of

90 Thomas Schelling, Arms and Influence, p. 72.
victory in war, the greater the probability of compellent success. It is evident that a compellent strategy requires forces that, similar to those of traditional strategy, can be used for aggressive and defensive missions and that these requirements significantly exceed those needed for deterrence.

In attempting to enforce a compellent strategy, the will to act is far more evident because the initiator must make the first move, and therefore his commitment is usually more obvious than in the case of a deterrent posture. Because the compellent actor seeks to impose his will in the coercive bargaining process, some form of advantage is required, and in terms of nuclear strategy this translates into an effective damage-limiting capability and the threatened ability to fight nuclear war at levels short of intercontinental exchange. A damage-limiting capability includes all forms of defence against nuclear attack and fast and accurate counterforce capabilities such that the adversary could have doubts about his assured destructive abilities in crisis situations. Even if an effective damage-limiting capability were not in place, a compellent strategy could threaten action at lower levels implicitly accepting the attendant risk of mutual destruction. But clearly, credibility would be


94 By this, counterforce against ICBM as well as other forms of nuclear strength are included. For one approach that decries the dangers of offensive oriented strategy see Stephen Van Evera, "The Cult of the Offensive and the Origins of the First World War," *International Security* 9 (Summer 1984), p. 106.
greater if flexible and controllable forces were to exist at all levels. These strategies are often labelled "war fighting deterrence" strategies, and their stated requirements are significantly greater than those necessary for finite or minimum deterrence.

Another stringent requirement for a compellent strategy is communicating exactly what is wanted and assuring the adversary that the compellent threat is clearly limited. If a threat is ambiguous and permits more flexible interpretation, it may be perceived as being open-ended, but if a threat to a status-equal is explicit and compels an action, it may appear so provocative and threatening that the recipient would doubt the ultimate intent could be limited. Assurances that must accompany a compellent action are harder to demonstrate in advance, but the threat and the proffered avoidance must give the adversary credible options. Should the combination of threat and assurance work, then the compellent action must be controllable so that it can be stopped.

The compellent paradigm assumes primarily that war is still a policy option in spite of the power of nuclear weapons, and therefore traditional strategy with some important modifications is still a valid guide to international behaviour. This paradigm is supported by some psychological research that describes patriarchy in modern society as the main cultural determinant to war in that pressures to achieve actually result in

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96 Herman Kahn, *Thinking About the Unthinkable in the 1980's* (New York: Simon and Schuster, 1984), p. 43. See also p. 33 for a description of increased requirements for multi-stable deterrence (at all levels).

97 For an excellent discussion on threats and warnings, see Glen Snyder and Paul Diesing, *Conflict Among Nations*, pp. 213-219.

98 Thomas Schelling, *Arms and Influence*, pp. 73-75.
aspirations to dominance, not parity.\textsuperscript{99} Compellence is built on the foundation of Machiavelli, Hobbes and Clausewitz; it has a coherent traditional logic that has endured as the basis of realist thought.\textsuperscript{100}

The concept of military advantage is an essential component of compellence, and the traditional assumptions imbedded in its realist logic are principally that an advantage in force relates to an advantage in international politics.

There is no real security in being just as strong as a potential enemy; there is security only in being a little stronger. There is no possibility of action if one's strength is fully checked; there is a chance for a positive foreign policy only if there is a margin of force which can be freely used.\textsuperscript{101}

Compellence assumes a significant continuity with pre-nuclear strategic logic, and as Herman Kahn describes:

\ldots more than ever there are lessons in the application of the nuclear threat as 'a continuation of politics/policy by other means' and as an instrument for advancing the national interest by deploying forces, though some important caveats and modifications are needed.\textsuperscript{102}

Not only is war not yet obsolete, but war could occur. Therefore, realistic military preparations and a perceived superiority should prove useful in coercive bargaining or combat situations. Because nuclear war could lead to self-destruction, this paradigm also implicitly assumes that conventional war or limited nuclear use does not necessarily lead to total nuclear war. As the risk of escalation remains, however, it does not seek

\textsuperscript{99} Charlene Spretnak, "Naming the Cultural Forces that Push Us Toward War," \textit{Journal of Humanistic Psychology} 23 (Summer 1983), pp. 104-114.

\textsuperscript{100} Colin S. Gray, \textit{Nuclear Strategy and Strategic Planning}, p. 43.


\textsuperscript{102} Herman Kahn, \textit{Thinking About the Unthinkable in the 1980's}, p. 84. See also p. 95 for a discussion on the continuities with traditional strategy.
nuclear or major war, only the advantages that stem from being in a better position to risk war.

Compellence is concerned not merely with staving off threats to the very existence of the state, but primarily "for protecting a variety of lesser interests and exerting political pressure on others." Behind this linking of military force to political pressure lies the realist assumption that power is a major determinant of international relations.

Never in history has it happened that a nation achieved superiority in all significant weapons categories without seeking to translate it at some point into some foreign policy benefit. Although nuclear compellence as a strategic paradigm includes deterrence, it also involves making threats that portend the risk of war to force an adversary to act; therefore, it requires a force structure and a mode of thought significantly different from that of the deterrence paradigm.

III. A FRAMEWORK FOR PARADIGMATIC ANALYSIS

The deterrence and compellent paradigms in theory both rely primarily on the psychological impact of threats, but the nature of these threats and the force requirements they generate differ greatly. Knowledge of the operating paradigm is important, especially in a crisis, when there is significant reluctance to embark on new modes of thought. As Moltke found in the 1914 crisis, staying with the established strategic plan was easier than changing it even though it was outdated. The importance of


paradigms is highlighted by the fact that in a crisis modes of action are "a function of cultural, organizational and personal behaviour patterns established long before the onset of any crisis."106

This section will meld the previously established paradigmatic constructs into a framework for analysis of superpower strategic interaction. The following framework is divided into three levels of assessment: The strategic intentions to determine the aim of a given strategy, policy or act; the threat of force and the perceptions of that force used to support the achievement of these aims; and, the actual correlation of nuclear forces that create the ultimate threat.

1. The Strategic Intention

Notwithstanding the emphasis that each paradigm places on communication, the real strategic intentions embodied in any policy, act or strategy are rarely so clear as to eliminate all doubt. Increasingly, declaratory strategy has become separated from operational strategy; hence the importance of also examining the explicit and implicit threats as well as the actual nuclear forces. In fact, only after a thorough examination of all issues can a final determination of probable intention achieve any degree of reliability. It may well be that strategic intentions are not uniformly held by various components of a given government, and the resultant strategy is a compromise or a locus of competing perceptions. This section will examine the variable of declared or official policy to determine, to the extent possible, the degree to which it reflects operational policy and to establish which paradigm best explains these strategic intentions.

106 Ibid., p. 335.
A major problem for analysis is that often strategy can be "muddled" so that a clear idea of the objective is not evident. The notion that nuclear weapons are political not military weapons means they "serve vital political objectives on a continuous basis, perhaps thus obviating the need for discrete and explicit utilization." This notion implies that nuclear weapons lack credibility to support specific policy options but recognizes that the very existence of these weapons provides an unspecified level of support. Such argument best fits the deterrence model, but the counter argument that "it would be absurd to believe that such powerful means of destruction can be wholly and permanently divorced from political conflicts" tends to fit in the compellent paradigm. The perceived utility of nuclear weapons to support policy initiatives is thus a subtle but important tool for analysis.

Some worthwhile research into the nature of deterrence and compellence has helped clarify one distinction between the two paradigms; its findings suggest that initiators threaten to use military force to change the status quo under conditions that are significantly different from the conditions under which they will initiate threats to defend the status quo.

The intent to maintain or to change the status quo thus becomes a


reasonable indicator of strategic intentions. Generally, a threat that deters supports the status quo, and a threat that compels seeks to change the existing status quo.

The political value of what is at stake is also of fundamental importance, perhaps more so than the visible degree of commitment.

Given the overwhelming incentive each contestant has under an effective nuclear balance to avoid general nuclear war, there is effectively no level of commitment of prestige or troops, which will be assumed to be equivalent to an irrevocable commitment. If this is the case, the chief part of any assessment of the strength of a contestant's commitment to an objective must be a process of political evaluation focused on the value of the objective.\textsuperscript{111}

A key aspect of assessing political advantage or value associated with a given strategy relates to the fact that "the strategic competition is only the symptom of a much deeper and broader political struggle."\textsuperscript{112} As a consequence, national self-respect and prestige can suffer from a policy which "deliberately accepts a permanent inferiority in nuclear striking power."\textsuperscript{113} The underlying values are a key variable in determining what objectives are really being pursued in any given situation.

The most important variables for analyzing strategic intentions of declaratory policy are the perceived utility of strategic nuclear weapons to support national policies, the degree to which the goal appears to

\textsuperscript{111} Stephen Maxwell, \textit{Rationality in Deterrence}, Adelphi Paper 50 (London: International Institute for Strategic Studies, 1968), p. 18. The greater the value in question the greater the resolve. This is why deterrence of a nuclear attack on a nuclear armed state's homeland is assumed more credible, the incentive to retaliate is exceedingly high. This highlights the problems of "extended deterrence."


\textsuperscript{113} Glen Snyder, \textit{Deterrence and Defence}, pp. 117-118. See also Barry Blechman and Stephen Kaplan, \textit{Force Without War}, p. 5.
accept or reject the status quo, and the underlying political values implicitly at stake in a given policy or act. Careful analysis of these variables appears to offer the greatest promise of differentiating and identifying various aspects of deterrent and compellent behaviour.

2. The Threat of Force

This section is concerned with examining only those variables that can help identify deterrent or compellent behaviour in the explicit or implicit threat to use force to achieve a given policy goal. In the construction of the two paradigms earlier in this study, it was evident that both rely on the ultimate military sanction.

Certainly the superpowers have demonstrated great restraint in the application of force against one another, but the quantity and nature of their respective threats has not always been so reserved. Since deterrence threats are more enduring, one might expect an increase in the frequency of threats to represent an increase in compellent behaviour. Some research shows that the greater the disparity in military strength between two adversaries, the more dampened the physical use of force will be and the greater the peaceful resolution of conflicts, but as parity is reached "the utility of threats decreases."

The degree of superpower reliance on strategic threats, however, has not necessarily declined with parity. As compellence is more applicable to specific situations, it is reasonable that a greater number of different threats in a given period may be one indicator of increased compellent behaviour.

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To differentiate between the two paradigms also requires an examination into the nature of the threats themselves, and the best way to do this is to extend threat logic to the fight and see what implications can be drawn. In Clausewitz’s theory of war, deterrence, or more properly defence, was grounded on the threat of war not retaliation, but retaliation in fact inevitably leads to a response which is by definition war. Threats to retaliate are usually and primarily deterrent threats, but threats to initiate an attack are usually and primarily compellent threats. Logic demands that if an actor is going to initiate an attack, the first and more important objective must be to limit damage to himself by attacking the enemy’s retaliating forces. By this logic a counterforce threat is primarily a compellent rather than a deterrent threat. Thus, to threaten an opponent’s strategic nuclear forces implies greater utility for the compellent function, and to threaten an opponent’s population and urban industrial base implies greater utility for the deterrent function. Since retaliation, however, invokes war, there is some deterrent utility in damage limitation as well, but clearly the compellent paradigm places a premium on counterforce and defensive capability.

Armed force in the nuclear age still provides the essential underpinning for the international political system between states, but the absence of warfare has fed the belief that war would be hard to control which has led to some doubts as to whether it could "serve useful


national purposes." If war cannot be controlled, then total ideological demands for victory will lead to total war, and if war can be controlled, one remains "accessible to coercion" concerning decisions effecting that control. While the former characterization suits the deterrent paradigm, the latter fits the compellent, especially when a possible war is calculated. The extent of controlled or limited war notions is therefore an appropriate indicator of paradigmatic thought.

If a deterrent does not work, the ex post facto incentives rapidly assume the nature of compellence, for the defender either has to compel the aggressor to withdraw or be compelled to accept a new status quo. Some analysts believe that the greatest likelihood of nuclear war will occur when one superpower attempts to compel the other to give up some recent gain. One major difficulty in examining the threat is the problem of terminating war in such a way that does not "ultimately rely upon pushing the enemy beyond a threshold of unendurable pain and thereby compelling him to stop." Certainly the theoretical basis for compellence should provide greater scope for war termination concepts than deterrence based on assured destruction.

117 Lawrence Martin, Strategic Thought in the Nuclear Age (London: Heinemann, 1979), p. 17.
121 Colin Gray and Keith Payne, "Victory is Possible," Foreign Policy 39 (Summer 1980), p. 27. This shallow article is overstated.
This highlights the first aspect of the nature of threat - its duration and the assurances that accompany it. As noted earlier, a deterrent threat is a relatively open-ended commitment and although the probability of its initiation may be low the expected damage is exceedingly high. A compellent threat is more likely to be contingent, but, since the threatened violence is usually less, the probability of its use must be higher for the initiator cannot be inhibited from its initiation or the threat will have no credibility. In each case, the adversary must have received believable assurances or else no meaningful bargaining can take place. Coercion depends on a subjective feeling which one is trying to create in the opponent's mind, generated from fear and respect, and it is possible to convey a stronger message than intended.\footnote{123}{Bernard Brodie, \textit{Strategy in the Missile Age}, p. 397.}

The critical dimension of strategic policy is political, and in the end, the necessarily vague perceptual factors may count for more than the weapons themselves.\footnote{124}{Edward Luttwak, \textit{Strategic Power: Military Capabilities and Political Utility}, p. 16.}

Perceptions created through communicating threats and assurances are vital to ensuring the success of threats; they must be understood for what they are and neither exaggerated nor undervalued. What may seem a reasonable demand to one party may be perceived as the start of a series of threats the aim of which may go far beyond the initial stated objective. One always sees a threat to oneself more seriously than one pointed the other way.\footnote{125}{Mary Midgley, "Deterrence, Provocation and the Martian Temperament," in Nigel Blake and Kay Pole, eds., \textit{Dangers of Deterrence: Philosophers on Nuclear Strategy}, p. 29.}

With the coercive diplomacy involved in both paradigmatic constructs, it is the leaders' beliefs that really matter,
the quantity and the nature of the threats as well as the perceptions associated with a given policy or action. The nature of the threat itself offers good potential for recognizing the operative paradigm in a given policy.

3. The Correlation of Nuclear Forces

The final level of analysis is more concrete in that the nuclear force structures can be readily identified and can be more easily measured. Each superpower has established a huge arsenal of nuclear firepower that each feels necessary to back up its explicit and implicit nuclear threats in its quest to emerge from this competition as the new centre of gravity in the world. In addition to the concept of balance, however, the correlation of nuclear forces also refers to the potential interaction of strategies in conflict, and the degree to which a nuclear posture is able to engage in war fighting may be a significant measure of the degree of compellence in nuclear strategy.

The first variable is the quality of the nuclear forces themselves. The demands for deterrence on weapons accuracies and yields are fairly simple, with the most important qualitative factor in the deterrent paradigm being survivability. On the other hand, the requirements for compellence call for far greater accuracies and specific yields for

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specific purposes requiring tailored or special nuclear effects. Since the credibility of use must be higher, the technological demands of fighting with and controlling these weapons are more "exigent."

The problems associated with designing nuclear strategy to do more than deter a major nuclear strike calls for a more complex system than simply assured destruction but may offer correspondingly greater reward, by way of leverage on world politics.\textsuperscript{128}

A second aspect of the correlation of nuclear forces is the proximate relative balance between the superpowers; if one holds a definite advantage in numbers one may be able to better support compellent behaviour. So long as states are primarily preoccupied with their survival, however, they will seek to maintain some kind of balance which in some degree regulates and reduces to order the political conditions that may lead to war.\textsuperscript{129} This notion of balance does not equate to stability; it is only one factor contributing to it. Studies tend to show that additional actors and that conflict of interest among them can contribute to general stability which implies the continued existence of all the major actors.\textsuperscript{130} There is, however, no clear empirical evidence that can support the hypothesis that the strategic weapons balance between the superpowers can influence the outcomes of conflict situations.\textsuperscript{131}

Many factors contribute to the relative equilibrium of geopolitical


\textsuperscript{131} Barry Blechman and Stephen Kaplan, \textit{Force Without War}, p. 132.
forces, but no theory ties them all together.  The balance of nuclear forces is only a key factor when one side has a clear preponderance of weapons. If overall numbers are high and increasing, however, this would tend to fit the compellent paradigm as each nation seeks advantage; if overall numbers are low and stable, this would fit the deterrent paradigm.

A more promising variable is the prospective utility of these nuclear forces in war, as only a combined quantitative and qualitative analysis can determine the probable outcome of nuclear use in specific scenarios. Actual power is more difficult to measure than potential power because power is relational and as soon as war is engaged the relative forces are constantly changing. Assuming counterforce attacks, in some situations a given state's relative advantage could actually increase if its adversary attacks first. If a state's relative ability to fight a nuclear war improves over time, compellence may be enhanced, and it may be that each superpower has developed increased counterforce capabilities for these reasons.

To assist in the correlation of nuclear forces analysis, a numerate Soviet method provides, for the first time, a Soviet conceptualization of the interaction of the nuclear balance. This tool is important not only because it provides an excellent method for analyzing nuclear force deployments, but it also offers a unique insight into the way the Soviet

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134 Edward Luttwak, Strategic Power: Military Capabilities and Political Utility, p. 62.

135 This model is described in more detail in chapters seven and eight. It has only recently appeared in the West and has, before now, not been applied to strategic nuclear forces in a comprehensive way.
Union may view the nuclear problem. A careful examination of the interaction of, as well as the quality and quantity of nuclear forces, should reveal whether they are more appropriate for simply securing the assured destruction of the deterrent paradigm, or they are increasingly able to obtain some advantages for the compellent paradigm.

IV. CONCLUSIONS

The paradigmatic approach to nuclear strategy is a heuristic tool to help disclose the operating mechanisms of how strategic nuclear weapons were thought to support superpower foreign policy. The deterrent and compellent paradigms are artificial constructs that have different requirements in theory to effect their desired consequences. The thesis of this dissertation is that the compellent paradigm, by encompassing both deterrence and compellence, more closely reflects this strategic thought process than the popular and accepted deterrent paradigm.

As a code of beliefs and a way of structuring thought, a paradigm establishes a mode of thinking consistent within itself. It provides heuristic criteria based on the superpower nuclear relationship from 1970, the date parity was generally acknowledged, until 1986, the date it became clear that strong winds of change were blowing in the U.S.S.R. Although this historical context predates the major changes of the late 1980's, it nevertheless covers a very important era in the ambiguous superpower relationship. From détente to strident competition, this period emphasizes the considerable importance of analyzing the deterrent and compellent approaches to nuclear strategy.

While deterrence is used to justify vast nuclear arsenals, as a strategic paradigm it is under a great deal of stress and is starting to display the inconsistency and confusion of a paradigm stretched too far.
A consensus is gradually building that deterrence theory "is wrong or inappropriate for a period characterized by essential equivalence."\textsuperscript{136} Deterrence does not recognize that nuclear weapons can be used effectively to project foreign policy as they are deemed too powerful to be credible for anything other than defending vital national goals.

Compellence, on the other hand, is very much concerned with projecting influence with nuclear power if necessary. The compellent paradigm acknowledges nuclear weapons may be used, and limited war is a possibility that the compellent actor appears ready to risk to achieve his aim. Clearly, a state with an appropriate war fighting force posture would have an advantage in a compellent situation if it was seeking limited objectives against a defender whose force structure was based on a deterrent paradigm.

This study has established a framework for paradigmatic analysis that will allow analysis of a given strategy, policy or act to determine to what degree it correlates with either paradigm. All that awaits is to apply this framework on a comprehensive basis to superpower relations in recent years. Since prevailing theory holds that deterrence and compellence are distinct, and since the deterrent paradigm excludes compellent action while the compellent paradigm does not exclude deterrent considerations, empirical indications of both compellent and deterrent behaviour would demonstrate the greater utility of the compellent paradigm. If this proves to be the case, then there may be much more interaction between deterrence and compellence than heretofore realized.

Superpower nuclear strategy and modern arms control have become so inextricably intertwined that it is now virtually impossible to assess one without the other. While nuclear strategy, as we have seen, is really an extension of politics by an admixture of military means, arms control is a continuation of politics by a mutual restraint on military means.\(^1\) It is international politics that cements the link between these two concepts. As a consequence, arms control forms a significant component of superpower national strategy and hence must have an important place in any paradigmatic strategic analysis.

Much of the discussion of arms control theory, however, has served to keep nuclear strategy and arms control as separate intellectual activities. The reason for this is directly related to the fear of nuclear war and the popular characterization of arms control as "good" in that it contributes to peace, and nuclear strategy as "bad" in that it exacerbates the potential for war. Over the years, peace movements in Western society have created a strong impetus for disarmament that has compounded perceptions of arms control issues and complicated the pursuit of strategic arms control.

This chapter will review the theoretical development of arms control in the nuclear age as it relates to the paradigms of deterrence and compellence. The first part provides the conceptual background necessary to understand the growth and the content of arms control theory, and the following two parts analyze this theory from the perspective of deterrent

\(^{1}\) Kenneth Booth, "Disarmament and Arms Control", in John Baylis, et al., Contemporary Strategy, p. 89. Booth deliberately uses Clausewitz's phraseology to show the political nature of arms control.
and compellent strategies. Since nuclear arms control and superpower military strategy are so interdependent, this chapter effectively completes the establishment of the respective strategic paradigms to permit the subsequent comprehensive examination of superpower strategic policy.

I. ARMS LIMITATION THEORY

The evolution of arms limitation theory has for the most part been a Western process that has concentrated on improving state security primarily via negotiations and bargaining to restrain force structure developments which threaten the international system. Thus, many of the systemic factors that affected the formulation of strategic thought have also affected the construction of the theory to limit armaments. Arms limitation as is used in this study refers to any efforts to restrain or limit national armaments and is inclusive of disarmament and arms control. The notion of disarmament has played a significant role in international relations for it has provided the theoretical foundation upon which arms control has rested. While disarmament refers to the reduction or abolition of armaments, arms control is generally accepted as

restraint internationally exercised upon armaments policy, whether in respect of the level of armaments, their character, deployment or use.\(^2\)

Disarmament is based on the idealistic concept that without weapons there would be no war, but arms control is based on more pragmatic concerns. Arms control theory must therefore acknowledge the "real clashes of interest and the brutal power relationships which actually exist."\(^3\) In

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the nuclear age, the eventual abolition or at least the control of nuclear weapons is generally regarded as an essential component in avoiding the devastation of nuclear war. Because disarmament is the broader of the two concepts and because it is the intellectual antecedent of arms control, it will be discussed first.

1. Disarmament Theory

As a concept, disarmament is perhaps as old as war itself, but most analysts point to the Rush-Bagot Treaty of 1817 as the first pertinent example of a successful disarmament treaty. It has helped establish the world's largest undefended border, and it epitomized the values of disarmament that later developed into the rising tide of liberalism of the late nineteenth century.

The inability of strategic leaders to account for their failures during World War I gave great popular support to the concept of disarmament. The high loss of life for no evident purpose made it the war to end all wars. The League of Nations was formed and disarmament negotiations became an accepted part of European diplomacy. Naval arms limitation was initiated in 1921, and in 1928 a major treaty, the Kellogg-Briand Pact, outlawed war.

The advocates of disarmament established ethical, social, economic, military and political grounds to support their cause. War was not considered beneficial or necessary, and weapons were the root of international tensions and war, because they, by definition, had to be directed towards another state. To prepare for war in general was not

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4 United States Arms Control and Disarmament Agency, Arms Control and Disarmament Agreements (Washington, D.C.: USGPO, 1980 edition), p. 3. An even earlier example of arms control was the agreement between Rome and Carthage after the second Punic War to ban elephants.
possible; one had to prepare for a specific war because detailed and complex staff plans required an enemy. The disarmers became strongly identified as idealists who believed a better world was close at hand. They believed that the practical difficulties of disarmament could be overcome but that progress towards universal disarmament was blocked by bureaucrats and militarists who held narrow and false logic. These concerns have continued into the nuclear age as "ban the bomb" and "peace" movements display similar intellectual characteristics although they still remain in a minority position. What has prevented disarmament from gaining greater political acceptability is its dissonance with the realist point of view, that power is a significant factor in world politics.

The inability of a disarmed Europe to cope with Hitler in the 1930s highlighted the tension between defence or deterrence on the one hand and cooperation or appeasement on the other. Armaments were not the cause of World War II, they were but the symptom of deep political conflict. Britain and France, in attempting to manage the revival of German power, in retrospect, erred by placing too much trust in appeasement and cooperation. The Western powers eventually threatened war to prevent Hitler from invading Poland, yet at the time had no military plans nor the forces to bring such a war to a successful conclusion. The high level of disarmament and the spirit of international cooperation after World War I was insufficient in itself to prevent another even more devastating war.

within one generation. One can disarm, but the knowledge of weapons remains, and political instability and conflict creates incentives to re-arm such that the central premise of disarmament theory is proven fallacious. The experience of the 1930s seemingly demonstrated at least some of the dangers of cooperation, prepared the ground for the advocates of deterrence through strength after World War II, and added a complex dimension to the arms control and disarmament debate.

Disarmament thought in the nuclear age has concentrated primarily on the abolition of nuclear weapons because of the cataclysmic consequences of their use. If all nations were to disarm, clearly serious consideration of the feasibility of some form of "far-reaching international organization is probably essential to the control of war." Because the international state system is so well entrenched, however, it is unlikely that the superpowers will completely disarm in the near future or allow any international organization the degree of power necessary to prevent or control war. Disarmament proponents recognize the long term nature of their utopian proposals and regard the reduction of the reliance on nuclear weapons as an important first step to be followed by abolition of nuclear weapons and then a reduction and abolition of conventional weapons. The technical details of dismantling missiles and warheads are not the problem; the problem is one of political will, trust, and the

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9 This is the theme of Hedley Bull in The Control of the Arms Race. See also Robin Ranger, Arms Control in Theory and Practice 1958-1981 (Kingston, Ontario: Center for International Relations, 1981), p. 5.

organization of the world community. Unilateral disarmament was discredited by the events leading up to World War II, so general or negotiated disarmament approaches came to the fore in the 1950’s.

The harsh climate of the cold war conditioned or even distorted the practice of disarmament negotiations in the United Nations Eighteen Nation Disarmament committee in Geneva. World wide aspirations for disarmament were never higher, but the political and technological basis for it were never so lacking. The result was that neither superpower was able to reject disarmament without a severe propaganda defeat, nor could it accept an agreement without seriously jeopardizing its national security - the result was psychological warfare. In this climate, agreement was impossible and discussion in the United Nations disarmament committee became "a perfunctory affair." The antagonisms of the Cold War ran so deep that they sustained themselves into the 1980s through a unique language focused on a narrow way of interpreting global relations that affected superpower relations in general and East-West arms control and disarmament in particular.

One impact of the lack of East-West dialogue is the fact that discussion of strategic studies and disarmament during this period was concentrated in Western academia. David Singer distinguished three approaches among this community that variously sought first to address

11 David Lynch, "Dismantling Nuclear Missiles: Military Logistics 3 (January/February 1987). The United States for example could probably dismantle 4000 warheads in one year. See also de Madriaga, Disarmament, p. 48.


either the tensions, the political conflicts or the armaments themselves.\textsuperscript{14} It is quite possible that this theoretical debate has not had as great an impact on policy as has been presumed, essentially because the actual development and deployment of strategic systems remained in the hands of military professionals throughout this period.\textsuperscript{15}

As a consequence of the failure to make any significant progress towards East-West disarmament, arms control came increasingly to be regarded as a more practical theoretical alternative. One result of this process was the expansion of the concept of arms control to include reductions in weapons. Originally arms control denoted internationally agreed rules limiting the arms competition rather than attempting to reverse it, but it now has an expanded meaning to include arms limitation and even disarmament.\textsuperscript{16} The notion that arms control in theory could eventually lead to disarmament still holds some allure, but for the most part disarmament theory in its pure form is not considered reasonable or achievable by most of the strategic community. Richard Barnet has penned a suitable epitaph:

\begin{quote}
Fifteen years of apocalyptic warnings of atomic annihilation have deadened us to the significance of the arms race, for the mind, like the hand, can become calloused. Words like "survival" and "devastation" no longer evoke any response but apathy.\textsuperscript{17}
\end{quote}

\begin{itemize}
\item \textsuperscript{14} David Singer, \textit{Deterrence, Arms Control and Disarmament: Towards a Synthesis in National Security Policy} (Columbus: Ohio State University Press, 1962), Chapter 7.
\item \textsuperscript{17} Richard Barnet, \textit{Who Wants Disarmament?} (Boston, Massachusetts: Beacon Press, 1960), p. 1.
\end{itemize}
2. **Arms Control Theory**

While disarmament theory sought to achieve absolute global security, the central objective of arms control theory has been to enhance the specific security of a given state or states. Thus military strategy must be interpreted in the broadest sense so that the goals of arms control and of military strategy are substantially the same.\(^{18}\) Arms control then is far more limited in scope than is disarmament, and arms control theory is critical of the assumption that complete disarmament should be the objective of arms control policy. This section will establish the goals of arms control and then address some specific concepts of the theory to include the need for confidence building measures, the impact of technology, the role of verification and the significance of limited war.

The proponents of arms control portray it as an alternative means to military strategy, the goal of both being greater security. The essential objectives of arms control are to enhance national security, to release economic resources for worthier endeavours and to contribute to the demise of war as a means of conflict resolution.\(^{19}\) The central assumption of arms control theory is that the world would be more secure if a controlled or reduced level of armaments existed. The resultant logic suggests that a balanced, controlled level of armaments is the best way of providing

\(^{18}\) Thomas Schelling and Morton Halperin, *Strategy and Arms Control* (New York: Twentieth Century Fund, 1961), p. 141-142. This work plus the two books by Bull and Brennan cited in the following footnote are excellent and together they have set the standard for arms control theory.

greater security at the lowest risk and cost.20 Because arms do contribute to tensions, arms control can contribute to the regulation of international behaviour, thus reducing the probability of international crises and the threat of escalation to or during nuclear war.21

These objectives of arms control overlap those of disarmament considerably. Disarmament specifically seeks to curtail manufacture of weapons, to prevent the proliferation of nuclear weapons, to prevent new areas of the world from becoming the scene of deployment of nuclear weapons, to prevent the outbreak of nuclear war and to limit the effects of nuclear war if one does break out.22 The key difference is that arms control recognizes that national interests preclude immediate disarmament and stresses the importance of recognizing the potential of joint interest between political adversaries. As a result of less ambitious theory, arms control is more feasible and consequently has had far greater political acceptance.

Because arms control theory is more closely related to strategy, the concept of balance has emerged as central to arms control.

It was recognized in the negotiations of the League of Nations period, and it has been recognized in recent negotiations, that any general reduction would have to preserve an agreed balance, replacing a balance at a higher quantitative and qualitative level with one at a lower level.23

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The notion that arms control could and should contribute to a stable strategic balance grew from the fear of nuclear instability generated by the strategic analyses of the 1950s. This requirement to achieve strategic stability has furthered the thought that arms control negotiations could be separated from the political relationship between the superpowers because arms control in the West became viewed as a search for "limited technical solutions." As this Western view has not been shared by the Soviet Union, considerable difficulty in achieving success between the superpowers has hampered arms control in practice.

Arms control is primarily concerned with formal negotiations, but in practice, unilateral actions and tacit or informal understandings may be equally or more important. In the international sphere the line between what is legally binding and what is not has less significance; therefore, all possible avenues to achieve one's aim should be pursued. As a consequence, arms control relies on trust and faith that extend beyond the letter of treaties, highlighting the criteria for acceptability which include applicable limitations, methods of verifying compliance and the consequences of violation.


Raising the idea of arms control to prominence in strategic thought has provided a constant reminder of the two edged nature of armed force, and established the importance of not needlessly provoking dangerous reactions in the behaviour of others. 28

The achievement of sufficient trust to rely on tacit arms control is not as simple in practice as it may sound in theory. No verification of compliance can achieve absolute effectiveness, and thus the inherent intentions of one’s opponent can never be fully known. It is possible that a state could temporarily pursue arms control due to the economic imperative of limiting defence expenditures and not be philosophically committed to the spirit of a given negotiation. Arms control theory therefore creates tension between the perceived level of tacit understanding and the hard requirements deemed necessary for national security.

In sum, arms control seeks greater security for a given state through the incremental and often tacit achievement of restraint on weapons programmes. Nuclear arms control policy should therefore complement nuclear strategy as both share the same goals, hence there is a significant political connection between the two. If the apparent objectives of each are seen as inconsistent by the adversary, then confidence is reduced that arms control is not being pursued for propaganda or political purposes.

To instil confidence that one’s arms control policies really intend to promote international security, the notion of confidence building measures has been introduced. These measures are primarily political and psychological rather than military, and they endeavour to reduce mistrust

through improved transparency and communication.\textsuperscript{29} While confidence building measures are useful to facilitate progress on reducing conventional forces in central Europe to preclude a surprise attack option to either side, according to some analysts, they are no substitute for arms control at the strategic nuclear level.\textsuperscript{30} Others feel that confidence building measures are the only way to achieve reduced political tensions and arms control breakthroughs in all possible strategic situations.\textsuperscript{31} The central thrust of confidence building is to improve communication or strategic dialogue\textsuperscript{32} thereby reducing mutual fear of surprise attack. In Europe in the mid-1980s, important confidence and security building measures have facilitated such progress on arms control issues such that the distinction between them has eroded.

While arms control theory initially tended to concentrate on the capabilities of weapons systems, confidence building measures address specific intentions or fears such as surprise attack. As strategic surprise in the nuclear age could determine the outcome of a conflict,\textsuperscript{33} the result is high states of readiness and serious strains on arms


Because nations with high propensity to use force are relatively appreciative of the advantages of doing so and relatively insensitive to the costs, the superpowers, each perceiving the other as having such propensity, are deeply suspicious of one another. Given the human stubborn attachment to old beliefs and an equally stubborn resistance to new ones, there is a tendency "to pay greater attention to signals that support current expectations about enemy behaviour." Confidence building measures are a means to break down strong perceptual barriers and to instil an awareness of how the other side views a given action.

Arms control theory also depends to a degree on the technology of weapons systems. If strategic weapons are vulnerable, greater impetus exists to expand the quantity of weapons systems, but if both forces are invulnerable then a stable equilibrium exists where there is no need to increase offensive forces. The advent of relatively invulnerable ballistic missile firing submarines is one example of a technological innovation that on balance probably contributes more to stability than it does to the arms race. While in the 1950s and the 1960s a widespread consensus supported the contention that nuclear weapons systems, especially large and easily verifiable nuclear delivery systems, should be the focus of arms control, increasingly technological momentum threatens

to make early arms control achievements irrelevant. The decision to deploy MIRV warheads has been cited as an example of such a process that overtook the SALT I negotiations. Modern small and mobile nuclear delivery systems further contribute to concerns that the measures available to verify arms control agreements may not be adequate in the future.

Verification of arms control achievements has become a significant component of arms control, particularly since the development of national technical means coincided with the articulation of arms control theory. Earlier efforts in the 1950s to achieve arms limitations stumbled over the issue of on-site inspection to confirm compliance, but space based surveillance is now capable of monitoring with confidence much, although by no means all, of the weapons related activities of the superpowers to the degree that much uncertainty is reduced. Progress in arms control has become directly linked to verification ability, but in recent years the technical standards of verification have risen as this issue has become highly politicized. As a result, the SALT II agreement, which included many specific measures to enhance verifiability such that one observer called it "an historic accomplishment in verification," ran into political difficulties. Clearly no arms control agreement can be established and no verification technique can work if the superpowers have

38 Bruce Russett, The Prisoners of Insecurity: Nuclear Deterrence, the Arms Race and Arms Control (New York: W.H. Freeman, 1983), p. 79.


a tendency to exploit ambiguities in these agreements or if the political relationship between negotiating partners is not solid.\textsuperscript{41}

One final aspect of arms control theory that deserves brief mention is the notion that constraint on war, including limited nuclear war, is really a form of arms control. Because absolute or unlimited nuclear war probably can serve no useful political purpose and may even end politics, Clausewitzian logic demands limited war.\textsuperscript{42} Any limitation in war is based on a tacit bargain between participants, and the frequently made distinction between conventional and nuclear weapons appears to be the most obvious and the easiest form of tacit arms control.\textsuperscript{43} Unilateral restraint of any kind prior to and during war, in theory, can serve to signal intentions and could form the basis of tacit bargains that could allow for de-escalation and war termination. In the event that deterrence failed and major war between the superpowers developed, however, the success of tacit arms control would be problematic. For a number of reasons including that of psychological denial, nuclear strategy in practice has not allowed for the termination of war.\textsuperscript{44}

Among the various approaches to arms limitation in general, modern arms control offers such sufficient prospects that it is now an important part of strategic interaction between the superpowers. Arms control theory


\textsuperscript{44} Clark Abt, \textit{A Strategy for Terminating Nuclear War} (Boulder, Colorado: Westview Press, 1985), Chapter 8.
has evolved from the idealistic notions of disarmament and has become far more politically acceptable. Advocates of arms control are however divided among themselves; according to one study, moderate arms controllers propose a minimum level of nuclear weapons and skeptical arms controllers support more sophisticated nuclear force structures to pursue flexible nuclear options. These two views of arms control in some ways parallel the two paradigms established in chapter one, and an assessment of the implication of these two paradigms on arms control theory is now in order.

II. THE DETERRENT PARADIGM AND THE IMPLICATIONS FOR ARMS CONTROL

As the dominant strategic paradigm, deterrence can be expected to be closely connected with arms control theory. During the past forty years, deterrence and arms control have shared much of the same intellectual attention, but the two concepts appeared to have drifted apart with the "failure" of arms control in the late 1970's and early 1980's. Arms control negotiations that lead to reductions cannot however be viewed as an end in themselves, "but must be judged in terms of their impact on the character of the strategic relationship." This section will use the three levels of analysis established in chapter one to clarify what one might expect from arms control when viewed from the deterrent paradigm.

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1. Strategic Intentions

To discover the real aim of anything is of fundamental importance; the "de quoi s’agit-il" query by Foch is still the most important strategic question. Arms control theory that aspires to enhance a state's security in a deterrent framework must adopt or at least be compatible with the assumptions and objectives of the deterrent paradigm. In the framework for analysis the key variables to analyze strategic intentions included the perceived political utility of nuclear weapons, the degree of support for the status quo and the underlying political values at stake.

The deterrent view of arms control would logically hold that the current levels of nuclear weapons, having minimal political utility, should be eminently controllable and probably reducible. If nuclear war has no military meaning because of mutual destruction, then it can have no political meaning, and the inescapable conclusion must be that the "macro-limitations inherent in war itself" preclude it as an option. Senior officials in private have often acknowledged that war between the great powers "just doesn't make sense" as nothing can be gained commensurate with the loss. What this line of thought encourages is the notion that arms control at any cost is preferable as long as mutually assured destruction is maintained. An important factor which contributes to an


50 Thomas Powers, Thinking About the Next War (New York: Alfred A. Knopf, 1982), p. 16. The analysis in this book is weak, but this point is valid.
optimistic view of the scope for arms reduction is the tendency to neglect the complex inertia of national weapons acquisition processes. One result is that at times arms control proposals can lack the benefit of a clear theory of security and become an end in themselves.

The second variable, the degree of support for the status quo, should logically be relatively high in a deterrent strategy of arms control. Deterrence inherently implies resistance to change in the status quo, and thus arms control initiatives along these lines seek to preserve an existing balance. Naval arms control agreements in the 1920s and 1930s remained effective until Japan elected to change the status quo in 1934 by beginning a naval arms race in the Pacific that served to undermine deterrence. Advocates of a balance of strategic weapons sometimes confuse this concept with the balance of power; what deters is not a balance of power or equal forces per se, it is a strong or powerful status quo power, willing to fight to maintain it.

The underlying political values in a deterrent arms control perspective are of fundamental importance, and they are inherently defensive in nature. The deterrent model does not imply a desire to upset an existing balance for it holds that the shared value of avoiding nuclear catastrophe is by far the most important variable. While some advocates of arms control reflect disarmament values, for the most part, arms controllers in the West have accepted the ultimate utility of nuclear deterrence. Even those who hold strong aversion to the first use of nuclear weapons have


52 Lawrence Freedman, "Europe Between the Superpowers," in Gerald Segal, et al., Nuclear War Nuclear Peace, p. 106.

53 Philip Towle, Arms Control and East-West Relations, p. 22.
nuclear weapons also support the maintenance of mutual assured destruction.54

With respect to strategic intentions, an arms control policy compatible with a deterrent paradigm could be expected to stress significant reductions of nuclear weapons and define security in terms of maintaining the status quo. To seek a balance of strategic weapons at relatively low levels would fulfill these requirements.

2. The Threat of Force

Since arms control policies in themselves do not introduce threats, the key question here is to what degree do arms control policies condition existing deterrent threats? There are those that believe that nuclear weapons, by their very nature, are "more useful as an instrument of deterrence than of compellence."55 The arms control problem in this level of analysis is directly related to technical capability, for the deterrent model requires a threat that is credible yet does not create alarms or tensions on behalf of the adversary.

Arms control to a certain extent seeks to limit the threat to that which is deemed legal, fair and necessary. In World War II, Britain and Germany initially showed marked reluctance to use strategic bombing even though by then it was considered legally acceptable to bomb civilians.56 By the previously established definitions, this reluctance was both a form

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of deterrence and a form of arms control, but in either sense it must be judged a failure as the Germans were not deterred and strategic bombing became an accepted mode of warfare. A major problem for strategy is that deterrence and its failure are "fundamentally different options," and strategic planning must attempt to take into consideration the fact that the kinds of attack which, for purposes of deterring war, it is most appropriate to threaten, are not the same as the kinds of attack which, for purposes of waging a war or surviving one, it is most appropriate to carry out.

The need to limit the threat yet retain credibility sets up a tension within which arms control, in a deterrent paradigm, seeks a technological compromise that the adversary would not consider aggressive or destabilizing. The central assumption implicit in this compromise is that limited technical solutions to specific problems of strategic stability could be negotiated between politically antagonistic superpowers, the result being a divorcing of arms control from politics which "flows naturally from the mechanistic model of deterrence." The most obvious limitation in this paradigm, that no strategic forces should threaten counterforce, is now "an article of faith" within much of the Western strategic community. The belief that stable mutual assured destruction requires no great accuracy, no strategic defences and survivable systems, stems from technical stability analysis, the intent of which is to

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58 Hedley Bull, The Control of the Arms Race, p. 209.


achieve a balance through arms control that each superpower can accept. Few analysts attempt to shift the emphasis of arms control away from a technical search for numerical solutions and equivalent capabilities by focusing on intentions and confidence building measures.61

The deterrent paradigm implies an arms control policy to limit nuclear threats to levels of assured destruction capability on either side. It regards nuclear weapons as so powerful that a credible deterrent exists even if the probability of its use is low.

3. The Correlation of Nuclear Forces

The final level of analysis addresses how strategic forces would interact in war and builds directly on the notion of stability which conditions the threats to deter. In the deterrent model, the primary role of arms control is to generate a safe dyadic relationship wherein neither party has incentives to strike first with nuclear weapons.

Arms control goes directly to the correlation of strategic nuclear forces and attempts to balance the various forms of control or restraint against one another. For example, missile silo survivability is a function of missile accuracy and yield of the warhead as well as the hardness of the silo itself, and any change in one variable leads to a different technical solution. The factor which has the greatest influence on the stability of mutual deterrence is the weapon for weapon exchange rate in the counterforce role; the greater the ability to destroy opposing

weapons, the greater the instability. What becomes apparent in detailed stability analysis is that minimum deterrence occurs in a region of great instability because small changes in numbers of weapons or even perceptions of potential changes can give one side a significant advantage. The uncertainties inherent in minimum deterrence require a margin which provides a measure of insurance to cover for technological advances, increases in numbers of weapon systems or violations of arms control agreements. As the only means of restoring the balance after its disruption by one superpower remains the counteraction of the other, this margin must be sufficient to allow time for the other superpower to monitor and verify the destabilizing action and to initiate an appropriate response.

Consequently, arms control is under pressure to establish a stable equilibrium of weapons in greater numbers than required for assured destruction, and this margin is in part determined by the ability of each superpower to monitor the other's weapons programmes. An upper limit to this margin is reached when improvements in nuclear weapons and delivery means tend to be of diminishing importance in the stability equation. Arms control in the deterrent paradigm seeks a controlled balance at the lowest level possible where neither side has any incentive to build additional weapons for their security.


63 Ibid., pp. 6-8 and p. 19.

4. The Implications for Arms Control

The prevailing theory of arms control appears to be very compatible with the theory of deterrence. Deterrence refers to a very specific theoretical relationship that has been applied to a far broader range of policy situations than would be the case if deterrence had not come to be accepted as the dominant strategic model. Arms control, to a large degree, has developed within this conceptual environment and thus shares many of the assumptions that underlie the deterrent paradigm. As a consequence, many of the similarities are highlighted or reinforced, yet some of the incompatibilities are camouflaged or ignored.

In the West, arms control and deterrence theory have resulted in complex technical constructs, the aim of which is to achieve balance, stability and mutual assured destruction. The emphasis on technology rather than political will was strongly reinforced by technical trends in the 1960s, but the effectiveness of this approach has been much less in the 1980s. Deterrence and arms control, by focusing heavily on the need to achieve such a balance, have served to complement each other and emphasize the compatibility of the two concepts. Both share similar notions as to the usefulness of nuclear weapons and both lend themselves to sustaining the status quo.

What has eluded attention, however, is that aspect of arms control theory which is potentially less compatible with the deterrent paradigm. Arms control theory provides for restraint on the use of arms to prevent a war from escalating, and since war has not yet been eliminated as a policy option between states, in theory it allows for limited nuclear war. Controlling escalation in this kind of war places a premium on flexible

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offensive and defensive weapons systems that are inconsistent with the
deterrent paradigm, in the sense that what is required for national
security may not be equal to that required for arms control. What
exacerbates this tension is the fact that arms control theory precludes a
safe and stable, minimum or finite, deterrent option. The degree of
margin required for the appropriate level of stability is then open to
interpretation and confusion. The result is, on the one hand, strong
efforts by moderate arms controllers to limit offensive capabilities and
abolish defensive systems or, on the other hand, a conceptual stretching
of "deterrence" by skeptical arms controllers to encompass nuclear force
capabilities beyond those necessary for assured destruction purposes.

Although the above inconsistencies exist, the compatibilities between
arms control theory and deterrent theory are profound and their shared
fundamental assumptions are more important. The limitation of national
strategy to defensive motivations inherent in the deterrent paradigm
contributes to an enhanced role for arms control in national policy, and
if both superpowers shared these motivations, arms control could be
expected to be a dynamic and fruitful process. Unfortunately, however, in
spite of official recognition that nuclear weapons have a role limited to
deterrence, "the propensity grows to use them for political purposes and
to make them the measure of international power and status."

III. THE COMPELLENT PARADIGM AND THE IMPLICATIONS FOR ARMS CONTROL

If the requirement for compellence is a component of national
strategy, arms control policy can be expected to pursue a more competitive
path. As the compellent paradigm includes greater scope for threat

utilization for those aggressive purposes often attributable to great power behaviour, arms control, when viewed from this perspective, would logically stress the usefulness of force or its threatened use, to attain foreign policy goals other than those of national defence. This section will again apply the previously established three levels of analysis to determine the implications of arms control theory from the perspective of the compellent paradigm.

1. Strategic Intentions

In the framework for paradigmatic analysis established in the previous chapter, the strategic intentions of superpower declaratory policy provide a positive indication as to which mode of thought might be motivating strategic behaviour. The political utility of nuclear threats, the degree of support for the status quo and the underlying political values at stake are the key variables that enable a distillation of potential compellent intentions.

According to arms control theory, the achieving of a given state’s security depends on national military strategy and arms control; both are alternative means to achieving national policy. In contradistinction to the deterrent perspective that nuclear weapons are not politically or militarily useful, however, the compellent view holds that they can support foreign policy. Despite several disclaimers of declaratory policy, "the history of nuclear development over the past three decades has been one of consistent attempts to make nuclear weapons usable." This trend has been reflected in arms control proposals by the superpowers

over the years in that each proposal on the surface looks very appealing yet each contains a "joker" that results in its inevitable rejection by the other side. This "joker" serves a dual function:

   to compel a rejection of the whole plan and thus place the onus for deadlock on the other side, and to protect the vital interests of the proposing side.\(^69\)

The result is that a state can appear to be pursuing arms control for altruistic motivations yet really be working to enhance its interests by increasing its nuclear advantage.

Compellence implies an effort to alter a status quo situation, and arms control can theoretically be used to change the existing balance of forces. William Kincaide in an important article has noted a strategy that he calls arms control through arms coercion where unilateral build­ups and threats are designed to achieve more favourable arms control agreements.\(^70\) Because this requirement implies a competitive strategy in which stability plays a reduced role, this form of approach accounts for those strategic analysts who firmly believe that a strategic nuclear posture and its guiding doctrine should be designed for time of war.\(^71\)

Increasingly, arms control is being affected by the perception that the superpowers are locked in a quest for nuclear superiority where they seek to manipulate the risk of war for political objectives.\(^72\)

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72 Barry Blechman, "Do Negotiated Arms Limitations Have a Future?" Foreign Affairs 59 (Fall 1980), pp. 111-112.
The final and perhaps the most important variable, the political values at stake, can also indicate which paradigm is operating. In the compellent paradigm, arms control is conceived as another arm of strategic policy, and national interest becomes a key variable:

if the position of one's country can be improved militarily, economically or politically by a disarmament policy, then it will be pursued.\(^73\)

A linkage of domestic policy and arms control is thus possible as it is easier to make proposals which promote one's interests to gain domestic support. Arms control therefore can be a political process and, like any important political process, its main objective can be to prevail or to achieve gains. It is quite understandable that the fear of "appearing to give anything away in an area where political emotions run so high and the stakes are genuinely so great" contributes to the politicization of arms control.\(^74\) If two powers adopted a similar approach with no restraints, a reliable political basis for arms control concessions would not exist,\(^75\) and arms control negotiations would become a competitive forum.

In a compellent paradigm, arms control goals would plausibly include proposals specifically designed to enhance a state's national interest even if, or especially if, these were at the expense of one's competitor. In such an environment a stable balance is not the ultimate goal, superiority is. What prevents the achievement of superiority is the adversary's strategy, and the compellent actor would logically attempt to seek a "balance" that would maximize his advantage to the highest degree.

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\(^73\) Kenneth Booth, "Disarmament and Arms Control," p. 109.


possible.

2. The Threat of Force

When threats become part of arms control, it is likely that compellent, not deterrent, behaviour is behind it. One major problem with pursuing arms control in a competitive framework is that compellent threats "usually breed resentment, rejection and counter threats," and thus are not conducive to the normal interpretation of bargaining or arms control negotiations, but bargaining it is.

As the compellent paradigm accepts a greater continuity between peace and war, there is a propensity toward accepting nuclear war fighting technology that has significant ramifications on the nature of stability. Operational effectiveness of weapon systems is a more important variable, and thus stability is a far more dynamic concept. The increased counterforce and damage limiting capabilities required for compellent strategy mean that stability is closely related to their utility in war. Both the United States and the Soviet Union have made continual efforts to improve their counterforce capability while officially supporting the need for stability. The Soviet Union, for example, has never acknowledged that submarine launched ballistic missiles (SLBMs) are less destabilizing than intercontinental ballistic missiles (ICBMs), and appears to possess a perception of strategic stability significantly different from that of the

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United States.\(^78\) Arms control equilibrium in the compellent view appears to be more closely linked to the notion of technical predictability, thereby increasing expectations from confidence building and verification measures.

In the deterrent paradigm technological developments are considered problems that need restraint before the strategic equilibrium becomes unstable, but in the compellent view technological advances are benefits that are sought to gain strategic leverage or military advantage. They may be bargained away, but only in return for something else of value. The compellent view is more comfortable with technical progress and recognizes that arms control restraints cannot be expected "to halt innovation or prevent the military application of advances in scientific and technological developments."\(^79\) In part, this is due to the inability of governments to control effectively the bureaucratic weapons procurement process,\(^80\) and to the fact that technology is forcing the superpowers to change their nuclear strategies to make better use of new capabilities.\(^81\) Strategic nuclear forces are now perceived very widely as the "ultima ratio" of a superpower,\(^82\) and as such deserve a central and privileged place in arms control negotiations. In the compellent model, nuclear

\(^78\) Richard Burt, "The Relevance of Arms Control in the 1980's," p. 163; and Paul Stockton, Strategic Stability Between the Superpowers, p. 27.


weapons can only be reduced or dismantled when the perceived benefits of mutual reductions exceed the potential for political leverage on a long term basis.

One technological innovation that increases pressure for greater numbers of offensive systems is the concept of strategic defence. If strategic defence could be limited to the defence of nuclear systems and not be extended to protect cities, then it could help stabilize mutual assured destruction. Unfortunately, the technology knows no such bounds; it can be applied to area ballistic missile defence (BMD) and, if accompanied with bomber and cruise missile defences, can erode the whole concept of strategic nuclear deterrence. Carefully limited defences can reinforce the deterrent paradigm, but expanded defences involve an alternate mode of thinking that represents a total break with the past concept of deterrence. In spite of an Anti Ballistic Missile (ABM) treaty signed in May 1972, both superpowers have expressed a preference for increased defensive measures. Since the compellent paradigm places a premium on expanded defence, arms control in such a paradigm could be expected to lead to eventual implementation of strategic defences.

The compellent threat of force has profound implications for arms control because it causes a rejection of the deterrent concept of achieving a relatively harmonious stable strategic balance between rival superpowers. As long as one side fears that the other seeks to attain a first strike capability, deterrence will become unstable and pressures

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84 Magnus Clarke, "Nuclear Deterrence and SDI," *Arms Control* 6 (September 1985), p. 178.
will mount for defensive systems. The technological impetus behind the superpower competition permits the expansion of damage limitation and counterforce systems which serve to better support the flexible nuclear strategies necessary to back compellent threats.

3. Correlation of Nuclear Forces

In this level of analysis the compellent quest for advantage leads to significantly different arms control prospects than the deterrent search for stability. In the compellent paradigm arms control seeks more security by having better or more nuclear weapons than the adversary, the aim of which is to gain a potential bargaining advantage through a superior military position.

In theory, arms control can be applied to check the technological momentum of the adversary in specific areas or freeze forces at advantageous levels. It can be used to maintain the balance of agreed strategic systems while permitting improvements in other systems not covered by agreements. Although technological progress is so rapid that quantitative restrictions are no longer adequate for arms control, numbers of weapons still appear critical to a superpower "balance of resolve." Both superpowers appear to believe that

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an appearance of inferiority in nuclear weapons brings great political damage. It follows that they believe - although they do not say this - that an appearance of superiority brings great political advantage.88

These trends provide greater scope for a competitive interpretation of arms control that permits technological developments to become a recipe for unlimited expansion even during major strategic arms limitation achievements.89

Since arms control can affect preparations for possible nuclear war, it may also be used as a partial tool to create or expand a compellent threat. The possibility exists that arms control could be pursued in bad faith to achieve deception, the foundation of all warfare,90 but this cannot succeed as a long term strategy due to the extensive nature of modern verification means. It is also possible to use geopolitical asymmetries as levers to generate military advantages in specific areas; thus one side may favour one weapon system while the other may abhor it. The competitive search places a premium on strategic calculations as arms control and nuclear strategy require careful integration to achieve a coordinated effect. For coercive limited war to achieve its aim, it requires more detailed prior planning than forms of total war,91 and for compellent arms control to produce an advantage, it requires more calculations than for deterrence.


Because arms control agreements affect the correlation of nuclear forces, they impact directly on the potential interaction of strategic systems in war. To achieve comparative strategic advantages, a given nation may attempt to reduce specific weapon systems that it finds most threatening, or it may seek to channel arms competition into areas where it has a natural advantage. In the compellent paradigm arms control can become a weapon with which to attack the opponent's strategy, but to achieve results careful integration with military strategy is required. In this situation arms control becomes simply a tool to discredit or to thwart the opponent's strategic credibility over time.

4. The Implication for Arms Control

Nuclear strategy and arms control both strive to enhance national security, but the former in the compellent paradigm has ambitions that extend beyond defence. Thus the latter, by virtue of their shared strategic objective, also has political motivations that include the potential to impose one's will in certain situations. Because compellence emphasizes competitive aspects not evident in deterrence, cooperative behaviour tends to receive less emphasis.

The major implication for arms control in a compellent framework is the degree of self interest implied by its strategic intentions, making national interest a significant factor in arms control negotiations. The competitive expectations in this model imply a clear lack of willingness to maintain a stable balance or the status quo evident in the deterrent paradigm.

The search for advantage logically requires military superiority as an ultimate goal, but this Kantian logic is not as inconsistent with arms control theory as it appears. Arms control theory provides for restraint
of arms to contribute to the national security of a given state, but does not necessarily require equal restraint from negotiating states. While the notion of mutual restraints comes primarily from the impact of deterrent thought on arms control, the constraints on compellent arms control stem from the competitor's strategy. Arms control then becomes a bargaining contest where the compellent actor seeks to maximize his gain. This form of arms control requires political direction that subordinates the values of arms control in itself to the strategic interests of the state. It follows that such a strategy would only sincerely pursue arms control negotiations when prospects for success were relatively high and would stubbornly cling to its "jokers" when conditions were otherwise.

Arms control in a compellent strategy also acknowledges that specific technological advantages can be militarily and politically useful. It assumes, in consonance with the themes of the Intriligator-Brito research model, that arms races do not necessarily lead to war and disarmament does not necessarily lead to peace.\(^2\) The use of arms control negotiations to gain political and military advantages is not only a moral and political responsibility, it does not necessarily contribute to an increased risk of war. Clearly this compellent position is incompatible with the deterrent paradigm, and the two views of arms control described as the moderate and the sceptical are merely reflections of paradigmatic incommensurability.

IV. CONCLUSIONS

Arms limitation theory adds considerable texture to the paradigmatic landscape of strategic relations between the superpowers. The idealistic notions of universal disarmament retain a small but dedicated group of

supporters whose ideas have helped shape modern arms control theory that simply seeks restraint on arms policy. Arms control has substantially the same aims as national military strategy, to enhance state security, but as its scope is far more limited than disarmament, it has become more politically useful. This combination has made modern arms control a central part of superpower interaction, but tendencies within the arms control community reflect at least partially the two strategic paradigms, deterrence and compellence.

Since arms control theory has been developed within the deterrent framework, it is very compatible with the deterrent paradigm in most respects. The focus on a stable minimum nuclear balance has been the dominant theme of deterrent arms control, the central objective being the shared avoidance of nuclear catastrophe. If threats were limited to defensive or deterrent levels, arms control could play a major role in national policy, and balanced nuclear force structures could be achieved at minimum quantities.

Compellent strategy results in a more competitive form of arms control, the major aim of which is to achieve comparative advantage. It accepts possible restraint in war fighting means but not in strategic ends. Because the compellent state in a sense is forced to accept constraints on its nuclear forces by strategic competition, it seeks to maximize its advantage to the degree possible. These factors fuel the technological impetus toward counterforce capable and damage limiting systems. Arms control can be compatible with compellence if it becomes politically responsive to a national compellent strategy and seeks to protect those national interests that may require the projection of nuclear threats.
Arms control can therefore be used in flexible ways to support at least two contending strategic approaches to war. As a major component of international politics, arms control theory contributes to these two paradigms and completes their theoretical formulation. The next two chapters will now analyze each superpower's nuclear strategy before returning to a detailed discussion of nuclear arms control in practice.
Chapter Three

NUCLEAR STRATEGY IN THE UNITED STATES

Victory in global war and the development of nuclear weapons in 1945 propelled the United States to superpower status, and the world began to pay closer attention to American ambitions. American strategic analysts for the most part viewed nuclear weapons as a revolution in destructive capability, and deterrence soon became the concept that framed the declaratory strategy of the United States. In the complex American political system, extensive open debates on nuclear strategy have markedly increased the volume of strategic material over preceding historical periods, but most of the debate accepts the concept of deterrence as its fundamental objective. In spite of this production of strategic thought, however, the action policy of how the United States intends to use nuclear weapons to support its foreign policy is far from clear.

This chapter examines the United States' nuclear strategy in an attempt to identify any elements of compellence that may exist. The framework for the paradigmatic analysis established in chapter one provides the tools to accomplish this task. The first section describes American strategic culture, a necessary and useful starting point for this analysis. The following sections deal with the general periods of massive retaliation, flexible response and more recent evolutions of "realistic" or "countervailing" deterrence. Although the primary focus of this dissertation is on the period 1970-1986, the earlier American experience with nuclear strategy is extremely relevant. The analysis will focus primarily on the objectives and threats embedded in the nuclear strategy of the United States; detailed quantitative analysis of the correlation of nuclear forces will be left to later chapters.
I. UNITED STATES STRATEGIC CULTURE

Strategic culture refers to a set of acquired beliefs, attitudes and behavioural patterns that condition the patterns of strategic thinking. While it evolves over time, it does not reflect specific policy, but rather represents a more permanent view resulting in and stemming from a socialization process. Embedded within the concept of strategic culture one finds the fundamental assumptions governing the constitution of military power and the ends it is designed to serve. Clearly the military behaviour of most societies has reflected to a high degree their political culture.\(^1\) Strategic culture is therefore simply a subcomponent of a nation's political culture.

In the United States, as in most democratic countries, a perceptible shift in strategic culture occurred with World War Two and the advent of the nuclear age. Throughout American history up to 1945, ...the United States usually possessed no national strategy for the employment of force or the threat of force to attain political ends, except as the nation used force in wartime openly and directly in pursuit of military victories...\(^2\)

In American society however the concept of war was slowly changing from the view of war as a struggle for survival or conquest to an image of war as a "malfunctioning of the international system."\(^3\) A nuclear war would


simply be an unmitigated disaster and the only political purpose of nuclear weapons had to be to deter their use. But these societal changes did not necessarily convince the strategic community that nuclear weapons could not be used in a more traditional sense. Drawing on its history and an increasingly sophisticated strategic studies community, the United States has produced a unique strategic culture that reflects the complexity of its make-up. Scientists, bureaucrats, military officers, politicians, industrialists and academics all form an active part of the United States strategic community.

An important factor in shaping the present American strategic culture is geopolitics. Due to its geographic insularity, the United States has faced few significant threats for most of its history. One observer even declared that compared to most great powers, the United States has had a "free ride" with respect to security until the twentieth century and, again, to a lesser degree, from 1945 until the Korean War. When a threat did appear, it was often distorted, and significant oscillations mark the history of American security policy resulting in a tendency to under prepare in peace and to exaggerate the danger in war. It is therefore a relatively new experience for the United States to assume global responsibilities or to feel threatened in peacetime. The effect of nuclear weapons and the ICBM has been to deprive the United States of an unquestionably secure military position that was based on its geographic


location and a comparatively advanced technology. United States strategic culture to a certain degree reflects a longing for absolute security stemming in part from its past geographic insularity.

The second factor that shapes American strategic culture grows from its view of the international environment. American political leaders have tended to a relatively unsophisticated view of the role of military force in the international community. The United States, as a major economic power with little direct threat to its homeland, has been primarily interested in promoting its economic interests to achieve a favourable world order. The United States has tended to view war as a "great moral crusade" which was only necessary after the "failure" of diplomacy. In general, war and peace were viewed as separate conditions, and this tendency still permeates much of the United States strategic community. Increasingly, however, part of the American strategic elite has accepted a more Machiavellian view heralded by the realist school of international relations.

Nations which renounce the power struggle and deliberately choose impotence will cease to influence international relations either for evil or for good and risk eventual absorption by more powerful neighbours.

The rise of the Soviet Union as a powerful and antagonistic rival has

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reinforced this view and propelled the United States into its leadership role in defence of the "free" world. The American strategic culture probably reflects a synthesis of past naivété and present realism in that power is held to be very important, but political ideals, to a degree, still guide strategic policy. A tension between those who believe power to be the most salient factor in international relations and those who feel political ideals to be more pertinent has marked the American polity, and to a degree the former tend to reflect a compellent view of nuclear strategy while the latter tend to reflect a deterrent view.

A third aspect of strategic thinking therefore relates directly to certain political values embedded in American political culture. The constitution of the United States, with its Anglo-Saxon heritage, combined a series of checks and balances that implied a certain distrust of the military. This bias is reflected in the myth of the citizen soldier and the perception that large standing forces, especially armies, were not required in peacetime. Another part of the Anglo-Saxon heritage is a strong reliance on the rule of law that permeates the entire political system giving it a high degree of openness, stability and moderation. The law of proportionality, for example, makes it difficult for some politicians to accept nuclear first use. One student has even suggested that the concept of nuclear deterrence is incompatible with the ideological and political system of the United States. The moral component of American foreign policy has provided a sense of optimism in


that history appears equated with progress, but many American politicians and strategic theorists have lacked a deeper knowledge of diplomatic history or of the theory of international relations.\textsuperscript{13}

The fourth factor to affect American strategic culture is the military history of the United States. The predominant historical influences stem from the impact of the American frontier and of the oceans that surround the North American continent. Few professional military were required, not that force was not important to American leaders, but that appropriate force could always be raised when it was required. By World War Two, the United States Army had never been defeated, and it won again primarily because it had a preponderance of material resources.\textsuperscript{14} Notwithstanding this effort, the United States economy never really lowered its level of civilian productivity, otherwise millions more men with weapons could have been raised.\textsuperscript{15} The overwhelming amount of resources available to the United States in the past has permitted its military to cling to the concept of \textquoteleft\textquoteleft attrition\textquoteright\ war when it no longer necessarily had the superiority in matériel or firepower to wage such a war.\textsuperscript{16} This is in part due to the narrow view of military officers who have tended to be apolitical and to concentrate on \textquoteleft\textquoteleft pure\textquoteright\ military matters. It took the Korean War before the United States strategic community \textquoteleft\textquoteleft discovered\textquoteright\ Clausewitz, and the military themselves began to


\textsuperscript{16} Edward N. Luttwak, \textquoteleft\textquoteleft The American Style of Warfare and the Military Balance,\textquoteright\ Survival 21 (March/April 1979), p. 57-60. This persistence of an obsolete style of warfare is due to an understandable \textquoteleft\textquoteleft cultural lag.\textquoteright\
view the role of force in a larger context.  

Within the strategic community, an impressive continuity of these four concepts is evident. The United States holds a fundamental self-confidence in its ability to fight and a Manichean idea of security that make it natural to agree to relative unpreparedness and then to intervene massively once aroused. The bitter experience in Vietnam shook this faith, and civilian strategists in particular were accused of leading the government astray. The American strategic community however is a diverse grouping of individuals many of whom have alternately worked for academia and the government and thus have had access to classified information. As a result much more information is available about American strategic matters than in most other powers. This factor is probably more responsible than any other for maintaining strategic continuity among the bureaucratic elites in spite of a political system in which domestic experts tend to become political leaders.

The final factor contributing to strategic culture in the United States is the increasing mechanization of war that has challenged man's

sense of moral values. Technology permitted the United States to expand its frontiers and dominate a continental mass, and the "belief that America is the moral leader of the world through modernization still sustains even the most banal and ruthless of our managers." The United States, more than any other power, relies on technological innovation to maintain its military power. The American concepts of escalation dominance and multiple levels of deterrence implicitly rely on flexible and precise weapons systems involving sophisticated technology. It has now become a standard assumption in the United States that "many possibilities for controlled manipulation of the level of violence would actually exist in most situations." Strong belief in the rationality of decision making and high confidence in reason are other assumptions in this American propensity to seek technological answers. American strategic culture is strongly influenced by a fundamental belief in the ingenuity of its scientists and the capability of its military equipment.

As a result of these factors, American strategic culture is imbued with the concept that the American military can combine superior fighting qualities with superior technology to meet any situation. Although the

23 George Grant, *Technology and Empire*, p. 27.
American historical experience is unique, it should also be noted that the traditional American approach to strategic thinking shared more characteristics with its West European counterparts than is generally realized. In the United States as well as in Europe, the linking of military and political considerations in American strategic culture was not forged until the polarization of the international community forced the United States to assume a global military leadership role.

II. THE ERA OF MASSIVE RETALIATION

In the late 1940's and 1950's the United States nuclear strategy envisaged the massive use of large yield weapons in the event of war with the Soviet Union. This period was marked for the most part by a United States nuclear military superiority in an era that became known as the "Cold War." Because of this advantage and the fact that the United States had used nuclear weapons in 1945 to compel the Japanese surrender, American nuclear threats had a considerable degree of credibility. This section will briefly examine the key elements of American nuclear strategy during this period when nuclear weapons were being introduced on a major scale. This analysis is based on the paradigmatic framework established in chapter one; the American strategic intentions, the use of threats and the correlation of nuclear forces will be examined in that order.

1. The Strategic Intention

The United States emerged from World War Two as the world's only nuclear power, but within three years the Soviet Union had demonstrated that it was not intimidated by that reality and that it intended to catch

up. The aggressiveness of the Soviet Union in Europe, the "loss" of China to communist revolutionary forces, and the North Korean invasion of South Korea combined to convince the United States that strong nuclear power was required to maintain a world order favourable to American interests.

In the 1950's the utility of nuclear weapons to support American policy appeared self-evident. Not only had they promptly succeeded in convincing Japan to surrender, but no other power could threaten the United States with the same magnitude of destructive power. Under Truman, a major study, that became known as NSC-68, concluded that the Soviet Union was now a "permanent" enemy and a major threat to the United States for the foreseeable future.\(^27\) NSC-68 devoted a great deal of attention to war fighting considerations, and strategic elites were slow to grasp the deterring significance of countervalue retaliation.\(^28\) Eisenhower, however, in his "new look" placed greater emphasis on nuclear weapons, and his Secretary of State, John Foster Dulles, declared that it was the decision of the United States "to depend primarily upon a great capacity to retaliate instantly by means and at places of our own choosing."\(^29\) This strategy was designed to fill the gaps in the United States' policy


of containment which was then only really protected by strong forces against attacks on the United States or on Europe.\textsuperscript{30} Massive retaliation as a nuclear strategy was clearly intended to intimidate the Soviet Union and China from attempting further expansion, but it immediately raised questions of its credibility in all situations. Notions of graduated deterrence, primarily British in origin, encouraged the use of weapons graduated to the scale of attack and created pressures to expand the utility of nuclear weapons to the battlefield.\textsuperscript{31} In the United States nuclear weapons were increasingly being regarded as able and necessary to restrain the large conventional armies of the Soviet Union and China.

The core of the United States foreign policy in this period was containment.\textsuperscript{32} This policy was essentially based on a concept attributed to George Kennan that if the Soviet Union could be prevented from expanding, in due course it would decay from within.\textsuperscript{33} At first glance this policy appears to support the status quo, but deeper analysis reveals an interpretation that containment also served as a means of expanding the role of the United States in the world.\textsuperscript{34} For instance, an early United


States war plan from this period clearly aimed "to bring about a basic change in the conduct of international relations by the government in power in Russia." To "contain" possible Soviet expansion, the United States in the 1950's expanded its influence globally by creating a string of alliances surrounding Communist territory wherever possible.

As the United States developed its nuclear arsenal in the early years, it clearly had tendencies that extended beyond deterrence. The United States was expanding its global influence, and the massive first use of nuclear weapons was considered useful to support these global objectives.

2. The Threat of Force

During this period the United States used explicit or implicit nuclear threats more often than in any other time in its history. These threats generally were created by long range bombers that needed to penetrate to their targets to drop nuclear bombs; it was simply an extension of Douhet's concept that influenced Allied air strategy in World War Two. For the most part, the United States Air Force (USAF) had a free hand in the preparation of the first war plans based on massive use of nuclear weapons. Targeting was based on the strategic concepts developed in World War Two, and counterforce and countervalue targets were both included. General Lemay knew, however, that it was the first strike that counted, and he was deeply concerned with preventing the delivery of any Soviet weapons to the United States. These plans gave priority to the

36 Barry Blechman and Stephen S. Kaplan, Force Without War, p. 47.
destruction of Soviet nuclear capability followed by military targets and government control centers.\textsuperscript{38}

While the Air Force was thinking in terms of massive destruction, the Army was addressing the problems of limited war. Army leadership was far more sensitive to the impact of the Korean War, and to them that experience dispelled the notion of massive retaliation without political limits.\textsuperscript{39} Some prominent Army generals took early retirement and spoke out against massive retaliation.\textsuperscript{40} The concept of fighting limited wars developed momentum, and plans were made to test nuclear artillery as early as 1951.\textsuperscript{41} Even John Foster Dulles acknowledged that tactical nuclear weapons made defence against a conventional attack more feasible. Consequently it was possible to place "less reliance upon deterrence of vast retaliatory power."\textsuperscript{42} Since the United States could not achieve anything near the Soviet or Chinese levels of conventional forces, Eisenhower readily substituted cheaper nuclear weapons to deter any


\textsuperscript{42} John Foster Dulles, "Challenge and Response in U.S. Policy," p. 31.
communist conventional expansion into West Europe or elsewhere. While massive retaliation remained the United States' declared nuclear strategy, there was considerable support for more flexible utilization of nuclear threats well before the United States itself faced a significant threat.

During this period certain nuclear threats were used to accomplish specific tasks. In 1945 the Secretary of State, James Byrnes, used atomic power as an implied threat to convince the Soviet Union to broaden the Romanian and Bulgarian governments. This threat did not work, however, for at the time the USAF did not "have the strength to dictate political developments in those regions where the Soviets already enjoyed dominance." A more credible threat to resort to nuclear weapons was used by Eisenhower after his election to end the stalling of the Chinese government in the Korean truce negotiations. Although some felt that this nuclear threat did not have a decisive effect, no one doubts that this threat was made and that it was limited to the Korean negotiations. During the 1956 Suez crisis, the use of nuclear weapons was first threatened by Khrushchev, but as soon as SACEUR made a counter threat, the Soviet Union remained silent. In the 1958 crisis in Lebanon, the United State's nuclear threats helped preclude Soviet action. In addition to


using nuclear weapons to deter a Soviet invasion of Europe, American nuclear threats have also been very contingent, a characteristic of compellent use.

Throughout the 1950's, conventional defence of Western Europe proved too expensive, and United States' strategy came to rely on nuclear first use to prevent Soviet expansion. In addition to their role as a substitute for conventional forces, nuclear threats were used for general intimidation and for specific compellence.

3. The Correlation of Nuclear Forces

Until the Soviet Union detonated its first nuclear device, the United States was slow to develop its nuclear strike capability. By mid 1947 the United States had sufficient material for only 29 bombs, and their use required several days' work by the two bomb assembly teams at the Atomic Energy Commission, the agency that controlled all nuclear energy, including the early bombs.\(^\text{48}\) Only 27 B-29 aircraft were modified to carry nuclear weapons, and they were never deployed to Europe. During the 1948 Berlin crisis when the United States deployed other B-29 bombers to Britain, Stalin probably knew that no real nuclear threat was being made.\(^\text{49}\) Once the Soviets had clearly entered the nuclear arms race, however, Truman agreed to step up American nuclear weapons production and to develop thermonuclear weapons to keep ahead of the Soviet Union.\(^\text{50}\)

By 1950, the United States possessed an "overwhelming superiority" in strategic weapons, and by 1954, when Dulles declared his massive


\(^{49}\) Ibid., pp. 125-128.

retaliation strategy, the American advantage was even greater.\textsuperscript{51} Less capable Soviet bombers faced long range one-way missions while more numerous United States bombers could forward deploy and had global range with air-to-air refueling.\textsuperscript{52} This situation lasted until 1957 when, with the launching of Sputnik, the Soviet Union threatened to develop ICBM's that could reach the United States in 30 minutes. The shock served to spur the American missile programmes, which had experienced significant cultural resistance in the early 1950's when compared with the bomber.\textsuperscript{53} For the first time in its history the United States faced a significant nuclear threat, but it was to take several years for the Soviet military scientists to deploy effective ICBM's in significant quantities. By then the Americans were already deploying their own ICBM's.

The American efforts to outproduce and keep ahead of Soviet nuclear capable strategic forces implied a reluctance to rely on deterrence. Not only did the United States pursue military nuclear superiority, but they projected landing the first decisive blows in order to preclude Soviet retaliation.

4. The Implication of Massive Retaliation

The United States military adapted quickly to nuclear weapons, but maintained, for the most part, a strategy that followed logically from the American victory in World War Two. The United States intended to deter communist expansion by threatening the transgressor with near total


\textsuperscript{52} Ibid., p. 14.

nuclear destruction when that nation could not destroy the United States. A lasting result of Eisenhower's "new look" was a strategic orientation around "a hope that nuclear weapons could be employed in such a way as to particularly favour the West."\(^\text{54}\)

By including as primary targets any potential means of Soviet nuclear response, this strategy implied a degree of war fighting. At the same time that massive retaliation was adopted as official policy, the American strategic community faced the spectre of limited war, noting that in practice, no war has been fought without some restraints.\(^\text{55}\) Advocates of limited war proposed that if the means of deterrence were more "proportionate to the objectives at stake," it would "maximize the opportunities for effective use of military force as a rational instrument of policy."\(^\text{56}\) In this period tactical nuclear weapons were introduced in Europe to deter a Soviet invasion and for use in the event of war. If war were to erupt, the United States clearly was planning to win and roll back communism wherever possible. The United States was prepared to interpret any Soviet move outside of its borders as the cause of war, and thus massive retaliation as a strategy to support the policy of containment appeared directed at curbing or changing what was perceived to be an expansionist Soviet policy. Massive retaliation contained more than just "elements of compellence"; it threatened nuclear intimidation generated by

\(^{54}\) Lawrence Freedman, *The Evolution of Nuclear Strategy* (London: Macmillan Press, 1982), p. 84. This point is well made by Freedman.


threats of massive first use to achieve deterrence.  

III. THE ERA OF FLEXIBLE RESPONSE

As long as the United States maintained military superiority or at least nuclear superiority, the policy of massive retaliation could be supported. But increasingly senior American officials questioned the utility of such massive nuclear use in deterring relatively minor conventional military operations, and when the Soviets began to develop the ability to severely damage the United States, the concept of massive retaliation began to appear suicidal. The vulnerability of both countries to ICBM attack with nuclear warheads made assured destruction an emerging fact.

The election of Kennedy in 1960 provided the opportunity for the United States to review these important strategic concerns. The new administration soon decided on a new strategy and on 16 June, 1962, the Secretary of Defence, Robert McNamara, made this new policy public.

The United States has come to the conclusion that to the extent feasible, basic military strategy in a possible general nuclear war should be approached in much the same way that more conventional military operations have been regarded in the past. That is to say, principal military objectives, in the event of a nuclear war stemming from a major attack on the Alliance, should be the destruction of the enemy’s military forces, not of his civilian population.

This section will focus briefly on the historical period where the superpowers reached near parity in strategic nuclear arms. The key elements of United States nuclear strategy will be analyzed from the

57 The citation can be found in William H. Kincaide, "Arms Control or Arms Coercion," Foreign Policy 62 (Spring 1986), p. 28. See also Henry Kissinger, Nuclear Weapons and Foreign Policy (New York: W.W. Norton and Company, 1957), p. 200.

paradigmatic perspective, examining the strategic intentions, the use of nuclear threats and the correlation of nuclear forces in that order.

1. The Strategic Intentions

For most of the period in question, about 1960-1970, the United States appeared to accept the inevitability of the Soviet accretion of nuclear power. This period included what may have been the zenith of American strategic thought where complex nuclear deterrence concepts were elaborated and stability concerns seemed paramount. To much of the strategic community, the reality of parity spelled the decline of nuclear weapons as a significant supporting element to foreign policy. Notwithstanding some rhetoric to the contrary, the utility of nuclear weapons appeared officially limited to strategic deterrence. What needs to be further analyzed is exactly what was intended by "strategic deterrence."

For many observers, major war was now simply too dangerous to threaten with any degree of credibility, but they also noted with concern that military officers still aspired to seek victory for its own sake. President Kennedy echoed these concerns and feared that the largest risk of nuclear war was from miscalculation, madness or accident. Robert McNamara, who had initially strongly supported counterforce developments,


60 Bernard Brodie, War and Politics, p. 426 and pp. 490-493. See also Morton H. Halperin, Contemporary Military Strategy, p. 23. USAF officers in particular stressed the need to win a nuclear war.

recanted his position somewhat. In part, this was due to the relatively unlimited financial and equipment resources called up by counterforce requirements, but also he deplored the "ineradicable tendency" to view security as being exclusively a military problem that could be solved exclusively with weapons. Even Henry Kissinger changed his earlier views about the utility of nuclear weapons to meet the spectrum of possible challenges, when he noted the increasing pressures against using any nuclear weapons and the resultant psychological burden placed on Western political leaders.

In the 1960's the United States also shifted to a somewhat more defensive stance with respect to sustaining the global status quo. The dilemma of assured destruction initially convinced most analysts that no major challenge to the existing status quo is likely, unless and until someone develops a winning strategy that can, in his opinion, overcome the dilemma.

Thus for the United States, a strategy that sought to maintain the status quo would require fewer resources than a strategy which could only respond to a small "fait accompli" by threatening to create a significant change in the status quo. One consequence of this new strategic thinking was

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that in the Vietnam conflict, the United States restrained itself to an attempt to maintain the existing political conditions and never intended to achieve an overall victory. Not everyone, however, was convinced that a purely defensive strategy was in order. Since the Soviet Union appeared to be waging political warfare against the United States, some observers felt that what was needed was a comparable offensive strategy. The difficulty was that an American strategic posture based on assured destruction and deterrence "spells failure of such a counter-offensive from the start." 

In terms of the fundamental political values at stake, the United States also demonstrated a degree of ambivalence. To a degree there was a shift in strategic values in that the American people, partly out of fatigue with the Vietnam War, began to feel that maintaining a strategic military advantage as compared with settling for parity was not worth the additional costs. On the other hand the strategy of controlled response, announced by McNamara in 1962, extended the notion of bargaining into the period after the inception of general nuclear war. This concept implied acceptance of the need for some advantage to conduct this bargaining, and to a large degree the strategy of containment had already given the United States an important strategic edge. President Kennedy, according to one observer, set out to convince the Soviet Union "that it

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can comfortably and honorably live within a balance of power which is decidedly in our favour."

As the United States introduced the strategy that became known as flexible response, considerable divergences of strategic thinking began to emerge. The cost of maintaining the nuclear superiority desired by military officers was simply no longer politically supportable. The reality of assured destruction degraded the perceived utility of nuclear weapons at least among political and academic elites. In terms of attitudes towards the status quo and towards political values some ambivalence is evident. Clearly, a significant shift towards the deterrent paradigm took place this period, but strong elements of compellent thought remained imbedded in the prevalent concepts of "strategic deterrence."

2. The Threat of Force

The American use of nuclear threats from 1960 to 1970 tended to run much greater risks as the Soviets gradually reached parity. One could plausibly expect a major decrease in the use of military threats, but this did not appear to be the case. The number of nuclear related threats remained fairly constant, but the quality of these threats did change significantly.

One major impact of a controlled response strategy was a greater influence of counterforce targeting ideas. Deterrence of the Soviet Union remained the primary objective of nuclear threats, and the action policy to implement this strategy was contained in the Single Integrated Operation Plan (SIOP). The development of this plan was a "really new


72 Barry Blechman and Stephen S. Kaplan, Force Without War, p. 47.
departure" in United States military planning because it finally placed some restrictions on Strategic Air Command (SAC) which had planned all previous nuclear targeting. This targeting plan produced in the early 1960's remained essentially unchanged in the early 1970's, when Nixon and Kissinger raised concerns that it limited the United States to only one massive strategic course of action. Both counterforce and countervalue targets were included in the early SIOP; the counterforce targets, however, were those that required increased accuracy and more warheads. Planning for assured destruction tasks was directly linked to a target baseline based on where the principle of diminishing returns caused the effectiveness curve to level off. According to McNamara, by 1968 the United States had greatly exceeded its stated requirement for assured destruction of the Soviet Union that required only 340-440 missiles. Pressure for far greater numbers of missiles came from the military who wanted in excess of 2,400 Minuteman missiles to cover a growing military

73 George B. Kistiakowsky, A Scientist at the White House (London: Harvard University Press, 1976), pp. 399-400. This was in spite of the United States Navy's desire to control its own targeting for Polaris.


A key element of military efforts to procure greater numbers of nuclear systems than required for assured destruction was to achieve operational flexibility. To deter provocation and encourage "acceptable" behaviour on the part of the Soviet Union required a capability to be able to fight and survive a war to the extent possible. McNamara tried for seven years to get more flexible nuclear options, but was stalled by a bureaucracy that feared more flexible options would require more new forces. Furthermore, in 1962 it became evident that the United States had such an advantage in flexibility and counterforce targeting that it appeared the Soviet technological capability for flexibility would forever remain inferior. But to the degree that operational targeting flexibility existed in United States plans, it existed outside the SIOP and had been prepared on the initiative of the Joint Chief of Staff and major military commanders. Changes to American nuclear doctrine were evolutionary and while assured destruction remained its essential core,

77 A.G.B. Metcalf, "The Minuteman Vulnerability Myth and the MX," Strategic Review 11 (Spring 1983), p. 7, noted that the original Minuteman programme sought 3000 missiles. See also Alain C. Enthoven and K. Wayne Smith, How Much is Enough?, p. 195. In the USAF, General Curtis LeMay wanted 2,400 while General Thomas Power sought 10,000 Minuteman missiles. The USN, however, accepted finite deterrence at lower numbers of missiles.


81 Henry S. Rowen, "The Evolution of Strategic Nuclear Doctrine," in Lawrence Martin, ed., Strategic Thought in the Nuclear Age, p. 151. This article is an excellent review of its subject.
that core was a small percentage of the nuclear target array. Although
the assured destruction mission had top priority, it did not necessarily
mean that cities would be attacked first or even given the most weight of
effort. It meant only that confidence in the ability to attack them must
remain high in all conditions.82

During this period the actual use of threats displayed an American
propensity to view them as being useful in "guiding" Soviet actions.
During the Berlin crisis in 1961, the United States deliberately communi-
cated to the Soviet Union the American awareness of the Soviet strategic
weakness to curb Khrushchev's bellicose behaviour.83 The inability or the
unwillingness of the United States to make use of or to press its military
advantage may possibly have contributed to Khrushchev's decision to place
missiles in Cuba and the resulting October 1962 crisis. The American
deliberate threat of nuclear escalation during the Cuban missile crisis
backed up conventional superiority in the Caribbean region and helped
convince Soviet leaders to back down from the threat of war.84 This

82 Ibid., p. 133.

83 Richard Ned Lebow, "Clear and Future Danger: Managing Relations
with the Soviet Union in the 1980's," in Robert O'Neill and D.M. Horner,
eds., New Directions in Strategic Thinking (London: George Allen and
Unwin, 1981), p. 224. This is an excellent book. See also Fred Kaplan,
The Wizards of Armageddon (New York: Simon and Schuster, 1983), pp. 291-
306. The U.S.S.R. had only 4 operational SS-6 missiles. This information
was only available in 1961 from the Discoverer satellite programme.

84 The danger of nuclear war during this crisis was real, greater
than either leader could have wished. See McGeorge Bundy, Danger and
had two thousand nuclear bombers and 200 ICBM's operational while the
Soviet Union had 135 bombers and only a few ICBM's. See Philip Bobbitt,
Democracy and Deterrence: The History and Future of Nuclear Strategy
Equivalence: The Political and Military Meaning of the Nuclear Balance,"
in Samuel Huntington, ed., The Strategic Imperative: New Policies for
American Security (Cambridge, Massachusetts: Ballinger Publishing Company,
1982), p. 115. Betts feels the nuclear threat made the difference. For a
contrary view see Maxwell Taylor, Swords and Ploughshares (New York: W.W.
nuclear global alert was very specific and was directly linked to the strategic balance, for Soviet intermediate range missiles in Cuba would place much of the United States under the threat of direct nuclear attack. The nuclear alert during the Cuban missile crisis was a clear case of compellence where a specific Soviet action was demanded, but other threats also carried implications beyond deterrence, for the United States appeared to seek modification of Soviet behaviour.

The American use of threats has displayed persistent tendencies to counterforce targeting, flexible use and contingency. While political elites appeared to accept assured destruction logic, the American military, the USAF in particular, have clung to the view of nuclear weapons as instruments of war fighting not simply agents of deterrence.

3. The Correlation of Nuclear Forces

During this period both superpowers built impressive strategic nuclear arsenals. This section will focus briefly on the relative quality of strategic nuclear forces, the overall balance of numbers and the expected combat utility of these systems. A more detailed quantitative analysis will follow in chapter seven.

In general, the United States favoured having fewer high quality nuclear delivery systems than having larger numbers of less capable systems. The example of the Multiple Independently-targetable Re-entry Vehicle (MIRV) demonstrates the American emphasis on technological solutions. No operational requirement predated MIRV; it was a classic example of technology shaping a strategic decision.85 As funds were cut and the numbers of Minutemen were reduced, the military bureaucracy was

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quick to accept this solution as it would allow each missile to attack a
number of different targets, sharply increasing their counterforce
potential. The success of MIRV demonstrates that the military had a
significant influence on the bureaucratic milieu in Washington. More
importantly, MIRV passed the stringent test of McNamara’s cost
effectiveness analysis, and it provided the United States the
 technological means to deliver more nuclear firepower than the Soviet
Union, even though the United States had fewer missiles.

By 1970, the United States had allowed the Soviet Union to deploy a
greater number of ICBM’s without attempting to maintain an exact numerical
balance. This was a significant departure from 1963 when McNamara
declared that "the damage-limiting capability of our numerically superior
forces is, I believe, well worth its incremental cost." The concept of
ballistic missile defence and MIRV’s reinforced this damage-limiting
momentum because greater numbers of Soviet missiles could be threatened
while even a partially effective defence could further blunt the
retaliation. Soviet determination to reach parity and high costs
precluded the United States from maintaining the degree of superiority

86 Scilla McLean, How Nuclear Weapons Decisions are Made (London:
Macmillan Press, 1986), p. 79. See also Alain Enthoven’s testimony before
the Hearings Before the Senate Preparedness Investigating Subcommittee of
the Committee on the Armed Services, 1968 (Washington, D.C.: USGPO, 1968),
pp. 140-148.

87 Graham T. Allison and Morton H. Halperin, "Bureaucratic Politics:
A Paradigm and Some Policy Implications," in Raymond Tanter and Richard H.
Ullman, eds., Theory and Policy in International Relations (Princeton, New

88 James M. Roherty, Decisions of Robert S. McNamara: A Study of
the Role of the Secretary of Defence (Coral Gables, Florida: University of

89 Remarks to the Economic Club of New York 18 November, 1963,
experienced at the start of this period. Nevertheless, with MIRVs, only 220 Minuteman 3 ICBM's could destroy 21% of the Soviet population from immediate effects alone and 72% of the Soviet industry. Thus an arsenal of over 1000 ICBM's plus hundreds of bombers and hundreds of submarine launched ballistic missiles (SLBMs) constituted a nuclear force far greater than that required for countervalue assured destruction tasks. To enhance survival of strategic forces, ICBM silos were also hardened to withstand anything but the most accurate attacks.

The United States strategic community had become increasingly accustomed to assessing the combat utility of nuclear weapons. The concept of launching a nuclear attack "before the aggressor has hit either us or our allies," was described in Congress as the only reliable form of deterrence; this is pure damage limitation. In 1961 SAC authorized the first withholding of ICBM's from the initial launches, an introduction of war fighting techniques. One key adviser to Kennedy declared that he believed "in the importance of maintaining superiority over the Communists in every element of our military power." Others remained convinced of the necessity to maintain superiority in areas that matter, for if the United States could maintain a


sufficient margin of superiority without giving a large stimulus to the arms race, it may hope to deter not only war but also the dangerous employment of Soviet strategic power for political ends.94

Many elements in the United States strategic community were not eager to accept complete parity with the Soviet Union. The political détente that evolved over the late 1960's and early 1970's helped those who believed in stability to convince many of the American political elite that parity would in the final analysis help the United States by encouraging the Soviet Union to adopt less confrontational policies. Thus at the beginning of this period when the United States had unequivocal nuclear superiority, significant compellent characteristics were evident, but as parity was achieved and deterrence apparently became the dominant paradigm in United States declaratory strategy, significant traces of compellent thinking still remained within the American strategic community.

4. The Implication of Flexible Response

The first part of this period resembled the era of massive retaliation because much of the United States political elite felt that some useful degree of nuclear superiority would be achievable. By the end of this period, however, these views seemed illusory and parity seemed to be the apparent objective.

Different students have drawn vastly different implications from this shift. Some observers suggested that the United States and the Soviet Union drew different lessons from the Cuban Crisis, the Soviets drawing a longer term view to build up their military power while the United States

believed détente and Soviet growth to nuclear parity would prevent a similar crisis in the future. A different view was that the present United States superiority was indispensible to the preservation of peace. A 1965 study of eight cases concluded that United States strategic forces played a part in conducting fear of unwanted consequences in the minds of Soviet leaders and thus influenced Soviet policy. Those who held this view tended to see alarm in the trends in relative military strength.

...the United States is moving toward a posture of minimum deterrence in which we could be conceding to the Soviet Union the potential for a military and political victory if deterrence failed.

The American failure in Vietnam seemed to cast doubts on the utility of force, but this interpretation ignored the successful North Vietnamese use of force. Nevertheless a belief in a declining utility of force, the possibility of greater cooperation with the Soviet Union, Soviet determination to reach parity, and the high costs of maintaining nuclear superiority combined to allow proximate superpower parity to come about. The United States began to reduce its expectations. It dropped the criteria of not allowing the Soviets to gain the ability to cause greater damage to the United States than the United States could inflict on the

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97 Ibid., pp. 6-7.

98 Paul Nitze, "Assuring Strategic Stability in an Era of Detente," Foreign Affairs 54 (January 1976), p. 227. This is an important article that helped coalesce and shape right wing opinion.
Soviet Union. In a 1971 report, Melvin Laird expounded a strategy of "realistic" deterrence, simply a continuation of the United States retreat from massive retaliation.

During this period, the United States officially shifted towards a greater emphasis on deterrence, but strong indications of compellent thinking remained among the strategic elite. In particular, in the sense that the USAF retained its war fighting orientation and MIRVed systems provided certain advantages even with fewer missiles, the compellent model reappears and is useful as an alternative means of explaining some aspects of United States policy during this period.

IV. THE SEARCH FOR ADVANTAGE 1970-1986

In the most recent period of American nuclear strategy, a reasonably consistent pattern emerges as various American administrations attempt to recover, at least to some degree, the ability to restrain or to modify Soviet international behaviour.

Some people in Washington have a nostalgia for the early days of the Cold War, when the U.S. had strategic predominance, and nuclear massive retaliation was a plausible strategic posture.

In the aftermath of the American failure to achieve its goals in Vietnam, the 1973 oil embargo by Arab states served to intensify global strategic competition. Increasingly, throughout this period, the United States re-emphasized the view that the Soviet Union was a formidable rival with


100 Albert Legault and George Lindsey, The Dynamics of the Nuclear Balance, p. 164.

101 Bruce Russett, The Prisoners of Insecurity: Nuclear Deterrence, the Arms Race and Arms Control, p. 41.
global ambitions. Inevitably, nuclear strategy reflected these thoughts, and American nuclear doctrine evolved towards greater complexity so as not to allow the Soviet Union any potential advantage. This section will briefly examine recent American nuclear strategy to determine which paradigmatic approach more closely reflects United States policy.

1. **The Strategic Intentions**

Shortly after his election as President, Nixon began to question the American nuclear strategy as it had evolved in the 1960's. The new administration sought to change nuclear strategy and "made it clear that it would not be bound by earlier theories of deterrence." The changes in American nuclear strategy initiated by Nixon were important because they were not only continued but were further developed by subsequent administrations. At the root of these changes lay different expectations about the utility of nuclear weapons, different views with respect to the status quo and slightly different values from that which existed in the 1960's.

Nixon was appalled by the prospect that in response to any form of nuclear attack, a President could be left with a single option of ordering the mass destruction of enemy civilians "in face of the certainty that it would be followed by the mass slaughter of Americans." In the early 1970's, Nixon charged Kissinger "to come up with additional nuclear war

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options." This study led directly to National Security Decision Memorandum 242, signed by Nixon in early 1974. These "new options" reflected a fundamental desire to change the United States declaratory policy as well as its nuclear action policy. The United States nuclear strategy as it emerged in what became known as Schlesinger's limited nuclear options assumed that the Soviet Union could not destroy the United States reserve strategic forces, and thus the traditional military values of using nuclear weapons to achieve sensible objectives should deterrence fail, were elevated to greater importance.

The Carter and Reagan administrations steadily pursued this strategic drift initiated by Nixon. Carter's Presidential Directive 59 emphasized a countervailing strategy to preclude any Soviet advantage, and Reagan's National Security Decision Document 13 went even further, proclaiming the American strategic goal is "to prevail in a protracted nuclear war" and to "restore peace on favourable terms." Notwithstanding this strategic objective, many observers felt that the United States still needed to develop an articulate, coherent and credible strategy of how to apply this force to promote the attainment of policy objectives.


Increased attention to achieving favourable outcomes if deterrence failed resulted in a reinforced belief in the utility of nuclear weapons to support American overall objectives. Assured destruction was not abandoned, but it was not enough; however measured, it would not lead to assured crisis stability in the face of a Soviet strategic nuclear advantage. The classical view that the best way to deter war is to prepare for war was gaining momentum, particularly among those that were familiar with Soviet nuclear strategy. United States strategic policy in this period moved clearly towards a war fighting orientation that reflected a great deal more than assured destruction thinking.

Another indication of paradigmatic intentions is the degree of commitment to the status quo. According to Weinberger, the United States must "contain Soviet aggression or subversion long enough for the internal contradictions of Soviet communism to emerge." But the policy of the Reagan administration took a more assertive view of containment. It implied a need to have a more explicit strategy for competing with the Soviet Union and even suggested that Soviet withdrawals could be induced


by an appropriate American strategy. Not only was there a belief in the Reagan administration that perceptions of relative military superiority were very important, but the tendency to link American economic policy to foreign policy vis-à-vis the Soviet Union implied a strong mercantilist orientation.

American perceptions that nuclear use could be threatened to impose a change in the international system appeared to stem primarily from the belief that the Soviet Union "might entertain the illusion that nuclear war could be an option." American nuclear policy makers were far more concerned with Soviet strategy than they were in previous periods, and one result was a subtle but significant change in how the United States leadership viewed the ability and utility of nuclear weapons to alter the status quo when desired.

These notions questioned the values that underlay American strategic intentions. Certainly from the Soviet perspective, it appeared that the United States was not prepared to accept the Soviet Union as a status equal. This point was emphasized by Reagan when he stated that the Soviet leaders were "the focus of evil in the modern world." Soviet analysts

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also tended to view American limited nuclear options as
an attempt to utilize and maximize those particular features
of the U.S. strategic offensive forces in which the U.S.
considers itself ahead of the Soviet Union.116

Although there was some Soviet recognition of the American acceptance of
the principle of assured destruction, the Soviet leaders were struck by
what they perceived as a "constant search for ways of using strategic
power in a more active and offensive manner."117

The American objectives in recent strategic formulations appear to
assume the utility of nuclear weapons, to question the validity of the
Soviet system and not accept that the Soviet Union has an equivalent moral
right to compete with the West. Although the United States may have been
prepared on the surface to accept "essential equivalence" in nuclear
systems, it did not appear prepared to accept the Soviet political or
economic system as a status equal.

2. The Threat of Force

Although military threats were about as frequent as in other periods,
from 1970 to 1986 there was only one major direct American threat to use
nuclear force. American resort to military force did not occur where
conflict with Soviet forces appeared probable, and American strategy to
counter possible Soviet expansion relied instead on allied states to
defend themselves. Where this strategy appeared insufficient, the Reagan
administration threatened horizontal escalation rather than nuclear

116 Henry Trofimenko, Changing Attitudes Toward Deterrence (Los
Angeles, California: Centre for International and Strategic Affairs,

117 M.A. Mil'shtein as cited in David Holloway, "Military Power and
footnote 29. This is a very good article.
escalation. Some American "hawks" expressed concerns that unless American nuclear forces were significantly improved, there would be a time window in the late 1980's where the Soviets would have a "perceivable and usable strategic superiority." Others felt that major efforts were needed to improve the American nuclear posture "to make the Russians insecure in order to coerce them and reduce their influence." This section will assess the United States' threats to use nuclear weapons, 1970-1986.

The only overt nuclear threat in this time frame was the global nuclear alert declared as a response to Soviet preparations to intervene in the October 1973 war between Israel on the one hand and Egypt and Syria on the other. The aim of this threat appears to have been more than simply to deter the Soviet threat, as it also carried far broader implications that embittered Moscow. In fact, American policy during those years was being conducted to reduce or eliminate where possible, Soviet influence in the Middle East.

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122 Henry Kissinger, Years of Upheaval (Boston, Massachusetts: Little, Brown and Company, 1982), p. 574. This theme did not appear in official statements at the time; see Henry Kissinger's news conference of October 25, Department of State Bulletin vol. 69 (November 12, 1973), pp. 585-94.
A second less obvious threat resulted from the 1979 Soviet invasion of Afghanistan, a step that was particularly galling to Carter and his emphasis on genuine self determination.\textsuperscript{123} Although Carter had warned Brezhnev at a summit conference not to intervene in Afghanistan, the United States was in no position to threaten the use of force in the face of Soviet local superiority. Nevertheless Carter used the "hotline" to communicate to the Soviet leaders that unless they drew back from and restored Afghanistan as a neutral non-aligned state, they were jeopardizing "the course of United States-Soviet relations throughout the world."\textsuperscript{124} It is worth noting that the American demands included the restoration of Afghanistan to a status that had not obtained since prior to 1978. Although it was not articulated, the implication in each threat was that the United States was thinking in terms of compellence as well as deterrence.

The degree of counterforce and war fighting orientation to nuclear targeting systems is another paradigmatic indicator. While some claim that the practical difference between counterforce and countervalue targeting is slight, it is also true that all United States nuclear strategies have addressed essentially the same targets - the only difference is the priority of effort.\textsuperscript{125} Counterforce targeting

\textsuperscript{123} President Carter's Address at Commencement Exercises, Annapolis, June 7, \textit{Weekly Compilation of Presidential Documents}, vol. 14 (June 12, 1978), p. 1053.


requirements have continuously been a major part of United States strategic planning, especially among USAF officers.\textsuperscript{126} As the Soviets had achieved parity, it was now clear to the United States that having an assured capability to destroy Soviet cities no longer provided effective deterrence. It was now necessary to be able to destroy the Soviet Union as a nation, including its war recovery potential.\textsuperscript{127} Damage limiting and hard target kill capabilities appeared necessary to allow the United States the credibility to use these threats for political advantage.

Increasingly, the United States nuclear strategy had extended its logic to include limited war notions of war fighting. One purpose was to obtain a post war government in the Soviet Union more compatible with Western values, and the United States now appeared willing to attack the Soviet top command and control apparatus before it could disperse into its hardened shelters.\textsuperscript{128} This strategy was a reversal from that of the 1960's and implied that retaliation alone was not enough and that protracted war was a possibility.\textsuperscript{129} The Reagan initiatives to strengthen


\textsuperscript{129} Lori Esposito and James A. Schear, \textit{The Command and Control of Nuclear Weapons} (Queenston, Maryland: Aspen Institute for Humanistic Studies, 1985), p. 23. In the 1960's the U.S. strategy was to spare Moscow to enable negotiation to take place.
strategic nuclear forces reflected a desire for greater flexibility and a clear emphasis on sophisticated notions of nuclear war fighting to prevail if deterrence failed.\textsuperscript{130} According to the Secretary of Defence, such a capability was not something separate from deterrence, but was a necessary part of it.\textsuperscript{131}

The concept of fighting the Soviet Union with nuclear weapons placed considerable emphasis on nuclear targeting, and in 1978, Carter initiated a series of studies to determine the optimum targeting strategy. One of these studies suggested that United States nuclear targeting strategy could in part contribute to the breaking up of the Soviet "empire."\textsuperscript{132} These notions were based on ethnic nationalism literature\textsuperscript{133} as well as the fact that most Soviet ICBM's were already located within the Russian ethnic area of the Soviet Union.\textsuperscript{134}

Soviet vulnerability to the breakup of its "empire" in time of war fueled American consideration of the use of ethnic targeting to gain some leverage over the Soviet Union. What contributed to greater awareness of

\begin{itemize}
\item \textsuperscript{134} Gary L. Guertner, "Strategic Vulnerability of a Multinational State: Deterring the Soviet Union," \textit{Political Science Quarterly} 96 (Summer 1981), pp. 211-213.
\end{itemize}
these potential vulnerabilities was the Soviet demographic trend; the Russian birth rate was declining while that of other nationalities, particularly Muslim, was increasing.\textsuperscript{135} Among the Russian ethnic group, nationalism was becoming a stronger force than ideology, and as a result ethnic nationalism was growing faster than integration in the Soviet Union.\textsuperscript{136} Notwithstanding considerable efforts on the part of Soviet elites to Russify their important institutions of power, the growing national aspirations of minorities in the Soviet Union may eventually result in irresistible pressures to create nation states.\textsuperscript{137} These ethnic trends have been held to be a fundamental weak link in the Soviet Union that could potentially be exploited by the United States.\textsuperscript{138} It is the only problem that has the potential to bring down the Soviet Union from

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within, and in time of war these tensions could explode.\(^{139}\)

What gave the concept of ethnic targeting great appeal was its potential for leverage over Soviet policy. Because these ethnic conflicts are virtually systemic and long term in nature,\(^{140}\) most Western observers have concluded that ethnic related conflict could increase in intensity.\(^{141}\) By threatening Russians and not non-Russians, incentives are created for greater resistance to Russian rule, and Soviet leadership could be kept on a "short leash."\(^{142}\) Thus, an American targeting strategy could threaten what the Soviet leaders value most, their power. The implication of threats of this nature more closely reflect compellence than deterrence and relate conceptually to the early notions of containment. In the final analysis, even though ethnic targeting was apparently rejected as official strategy, its consideration may have influenced the United States to target Soviet command and control facilities.\(^{143}\) By threatening to destroy the Soviet leadership, many of the aims of ethnic targeting have been preserved without raising moral

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questions.

The use of threats in this period had gained in sophistication. Nuclear targeting, damage limiting and war fighting concepts demonstrate continued appearance of compellent type of thinking in United States nuclear strategy. Although deterrence remained the official rationale for nuclear threats, the nature of threats in the 1970's and 1980's has long surpassed that required for "pure" deterrence.

3. The Correlation of Nuclear Forces

During the 1970-1986 period, the United States has gradually come to view the correlation of nuclear forces as an important variable in strategic planning. The greater the emphasis on nuclear war fighting, the more the importance of the relative ability of nuclear forces in the respective strategies of the superpowers.

By 1985, the United States had fewer delivery systems than the Soviet Union, but still had a hard target kill advantage if slower cruise missiles were counted. The quantitative measurement of relative combat utility will be dealt with in a later chapter, but in terms of numerical balance the United States had rough equivalence to the Soviet Union. Total numbers of warheads were higher than ever, more than ten times the number available in 1962. In spite of this huge number, in 1977 the Joint Chiefs of Staff warned President Carter that the Soviet Union had achieved a "significant nuclear weapons advantage." Yet ten years after that dire warning, the United States faced a relatively similar strategic correlation of nuclear forces, and even after a surprise attack, could still retain one-third of its bombers, forty percent of its SLEM's and

What the military really wanted was combat capability, "the essence of deterrence." This combat capability provided the military justification for prompt hard target kill warheads. Increased accuracies and increased yields were required to destroy hardened silos and command and control facilities. According to the Carter administration, the hard target capability of the MX was "a major step in strengthening deterrence."

The Reagan administration continued to develop greater prompt hard target kill capabilities, but also introduced the Strategic Defence Initiative (SDI). SDI is an attempt to coordinate and accelerate research on ballistic missile defence systems. The combination of first strike capable offensive systems and ballistic missile defence epitomizes the logic of damage limitation by providing an excellent war fighting capability that could reduce the Soviet ability to threaten or intimidate. Another aspect of SDI, however, is the cost to the Soviets to follow suit, and some believe that it was designed to create serious pressures on the already strained Soviet economy.

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148 William Van Cleave, Fortress USSR: The Soviet Defence Initiative and the U.S. Strategic Defence Response (Stanford, California: Hoover Institution Press, 1986), see pp. 39-41. It is worth noting that it does so by increasing the American capability to do the same. This point is deliberately overlooked in this slanted piece.
The financial cost to both sides of a virtually open ended arms race in space would be huge and it is thought the USSR would be less able to afford it than the USA.\textsuperscript{149}

Although the capability of the United States strategic forces was at an all time high level, so was the Soviet capability. Each superpower appeared to be interested in survivable systems that could withstand the rigours of combat. In the United States, various basing modes for MX were discussed, mobile ICBM's were being developed, and air launched cruise missiles helped extend the accurate range of bombers. In spite of these developments, the United States control of its nuclear forces was so vulnerable that one analyst concluded with virtual certainty that thousands of megatons of explosive power could be delivered to the United States before authorization to retaliate could be passed to the armed forces.\textsuperscript{150} Due to limitations in control means, much of the discrimination built into the United States nuclear war plans was probably significant only to American target planners.\textsuperscript{151} While great improvements in combat utility were made in this period, significant deficiencies remained.

The United States nuclear strategy appeared designed to compete with the strategy of the Soviet Union. The numbers of nuclear systems, the hard target kill capability and damage limiting orientation tended to


support more than "high quality" deterrence. The United States military strategy appeared intended to establish military advantages, indicating a reluctance to accept Soviet parity. The analysis of the correlation of nuclear forces shows strong evidence of compellent thought.

4. The Implications of the Search for Advantage

Recent American strategic developments have emphasized war fighting capabilities to a higher degree than ever, and the coming to power of the political right in the United States only reinforced this tendency. The Reagan administration began its first term with a strong belief that only strong strategic forces could prevent the "Finlandization of America." The fact that questions were raised in public by a senior Defence Department official as to whether the world could continue to exist half slave and half free implied a propensity to extirpate the "evil empire." Notwithstanding the rhetoric, Reagan's initial budgets made very few changes to the military plans, and a trend of increased military spending can be traced to 1971. The swing to war fighting doctrine is not explained simply by the Reagan administration and its right wing


155 This official was Noel Koch, overseer of the U.S. Special Operation Force, cited in "Soviet Geopolitical Momentum: Myth or Menace?" The Defence Monitor 15 (Number 5, 1986), p. 9.

orientation, for this trend had been reflected in United States strategic considerations throughout this whole period.

The Soviet reaction to Schlesinger's limited nuclear options and subsequent American attempts to construct usable nuclear plans had been intense. The Soviet Union accused the United States of seeking to make their deterrence of the Soviet Union more efficient than Soviet deterrence of the United States. The Soviet Union appeared convinced that the United States fully intended to conduct its international affairs from a position of strength.

What the United States appeared to desire was to regain at least in part the powerful strategic position that it held prior to the Soviet achievement of parity. The search for whatever leverage technology could bring was an attempt to recapture an important element of strategic advantage. The analysis of strategic intentions indicates that the United States was reluctant to accept the Soviet Union as a status equal and therefore sought a strategy that would reduce Soviet influence. The analysis of nuclear threats revealed a serious flirtation with ethnic targeting that implied a high degree of motivation to induce major change in Soviet affairs through limited nuclear strikes. The correlation of nuclear forces analysis demonstrates a strong commitment to damage limitation in the form of fast and accurate hard target kill as well as ballistic missile defence capability.


158 Whence the Threat to Peace (Moscow: Military Publishing House, 1987), p. 3.
All of these elements in United States nuclear strategy have been officially justified in terms of deterrence, but there is no doubt that they contribute to compellence as well as deterrence. It is clear that recent United States nuclear strategy can be more fully explained by the logic of the compellent paradigm.

V. CONCLUSIONS

When the concept of nuclear deterrence became official policy in the United States, the belief grew that massive strategic bombing was the optimum means to avoid wars, but conceptual difficulties immediately arose. American strategic culture has always demonstrated a complex ambivalence toward nuclear weapons; for some they were simply too powerful to use, and for others they represented a challenge that science can ultimately solve. For the latter the answers lay in complex methodologies that sprang from operational analysis, game theory and technically improved systems. While the former have tended to reflect the modes of thought found in the deterrent paradigm, the latter have become immersed in the logic of the compellent model.

To a degree, declaratory American nuclear strategy appears to resolve the tensions inherent in these different points of view by holding the deterrence of war to be its principle objective. The combination of the policies of massive retaliation and containment, however, held significant elements that transcended deterrence. During this period the United States held a significant nuclear superiority and attempted to threaten massive first use not only to prevent a potential Soviet conventional


160 For a good review of the logic of deterrence, see Frank C. Zagare, "Rationality and Deterrence," *World Politics* 42 (January 1990).
invasion of Europe, but also to modify Soviet international behaviour.

As the Soviet Union developed its nuclear capable systems, however, for the first time in American history the United States faced a continuing threat that could result in its destruction. The outcome was that the United States modified its strategy to make its extended deterrent more credible by introducing the notion of graduated deterrence. Strong tendencies to counterforce targeting surfaced but assured destruction of the Soviet Union remained the primary aim of United States nuclear strategy. The dominance of deterrent thinking in the late 1960's contributed to a heavy focus on stability and mutual assured destruction that precluded progress toward more flexible nuclear use options.

From the early 1970's, the United States began to shift its official policy to provide more flexible nuclear options. One major objective of increased operational flexibility was to prevent the Soviet Union from gaining any strategic advantage from the Soviet nuclear force buildup, but another equally obvious American goal, was the seeking of some form of American strategic leverage over the Soviet Union. A premium was placed on damage limitation and war fighting capabilities that clearly mixed both deterrent and compellent capabilities.

The United States' declaratory strategy emphasized its commitment to deterrence, but it also sought to win if nuclear war came. While the United States' strategic rhetoric focussed on deterrence, its nuclear force structure reflected increasing reliance on compellent capability. This brief overview of United States nuclear strategy indicates that deeper examination of the compellent paradigm as an appropriate explanation of American strategic thinking is clearly warranted.
Chapter Four

NUCLEAR STRATEGY IN THE SOVIET UNION

Military power is an essential adjunct to Soviet diplomacy and has, more than any other factor, contributed to the elevation of the USSR to superpower status. In spite of theoretical and practical difficulties, a substantive philosophy of international relations theory does exist in the Soviet Union, and although it has changed significantly over the years, it continues to rely heavily on the concept of power.¹ How the Soviet Union intends to use nuclear weapons to support its political ambitions and how nuclear strategy evolves over time are important questions. Even though the interaction of opposing strategies is still not fully understood,² in recent years serious attempts have been made to understand Soviet as well as American nuclear strategy.

These efforts have met with mixed success due to the tremendous difficulties in interpreting those relatively few Soviet sources that are generally available. These sources tend to be incomplete and contradictory, ranging from political assertions of the non-utility of nuclear weapons to detailed military assessments of their utility in combat.³ Depending on one's basic assumptions about the Soviet Union, one can find documentation to support several different interpretations. The


² For example, see Avner Cohen and Steven Lee, eds., Nuclear Weapons and the Future of Humanity: The Fundamental Questions (Totowa, New Jersey: Rowman and Allanheld, 1986), p. xi. The editors single out U.S. nuclear strategy and its growing emphasis on counterforce targeting in itself as making nuclear war more likely.

veil of secrecy that shrouds the Soviet internal strategic dialogue seriously complicates the interpretive process. In the Soviet Union, declaratory policy essentially reflects military doctrine while action policy for the most part reflects military science, but throughout the nuclear age a tension has existed between these two levels of analysis.

It has been difficult to discern to what degree Soviet declaratory policy reflected actual Soviet military strategy or represented Soviet reliance on a strategy of deception and concealment on a grand scale. Among those Western experts that study and interpret Soviet military doctrine, at least six different approaches have been identified, all of which tend to emphasize different aspects of the problem.

This chapter will apply the previously established paradigmatic framework to Soviet nuclear strategy in an attempt to illuminate the prevailing basis of Soviet strategic thinking from 1970 to 1986. The first section describes Soviet strategic culture, the basic milieu in


5 In the analysis of Soviet sources, it is important to note that military doctrine is often decided at the highest levels and forms the apex of military thought. Military science is subordinate to military doctrine and can be divided into military strategy, operational art and tactics. Soviet analysts do accept the interrelationship of these levels, but not to the degree that Edward Luttwak implies in his *Strategy: The Logic of War and Peace* (Cambridge, Massachusetts: Harvard University Press, 1987), pp. 69-71.


which strategic decisions in the USSR are taken. Three following sections then deal with the thinking that accompanied the introduction of Soviet nuclear weapons, the drive to achieve parity and the subsequent tendency to search for strategic advantage. The focus of this chapter will primarily be on the objectives and threats embedded in Soviet nuclear strategy; detailed quantitative analysis of the correlation of nuclear forces will be left to later chapters.

I. SOVIET STRATEGIC CULTURE

Soviet strategic culture is a subset of Soviet political culture that, for the most part, is determined by the slowly changing attitudes of top party leaders and senior military officers. Soviet military leaders tend to reflect the major historical values of Russian political culture: an expansion of Russian/Soviet interests, a proclivity to authoritarianism, an acceptance of a fundamental ideological framework, and a propensity toward modernization. These are but some of the several contributing factors that have played a decisive role in shaping a unique Soviet strategic style.

One permanent feature that conditions strategic thought in the Soviet Union is the lack of natural geographic boundaries and the scope of continental requirements that have inevitably led to large armies. Russian growth and self-perpetuation has largely been due to the size and capability of its army, an army that today is still largely based on

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8 The Soviet elite suffers a paradox in that it is simultaneously conservative and revolutionary. Soviet strategic culture, as could be expected, reflects this dialectic. See Dimitri Simes, "Disciplining Soviet Power," Foreign Policy 43 (Summer 1981), p. 40.

nineteenth century traditional military structure and values. Army thinking still dominates a Soviet Armed Forces that envisions massive battles over "vast flat areas of sparsely populated land." Recent wars of the twentieth century have reinforced the Soviet belief that mass and sizeable reserves are of vital importance in war. From 1914 to 1920, 12 million people were killed, and the loss of life in the Great Patriotic War (World War Two) was even greater. The impact of these wars on modern Soviet strategic thought has been enormous, and even in the nuclear age, all officers are thoroughly schooled in the continuity of strategic principles, for the most part derived from past victories.

The combination of heavy reliance on the military for the preservation and expansion of the state and an authoritarian political history has emphasized the role of the military in Soviet society. The accumulation of military power was not in the past and is not presently viewed as an unwanted but necessary burden. Rather, its acquisition has been a clearly articulated and acted upon state objective...

With such a societal impact, the ability of Soviet military professionals...


13 Nathan Leites, *Soviet Style in War* (New York: Crane Russak, 1982). Leites' study was heavily based on World War Two and the author finds much continuity of thought with the present.

14 Richard Pipes, "Militarism and the Soviet State," *Daedalus* 109 (Fall 1980), p. 1. Pipes claims this process has gone to the point of "militarization," but this is somewhat overstated.

to exercise greater influence than their American counterparts "in shaping their nation's strategic programs and arms control policies seems overwhelmingly powerful." In contrast to the United States, where the civil community has great impact on resource allocations, Soviet nuclear strategy has been developed and implemented almost exclusively by military officers. This reflects a profound difference between Soviet and American strategic cultures. In an excellent article, David Holloway surmises that the very success of the Soviet Union in creating military power allows the military a "comparative advantage" in formulating security policy. This does not mean that the party leaders are not in charge or that there are not periodic political-military tensions. What it does mean is that in a system with "no institutional mechanism for the resolution of conflicts among competing interests," the military "experts" cannot be authoritatively challenged and therefore have had a powerful impact on strategic style.

A third component that helped shape a unique Soviet strategic culture was the adherence to a fundamental ideological framework that evolved relatively slowly when compared to changing political governments in the


17 Benjamin S. Lambeth, "Contemporary Soviet Military Policy," in Roman Kolkowicz and Ellen Propper Mickiewicz, eds., The Soviet Calculus of Nuclear War (Toronto: Lexington Books, 1986), p. 35. This is an extremely useful book, in spite of the fact that only two chapters were relatively new at the time of printing.


West. Marxist-Leninist ideology in the Soviet Union had effectively replaced the Russian messianic role in "liberating" and "civilizing" other peoples, the justification for six centuries of Russian expansion. To Marx, historical experience confirmed the often determining role of violence in political affairs, and to Lenin peace and war were but tools of policy to be flexibly employed to achieve political ends. Marxism-Leninism indeed provides a comprehensive and sophisticated political military conceptual framework that has had a profound impact on all levels of military theory and practice in the USSR. Military doctrine in the Soviet Union therefore embodies that element of political strategy that concerns itself with those specific principles, methods and forms of preparing for and waging war. Although military professionals produce the details of nuclear strategy, within the context of military science, it remains rooted in political formulations of military doctrine and


invariably addresses the larger purposes of military power. 24 Soviet leaders recognize that such a comprehensive view is essential to optimize the relationship of military force to the achievement of political objectives, and Soviet military doctrine attempts to provide a hierarchical framework within which military strategy, operational art and tactics are subordinate variables. One significant impact of this ideology is that at times there has been considerable conceptual resistance among the military to the view that nuclear weapons have altered in any major fashion this fundamental political military relationship. 25

A fourth factor in Soviet strategic culture is an apparent ambivalence toward the west. On the one hand the West is feared for its potential ability to wage war, but on the other hand the West is admired because of economic and technological strength. Soviet fears of the West have been fueled by perceptions filtered through ideological and parochial suspicions that created a "woefully distorted picture, particularly of Western motives and intentions." 26 Furthermore, the formative years of strategic nuclear doctrine in the USSR coincided with a period of Soviet strategic inferiority that had a profound affect on

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Soviet strategic culture. These concerns have resulted in an imbedded Soviet reluctance to accept that in some areas they are ahead of the West. Somehow the West, they fear, with devilish cunning, is going to pull a technological rabbit from its hat and defeat all their efforts.

The result has been a consistent attitude among the Soviet strategic elites, at least until 1986, that priority of effort to modernize the armed forces has been essential to overcome the economic and technical limitations inherent in the Soviet economy.

Another facet of Soviet strategic culture is the Russian propensity to respect strength. The ideology of the present Soviet state is really not incompatible with much of the previous Russian political culture in that it reflects centuries of bureaucratic and authoritarian rule. In Russian and Soviet history, the legitimacy of authoritarian rule and its supportive ideology is a very complex matter that in many respects has strong roots in the Soviet polity and is sustained by fear of what can happen if strength dissolves. One impact of this respect for strength leads to cautious behaviour so as not to needlessly provoke a powerful

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enemy; in a subculture that takes a long term ideological view of struggle, rashness is a decided liability. Another impact of Soviet respect for strength is the deep conviction among military officers that "the political utility of military power is a function of its combat effectiveness." This leads to strategic style that values combat power as the most important variable or measure of strength such that any Western unilateral arms renunciation could well be interpreted by communist military analysts as a sign of political weakness.

Soviet military strategy therefore relies heavily on traditional indices of power, notwithstanding the scientific technical revolution in military affairs brought about by nuclear weapons. The concepts of deterrence and stability are important but not central to a Soviet military doctrine that appears to accept them as useful by-products of military power and proper strategy. According to the principles of military science, the more effective a state's fighting capability, the less likely another state would be to initiate war. The Soviet military tend to regard all weapons, even nuclear weapons, as but tools of war and not the determinants of strategy; it is their ability to fight that is important.

In the Soviet military view, therefore, "mutual defencelessness"

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makes no sense whatsoever.\(^{35}\) To minimize the damage to the Soviet Union from the power of nuclear weapons, Soviet military thought has emphasized surprise and deception to enable the Soviet Union to initiate their first decisive use.\(^{36}\) In Soviet military thought, the defensive is a forced form of military operations, the chief goal of which is to create conditions for a subsequent transition to the offensive.\(^{37}\) Defence is therefore a vital necessity when faced with a powerful enemy; it is an essential element of strategic thought, even in the nuclear age. Thus while political leaders at times have openly accepted the reality of mutual assured destruction, military officers have tended not only to resist MAD logic as a basis for strategy but also to question the United States' commitment to it.

The final component of the Soviet strategic subculture is the concept known as the correlation of forces. This fundamental concept is a Soviet account of the international system that appears more than ever a combination of Russian national interests in substance and Marxist-Leninist ideological principles in form.\(^{38}\) The correlation of forces has been in Soviet use since revolutionary days and combines military,


\(^{36}\) For a useful review of surprise (VNEZAPNOST) and deception (MASKIROVKA) in Soviet Strategy, see Jennie A. Stevens and Henry S. Marsh, "Surprise and Deception in Soviet Military Thought," *Military Review* 57 (June and July 1982).


economic, political and geographic factors. It clearly suggests that an appropriate preponderance of overall strength results in an increase in political influence. As the Soviet leaders take an extremely broad view of this concept, the correlation of forces makes Moscow measure its strategic position relative to the United States, Europe and China simultaneously, as one single security problem. Thus, a Soviet strategic analyst must consider the USSR surrounded by potential enemies and could have no basis for much confidence. Given Soviet political and economic limitations, this inevitably drives a requirement for very strong military forces in an attempt to achieve a favourable overall correlation of forces. Military power is therefore one of the "most important instruments" available to support foreign policy, and for the Soviet Union the effect of growing military power has been to create more "favourable conditions" for achieving Soviet goals.

From a military perspective, the correlation of forces provides a guide within which military officers prepare their estimates for various strategic situations. To the Soviet officer, the main characteristic of war is Clausewitzian in that "the essence of war is the continuation of

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41 Seweryn Bialer, Stalin's Successors: Leadership, Stability and Change in the Soviet Union, p. 245.

politics by means of armed force. But war is not just a technical enterprise, it is also a complex and many-sided process involving economic, diplomatic and ideological forms of struggle. The main objective of Soviet strategic thought is to be in a position to win, if at all possible, any potential conflict. The objective of victory adds an offensive military component to the correlation of forces that further fuels a consensus favouring a strong military. Because the conflictual dialectic of Soviet ideology is incompatible with defensive doctrine or the commonly held Western notion of "peace," and because Soviet doctrine claims the correlation of forces is shifting towards socialism, one would be guilty of "capitulationism" if one did not take advantage of one's opportunities.

Clearly Soviet strategic culture is significantly different than that found in the West. The greatest single difference at least until recently has been the lack of a civilian security community in the Soviet Union that could speak with sufficient authority to challenge the Soviet military. Thus the concept of the correlation of forces has provided the military a central role in both political ideology and military doctrine. Although significant theoretical shifts have occurred over the years, the Soviet military remains for the most part committed to traditional military values and tends to seek the large forces necessary to ensure security if not victory in major war. Soviet military leaders tend to regard security in terms of military power, and to the Soviet political


and military elites, too much power would probably constitute a contradiction in terms; Soviet leaders appear to equate military power with security, respect and influence in the world.

II. THE EARLY IMPACT OF NUCLEAR WEAPONS

At the close of World War Two, the United States introduced nuclear weapons, using them twice to compel Japan to consent to an unconditional surrender. The Soviet Union under Stalin's leadership appeared to ignore the impact of nuclear weapons on strategy and acted as if they were not a decisive factor in the dialectic of superpower relations. Because this declaratory strategic approach changed so rapidly after the death of Stalin, it appeared that Stalin had stifled the development of Soviet military thinking. More recent studies, however, have discerned greater continuity in Soviet strategic thinking from World War Two to the present. This section will briefly survey the key developments of Soviet strategy as nuclear weapons were being introduced into the Soviet Armed Forces. As in previous chapters, this study will utilize the paradigmatic framework by examining strategic intentions, the explicit and implicit threats and then the correlation of nuclear forces.

1. The Strategic Intention

In the period 1945-1954, the Soviet Union concentrated on recovering from the devastation of World War Two and rebuilding its security position by consolidating gains along its periphery. It was the latter objectives that caused confrontation with the West that led to the Cold War. In

retrospect it appears that Stalin deliberately downplayed, at least in public, the changes that nuclear weapons forced on the international community, but some Soviet debate undoubtedly took place in private.

Stalin clearly regarded nuclear weapons as significant, but he probably believed that, in limited numbers, they did not constitute a sufficient advantage against a country as vast as the USSR. Others such as Malenkov felt otherwise, and by the time of Stalin's death, Malenkov declared that permanent deterrence of the United States was not only possible, but a preferable strategy. A major reason that Khrushchev was able to replace Malenkov as party leader after only one year in power was that Khrushchev had the support of the Armed Forces (including Marshal Zhukov) who were quite outspoken in their rejection of Malenkov's view of deterrence. During this initial period, the Soviet Union did not appear to consider nuclear weapons in themselves sufficient to support foreign policy, and Soviet military strategy relied on conventional arms directed towards Europe, not the United States.

The huge Soviet conventional advantage over a war torn Europe outweighed or at least matched the political utility of American incipient nuclear power. The vast modern Soviet armies created in World War Two were only partially demobilized, and Soviet traditional military strategy did have considerable relevance in supporting the construction of a new

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46 H.S. Dinerstein, War and the Soviet Union (New York: Frederick A. Praeger, 1962), p. 77. Malenkov echoed many of the American strategic community who felt nuclear weapons were not usable other than to deter.

Soviet security system in Eastern Europe. Stalin's objective was undoubtedly to advance the interests and ideology of the Soviet Union in whatever ways were most expedient so long as the survival of Soviet power itself was not threatened. Nuclear strategy during the Stalinist period, if it existed at all, was a closely guarded secret, and the MVD under Beria, not the military, controlled nuclear development. The fact however that within six months after the arrest of Beria, the USSR held its first full scale nuclear military manoeuvres indicated that at least some nuclear planning had taken place in the military general staff.

During this early period, nuclear strategy in the Soviet Union remained for whatever reason heavily influenced by traditional military strategy.

2. The Threat of Force

A Soviet nuclear threat did not exist until after 1949, and even then the nuclear threats implicit in the early stages of nuclear deployment were limited to Europe. The bomber was the only means of delivery, consequently air defenses became an important strategic resource, one in which the Soviet Union invested heavily. Through Soviet intelligence sources, it is highly probable that Stalin knew the exact status of the

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United States nuclear programme.\textsuperscript{51} He would have known that a minimal American nuclear threat existed prior to the Korean War, and thus he would have felt no immediate pressure to change military strategy, at least until the Soviet weapons production programme could catch up with that of the United States.

As Soviet nuclear forces became available, targeting became an issue. During World War Two, the Soviets eschewed strategic bombing, and their historical analysis of British-American strategic bombing concluded that there was no evidence to support notions that strategic bombing of cities with the purpose of inflicting punishment on the civilian population could have a substantial effect on the outcome of a war.\textsuperscript{52}

The Soviet military came to reject reliance on a strategy of nuclear bombing of the enemy's war making potential; attacking industrial and economic targets was not considered the most effective means to attain victory.\textsuperscript{53} In fact, the Soviet leaders have charged that since the United States nuclear bombings of Japan were militarily pointless, they were really intended to intimidate the USSR.\textsuperscript{54} During this early period when Soviet nuclear targeting plans were initially prepared, priority was given to military targets in Europe.

The primary Soviet threat was a potential rapid conventional

\textsuperscript{51} William C. Green, "The Early Formulation of Soviet Strategic Nuclear Doctrine," p. 375.


offensive against Western Europe, and nuclear attacks on industries that could be quickly overrun in the event of war did not make sense. Nuclear threats were used implicitly to support a traditional strategy; war would be won by the destruction of enemy military forces, and nuclear weapons could greatly assist but were not in themselves decisive weapons. The concept of nuclear deterrence that was being developed in the West did not find much support among the Soviet strategic community.

3. Correlation of Nuclear Forces

During these early years, regardless of whether or not the United States' nuclear advantage effectively countered the Soviet conventional superiority in Europe, the United States did enjoy a favourable correlation of nuclear forces. In spite of rhetoric to the contrary, Stalin at a private meeting among other communist leaders, recognized that the United States was the most powerful state in the world.55

According to a superb review of Soviet military policy, Stalin undoubtedly appreciated the strategic significance of nuclear weapons; secret work had begun on nuclear weapons in the 1930's and continued throughout most of the Second World War.56 Soviet nuclear weapons development was clearly not a simple reaction to the United States' success. Equal priority was given to rapidly developing strategic delivery systems, and decisions made under Stalin enabled the Soviets to be the


first to place a satellite in orbit around the earth. The Soviets were probably eager to develop systems to counter the American strategic advantage in nuclear capable bombers and were not satisfied with the quantity or quality of their own bomber force.

To the Soviet military, the effectiveness of their nuclear weapons was measured in concrete military terms that analysts in the West began to call counterforce. According to the Soviet Maj. Gen. M.A. Mil'shtein,

it is essential to select most carefully the targets for strategic air strikes so that the enemy cannot deal a retaliatory blow.

During this formative period several basic patterns of Soviet nuclear strategy were developed. War was still regarded as a political phenomenon, the objective of which was to achieve victory, and this could best be achieved by acting in accordance with an overarching strategy to direct decisive blows in a counterforce manner. As the Soviet Union entered the nuclear age, the Soviet strategic elite tended not to consider nuclear weapons as having created a revolution in military strategy.

4. The Implications of the Early Period

The legacy of this early period on Soviet nuclear strategy is profound. It established a clear link between nuclear weapons and traditional military strategy to a degree that did not exist in the West. Initially this was attributed to "stagnation" in Soviet military doctrine caused by the direct strategic control that Stalin allegedly maintained over strategic thinking. This lack of "progress" resulted in a Western


59 Ibid., p. 63.
perception that Soviet thought was lagging behind that of the West, but this view downplays the significant continuity between traditional military thought and subsequent Soviet strategic innovations. What this period did do is instill a strong desire for professional autonomy and influence among senior military officers who were responsible for producing Soviet military doctrine and nuclear strategy. With the fear of another purge lifted, these officers moved the strategic debate onto more visible levels and began to clarify their war fighting orientation toward nuclear weapons. Their problem was how to defeat a superior war fighting capability of the United States, and thus Soviet nuclear strategy closely resembled the traditional emphasis of the compellent paradigm.

III. THE ACHIEVEMENT OF PARITY

In the period between the mid 1950's and the late 1960's, the Soviets slowly but steadily developed the capability to attack and destroy the United States, and in the process recognized the scientific-technical revolution related to nuclear weapons. As Soviet nuclear programmes evolved, tensions over military doctrine developed between Khrushchev and his senior military officers, and Soviet strategy reached a crossroads. Fundamental issues regarding the utility of nuclear weapons were only resolved after Khrushchev's dismissal when an important political-military consensus was reached. This section will examine the changes in nuclear strategy from the paradigmatic perspective to ascertain the declaratory


nature of Soviet military doctrine.

1. Strategic Intentions

The advantage of an overarching ideology is that Soviet fundamental political objectives are relatively constant over time. What varies of course is the policy to achieve them. The advent of the ICBM, from which no real defence appeared possible, seriously challenged the tenet that nuclear weapons had not radically changed the nature of war.

Although Khrushchev in 1954 was able to oust his rival Malenkov in part through the support of the military, he subsequently demobilized about one million men and began to rely more heavily on nuclear weapons. However, when he attempted in 1959 to cut defence budgets further and again reduce the size of the Soviet army, his emphasis on nuclear substitutes antagonized more than just the "traditionalists" in the Soviet armed forces. Many in the Soviet military were reluctant to underwrite the short war concept inherent in Khrushchev's concept of strategic rocket war even if the early missiles could be made more reliable. To them powerful conventional forces were still essential. This brought the military doctrine of Khrushchev into serious conflict with his military officers who for the most part sought military superiority at all levels as emphasized by Marshal Grechko: Soviet armed forces "must always be superior to those of the imperialists."63

By the twenty second congress of the Communist party, a compromise

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62 Yosef Avidar, The Party and the Army in the Soviet Union, pp. 246-301. This solid study is based on interviews with several Soviet sources. See also Thomas W. Wolfe, Soviet Strategic Thought in Transition (Santa Monica, California: Rand Corporation P-2906, 1964), p. 12. The "modernists" favoured increased reliance on nuclear weapons, but the "traditionalists" viewed nuclear weapons primarily as adjuncts to strong conventional forces.

was reached. It reflected the attempt to incorporate both the strategic rocket forces and balanced military forces in a new military doctrine that was first published in Marshal Sokolovsky's book, *Military Strategy*. Tension in military doctrine nevertheless remained over the primacy of nuclear weapons and the issue of whether nuclear war could still be won. Political leaders tended to fear the consequences of nuclear escalation, while military officers clung to the theoretical possibility of military victory. The third edition of Marshal Sokolovsky's book marked another important political military consensus in that escalation was no longer considered inevitable.64

The goal of military superiority was strongly held by the Soviet military elite;

> to assert that victory is not at all possible in a nuclear war would not only be untrue on theoretical grounds but dangerous as well from the political point of view.65

One year later another Soviet military author was even more explicit in proclaiming that "long industrial efforts" were required to win the "struggle for superiority" that "must be waged continually."66 Nuclear strategic forces were a vital component of military strategy, and

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64 V.D. Sokolovsky, *Soviet Military Strategy*, edited by Harriet Fast Scott, p. 69. Also between the first and third editions, the McNamara doctrine of counterforce was introduced, and it in turn affected Soviet doctrine. Note that the title of Sokolovsky's book is incorrect in this American translation.


superiority appeared to be the ultimate military objective.

A major difficulty in Soviet military doctrine, however, was the fact that even if a Soviet pre-emptive attack resulted in the first decisive use of nuclear weapons, the United States could still inflict intolerable damage on the USSR. The concept of assured destruction was not popular among the Soviet military, but it was an objective reality that underscored the tensions with political leaders over military doctrine. As the Soviet Union gradually achieved the ability to destroy the United States, however, Soviet strategy became less concerned with an American direct attack and focussed on the far more demanding task of deterring American nuclear use if a Soviet conventional victory in Europe appeared likely. The overriding Soviet objective became avoiding nuclear devastation of the USSR while still being free to pursue ideological and political goals.

During this period, the primary objective of Soviet strategy appeared to have been to catch up with the United States to check American strategic power. This aim and the desirability of achieving superiority as a long term goal displayed a tendency to compellence, but it was also clear that a strong component of deterrence was imbedded in it. This was not the strategy of a status quo power, and the Soviet Union actively sought to compel a gradual change in Europe that would enhance the security and stability of the socialist system. The attempt to place

67 Gerald Segal and John Baylis, Soviet Strategy, pp. 11-22.

68 Michael MccGwire, Military Objectives in Soviet Foreign Policy (Washington, D.C.: Brookings Institution, 1987), p. 49. Although this study is written from a fairly narrow deterrent perspective, it is nevertheless an excellent work.

offensive missiles in Cuba must be seen in this context, and it is usually portrayed as a shortcut to catching up to U.S. strategic power.\textsuperscript{70}

In Soviet strategy, compellence and deterrence thus became intermeshed in the dialectical synthesis that sought to resolve the tensions between military doctrine and military science. Although the military had made major efforts to identify Soviet military doctrine with the fundamentals of military science, in the final analysis political interests were not that different, and by the late 1960's a consensus emerged.\textsuperscript{71}

The USSR is quite serious about deterring an American nuclear attack, but it rejects any notion that the United States is equally justified in seeking to deter a Soviet attack.\textsuperscript{72}

2. The Threat of Force

The first significant use of nuclear threats by the Soviet Union occurred in this period. While Khrushchev was particularly prone to nuclear boastfulness, most of the implied or explicit threats between the mid 1950's and the late 1960's were general military threats that were not specifically nuclear. According to the data of one superb study, the total number of threats to use force appeared to have remained relatively


constant compared to previous years.\textsuperscript{73} This was consistent with the Soviet propensity to rely on military threats to support foreign policy, but in only one case was the USSR ever thought to have increased its nuclear alert status.\textsuperscript{74}

If the quantity of military threats did not change with the introduction of nuclear weapons the nature of those threats did. The Soviet Union only threatened the use of nuclear weapons implicitly in support of military force in general and reserved explicit nuclear threats for vital interests.\textsuperscript{75} The greater the commitment to a given policy, the greater the propensity to threaten significant military force, and the greater the likelihood of potential escalation to nuclear levels. In those cases where force was used to coerce, it was meant not only to deter certain behaviour but also to compel an action.\textsuperscript{76} Until the Soviet Union achieved at least parity with the United States, however, it generally attempted to use military threats as a "counter-deterrent" to deter the United States from resorting to its nuclear deterrent. Thus for the USSR, the American concept of deterrence was a double-edged sword, "capable of offence as well as defence."\textsuperscript{77} The Soviet leaders retained a declaratory

\begin{itemize}
\item\textsuperscript{74} That case was Cuba, but recent evidence indicates that no Soviet nuclear alert was called. See comments by David Burchival and Richard H. Kohn and Joseph P. Harahan, "U.S. Strategic Airpower, 1948-1962: Excerpts from and Interview with Generals Curtis E. Lemay, Leon W. Johnson, David A. Burchival and Jack J. Cotton," \textit{International Security} 12 (Spring 1988), p. 95.
\item\textsuperscript{75} Benjamin S. Lambeth, \textit{Selective Nuclear Operations and Soviet Strategy} (Santa Monica, California: Rand Corporation P-5506, 1975), p. 20.
\item\textsuperscript{76} Stephen S. Kaplan, \textit{Diplomacy of Power}, p. 644. Soviet use of force to influence behaviour in East Europe is an obvious example.
\end{itemize}
strategy that emphasized military targets in a war fighting capacity in an effort to neutralize the American nuclear advantage.

To a Soviet military officer in the 1960's, fighting a limited nuclear war was to misuse a decisive strategic weapon and had no place in Soviet declaratory strategy. The underlying rationale was probably that it might weaken the effectiveness of Soviet restraints on the Western use of military and nuclear power.\(^7\) Soviet emphasis on a pre-emptive nuclear strategy of first decisive use was criticized for avoiding the realities of nuclear combat,\(^7\) but even if all the forces were not yet in place to support this strategy, it still held considerable deterrent value. Soviet strategists regarded with contempt complicated Western attempts at creating escalation ladders, being inclined to view these formulations as products of misplaced scholasticism on the part of naive civilian defence intellectuals, who neither understand war nor treat important defence issues with the sort of seriousness they properly warrant.\(^8\)

To a Soviet officer, a decision to engage in war is the key threshold, and once joined in battle, nuclear weapons must be used decisively or not at all.

Of those threats in this period that could be considered serious enough to escalate to the nuclear level, the Suez crisis was the first. Khrushchev attempted to use nuclear threats against the British and French, but when SACEUR declared that the United States was prepared to

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retaliate, Soviet nuclear posturing quickly abated. In the second case the Soviet Union achieved its objectives in crushing the revolt in Hungary in spite of the American strategic superiority, and this may have later encouraged Khrushchev to run increased risks in Berlin. Thirdly, the decision to place offensive missiles in Cuba may have been a risky attempt to gain some strategic leverage over the United States, but Khrushchev appeared genuinely appalled at the possibility of war. A final significant use of a threat was the Soviet nuclear threat against China in 1969. This threat followed six months of tensions and culminated in the cessation of border incidents; China felt compelled to begin negotiations within one month of the threat. All Soviet threats were relatively contingent and limited to a specific target, a characteristic of compellent use. These threats were not intended to lead to war, but were carefully planned to create a politically exploitable environment.

To a similar degree, Khrushchev attempted to enhance the perception


82 For support for this view, see Arnold Horelick and Myron Rush, Strategic Power and Soviet Foreign Policy, p. 212-213.


of Soviet nuclear power. According to one study, what matters is not superiority as such, but the perception of superiority. Khrushchev clearly attempted not only to accelerate the acquisition of Soviet nuclear power, but he also sought to enhance the image of Soviet nuclear power. To extract concessions in political negotiations over critical issues such as Berlin, he sustained the image of a growing Soviet lead in missile technology "through frequent misleading claims on Soviet missile strength."87

This brief analysis of the use of nuclear threats indicates that their quantity and nature demonstrate the interrelationship of both compellent and deterrent characteristics. The use of the nuclear threat against China, a country over which the USSR had nuclear superiority is a good indicator of a compellent component in the Soviet use of threats.

3. The Correlation of Nuclear Forces

It was during this period that the Soviet Union progressed from a position of strategic inferiority to one of perceived parity with the United States. According to Benjamin Lambeth, Soviet nuclear doctrine had not really changed that much; what had changed was the Soviet ability to field more modern nuclear systems to implement it.88 This was attributable to Soviet resource allocations that increased defence


88 Benjamin S. Lambeth, "Contemporary Soviet Military Policy," in Roman Kolkowicz and Ellen Propper Mickiewicz, eds., The Soviet Calculus of Nuclear War, p. 32.
spending steadily from about 1960 until at least 1976 in spite of a serious impact on the Soviet economy.⁸⁹

The scale and proportion of this early Soviet nuclear development implies that catching up with the United States was an overriding objective. The attempt to place medium range missiles in Cuba would have put a substantial proportion of United States strategic bases under risk of a no-warning attack. The Soviet effort appeared intended to create a "fait accompli" of such a nature that the prompt unilateral action required to reverse it would require the initiation of violence.⁹⁰ This action and subsequent Soviet ICBM deployments demonstrated that the USSR probably did not regard the possession of an assured destruction capability against the United States as an adequate guarantee of Soviet security. It appears that the Soviet Union intended as a minimum to match the United States in strategic power and regarded superiority as clearly preferable.⁹¹

The Soviet assessment of the combat utility of nuclear weapons during this period also reflected the need for a wider range of military options and a divesting of the political liability of having a second best strategic posture.⁹² The Soviet military were seeking a fighting


⁹¹ David Holloway, The Soviet Union and the Arms Race, p. 44.

capability second to none, and the standard distinctions in Western strategic discourse between first and second strike and between tactical and strategic nuclear operations were "entirely alien to the idiom of Soviet military philosophy." To a Soviet war planner, damage limitation was a key element, and this reinforced a tendency to pre-emptive strategy, civil defence and attacking enemy command and control. If war was perceived to be inevitable in a crisis, then Soviet strategy sought to alter the initial correlation of forces as rapidly as possible by optimizing the use of its available forces. Soviet strategists believed that if strategic command, control and communications were destroyed at the outset of nuclear war, the United States nuclear response would be ragged and uncoordinated allowing increased scope for other damage limitation measures. The SS-9 Soviet ICBM with a 20 megaton warhead designed in this period, was probably intended for attacks on U.S. Minutemen launch control centers and other "nuclear decapitation" tasks. This Soviet strategy was an effective way to deal with a larger more diverse nuclear force; without effective command and control, American

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95 Desmond Ball, "Soviet Strategic Planning and the Control of Nuclear War" in Roman Kolkowicz and Ellen Propper Mickiewicz eds., The Soviet Calculus of Nuclear War, p. 50.

limited war options would be ineffective.

Soviet efforts to construct a credible strategic nuclear force appeared directed to increasing their relative strategic position, not achieving assured destruction. Soviet strategic thought in this period developed on a different track than in the United States and emphasized the ability to fight. Deterrence was to be ensured by having the ability to win if possible, but significant demands on nuclear forces appeared to approach the requirements for compellence.

The strategic course of U.S. policies is now changing before our very eyes from "pax Americana" to a definite form of necessity for peaceful coexistence. We must clearly understand that this change is a forced one and it is precisely the power of the Soviet Union and the socialist countries that is compelling American ruling circles to engage in an agonizing reappraisal of values.  

4. The Implications of Parity

As parity became tangible, Soviet military doctrine shifted to a pre-emptive declaratory strategy for two fundamental reasons. Firstly, Soviet nuclear inferiority made it obvious that if the Soviet Union was to have any chance of winning a nuclear war, its strategy must allow it to land the first decisive blows. Secondly, an offensive oriented strategy required minimal modification of pre-nuclear military strategy thus maintaining a consistent approach to Soviet security that was ideologically compatible with Soviet foreign policy objectives. It may be that Soviet threats to use and the actual use of military force in East Europe directly reflected Soviet strategic weakness, in that force was the

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only potential lever available. The pre-emptive nuclear strategy probably reflected the Soviet need to deter United States nuclear threats while at the same time supporting an ideologically aggressive foreign policy. It combined a clear sense of purpose and an unrivalled conventional army in an attempt to maximize Soviet comparative strategic advantages, recognizing that nuclear weapons have not changed the fundamental relationship between policy and war.

The Soviet goal of achieving at least parity with the United States was an extremely high priority, but many in the strategic community viewed military superiority as the ultimate objective. The use of threats indicated an early propensity to threaten the use of nuclear weapons to gain political advantage. During this period, the deterrence of American nuclear power, a fundamental requirement to protect the Soviet Union, did not constrain the Soviets from actively pursuing a declaratory strategy that also contained a significant amount of compellence.

IV. THE SEARCH FOR ADVANTAGE, 1970-1986

In the 1970-1986 period, great controversy over the strategic intentions of the Soviet Union centered on whether or not the Soviet leaders still sought military superiority. The political military consensus over strategic military doctrine that was reached in the late

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98 In the sense that real power and the need to threaten violence are opposites. See Hanna Arendt, On Violence (New York: Harcourt Brace Jovanovich, 1970), pp. 53-56.

1960's began to show signs of increasing tension in the later 1970's.\textsuperscript{100} At least since 1977 Soviet political declarations have implied greater acceptance of nuclear deterrence,\textsuperscript{101} but the continuous build up of Soviet military forces has resulted in the accumulation of military equipment far in excess of what one might reasonably expect for defensive purposes.\textsuperscript{102} This section will examine Soviet nuclear strategy (1970-1986) to determine which paradigmatic approach more closely reflected Soviet policy. The analysis of Soviet strategic intentions will determine, to the extent that available evidence permits, the degree of strategic consensus within the Soviet political-military elite. Subsequent sections will analyze the use of threats and the correlation of proximate nuclear forces.

1. \textbf{Strategic Intentions}

Although the tone of Soviet foreign policy may have moderated somewhat from the days of Stalin and Khrushchev, the underlying objectives did not appear to have changed. The Soviet achievement of nuclear parity added momentum to a cautious incrementalist strategy to outflank, envelope and neutralize her divided adversaries and eventually force them to acquiesce to Soviet hegemony. The fundamental goal of such action appeared to be the alteration of the global correlation of forces by


increasing Soviet pressure on Europe, the strategic pivot of Soviet aspirations. This was not only traditional great power behaviour, but it was legitimized by an ideology that ascribed a dominant role to military power and was supported by a strategic culture that accepted nuclear weapons as an important component in this process.

The Soviet Union clearly continued to see some utility in its nuclear arsenal to support its policies, and it rejected any acceptance of a status quo, particularly one based on a previous correlation of forces that had significantly changed. In this sense the Soviet leaders rejected the notions of "equivalence" or "balance" for they implied acceptance of a status quo; they embraced concepts such as "equal security" and "correlation of forces" that are more permissive and elastic.

Soviet political values included an ideology that implied a fundamental questioning of the legitimacy of the United States regime. In a dialectical fashion, Marxist-Leninist ideology provides such purpose and direction to pragmatic politics that traditional state policy is held to be complementary to the class dominant paradigm. The Soviet leaders

103 Alvin Z. Rubinstein, Soviet Foreign Policy Since World War II: Imperial and Global (Cambridge: Winthrop Publishers, 1981), p. 259. During the Brezhnev period, the correlation of forces was particularly influential. Chapter eight covers this in more detail.


also expressed concerns that the United States rejected the Soviet Union's right to exist as a major actor in international politics. Thus, fundamental political antagonisms existed which, for the Soviet rulers, maintained the possibility of cataclysmic conflict and drove a requirement for powerful nuclear forces.

Increasingly, the Soviet Union was coming to terms with the fact that in spite of considerable efforts by the military, the USSR was still liable to be destroyed in any nuclear war. Soviet forces have in the past and continue to assign high priority to missile and space defence in spite of a significant technological lag in this area. SDI was therefore seen as an American attempt to push Moscow into a distant second place in the technological competition by breaking the rules agreed upon in SALT. The possibility of a global climatic change or a nuclear winter possibly reinforced a growing tendency to focus on conventional weapons, but the Soviet military have been reluctant to accept this hypothesis. Soviet leaders understood that the biggest threat to political control of the party in the USSR was a possible breakdown in war, and the nuclear forces of the United States posed their most immediate danger. It may be that the growing Soviet focus on the conventional phase of war and the acknowledged possibility of the non-use of nuclear weapons was leading to an ultimate view in some quarters that war cannot be won with nuclear


The issue of whether the Soviet Union really sought strategic or nuclear superiority was emotive and hinged in part on whether the Soviet Union ever believed it could fight and win a nuclear war. Richard Pipes, among other hawkish observers, felt that the Soviet leaders aspired to reach this objective. A more balanced study however determined that since about December, 1966 the Soviet goal of superiority dropped to a second order of objectives while deterrence of nuclear devastation became the first order Soviet goal. Yet another analysis found that "conservative" and "modernizing" factions with the Soviet elite "disagreed about the merits of pursuing strategic superiority." The official American view from 1978 to 1986 appears to support Richard Pipes, and the United States National Intelligence Estimate acknowledged for the first time in 1977 that the Soviet Union was really striving for superiority. Others felt that the twin drives for global domination and total security compelled the USSR toward constant expansion that denied the possibility

110 This is Marshal Ogarkhov's theme in History Teaches Vigilance (Moscow: 1985). This view is also held by Malcolm MacIntosh, Operation Research Analysis Establishment Lecture (Ottawa: ORAE Lecture, 13 April 1987).


112 Michael McGwire, Military Objectives in Soviet Foreign Policy, p. 235. This first class study notes the strong Soviet desire to avoid the devastation of the USSR if at all possible.


114 Eugene V. Rostow in Forward to Joseph D. Douglass, Jr., and Amoretta M. Hoeber, Soviet Strategy For Nuclear War (Stanford, California: Hoover Institution Press, 1979), p. xii. The right wing in the U.S. begins to gain domestic influence as Soviet declaratory strategy was becoming increasingly deterrence oriented.
of reaching any point of lasting equilibrium between the superpowers. The key issue may not be whether Soviet leaders ever believed the achievement of a nuclear superiority to be possible, but rather whether they believed that a proper combination of weapons systems and strategy could achieve political advantages.

Whether or not the Soviets seek strategic superiority, every aspect of their force development over the past two decades points toward their determination to see what the traffic will bear in pursuit of whatever strategic advantages they can acquire...

A major question that arises from the conflicting evidence is whether the political-military strategic consensus achieved in the 1960's had unravelled by the 1980's. Brezhnev's declaration in 1977 that no one could win a nuclear war, the Soviet declaration of 1982 not to be the first country to use nuclear weapons, and Gorbachev's initiatives in national security all seemed to question the continuing degree to which the military could retain its impressive control over strategic matters. This military position was primarily attributable to the monopoly on information and expertise on military strategic affairs in


what has been an extremely compartmentalized bureaucracy. The fundamental problem facing the Soviet Union has been slowing economic growth and an increasing reluctance on the part of party leaders to sustain the tremendous rates of growth of defence budgets that were easily achievable in the 1960's and 1970's. From 1977-1982, the Soviet military have had to adjust to decreasing growth of their budgets while the United States initiated a major defence buildup. The resultant tensions between party and military leaders in Moscow may be leading to party efforts to achieve greater independent analysis of strategic concerns implying a possible degradation of the primacy of the military in nuclear matters.

One interpretation of these events is that the party leadership denies that victory in nuclear war is possible while military leaders continue to assert that victory in nuclear war remains an "objective possibility." In Soviet ideological jargon this expression allows the

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120 Rebecca Strode, "The Soviet Armed Forces: Adaptation to Resource Scarcity," The Washington Quarterly 9 (Spring 1986), p. 67. Brezhnev in 1976-77 also took steps to reassert direct political control over the armed forces: he promoted himself Marshal, he announced his chairmanship of the Defence Council and he appointed Ustinov as Defence Minister. It may be no coincidence that this took place prior to the political assertion of the Tula line. See Michael J. Deane, Political Control of the Soviet Armed Forces (New York: Crane Russak and Company, 1977), pp.271-272.
military to admit the unlikelihood of the event while maintaining a theoretical purity that allows continuity with past strategy. As achieving an effective war fighting capability can justify limitless military procurement, this debate is directly linked to the resource allocation problem.\textsuperscript{121} The most visible manifestation of this process was the dismissal of Marshal Ogarkov from the Chief of Staff position and his eventual apparent acceptance of the party line established by Brezhnev at Tula in 1977.\textsuperscript{122} Closer analysis of Ogarkov's writings, however, indicates that he has steadfastly supported war fighting concepts and has consistently avoided saying that victory in nuclear war is impossible.\textsuperscript{123} In spite of a general acknowledgement of the reality of assured destruction, it appears that the Soviet military have never accepted it as a strategic objective. Since two-thirds of the top 200 military officers have retired from 1985-1988 and since Gorbachev has strengthened the ability of the party to independently review military matters,\textsuperscript{124} however, it appears likely that post 1986 military influence in the politburo will diminish.\textsuperscript{125}


\textsuperscript{125} Strong statements from senior political leaders signify a decreasing military input into military doctrine. See Mikhail Gorbachev, \textit{Perestroika: New Thinking for Our Country and the World} (New York: Harper
An overview of Soviet strategic intentions demonstrates impressive continuity in Soviet strategic thought in that Soviet fundamental objectives have not significantly changed. The military focus on the combat function is not inconsistent with the party need for deterrence to preserve their state. The Soviet Union evolved a strategy that prior to the 1980's left open the option of victory, and this required a degree of superiority that created a demand for high defence resource allocations. What was probably at issue in Moscow was not whether superiority was desirable, but whether it was affordable or achievable. The Soviet Union probably had as its top priority the deterrence of an American nuclear attack, but at the same time it continued to manifest tendencies that were also attributable to the compellent paradigm.

2. The Threat of Force

The use of military threats has not abated with the Soviet Union's achievement of parity, and the Soviet frequency of military use over the years appears to have remained relatively stable. What has changed is the more assertive use of Soviet and allied forces to support foreign policy objectives, primarily in the third world. Soviet use of force led one observer to conclude that the Soviet Union had gained confidence and was prepared to run greater risks. Others point out that, due to several uncertainties for Soviet planners, they remain cautious and will tend to

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avoid coercion when the United States' direct involvement is likely.128 The Soviet operations in Angola, Ethiopia and Afghanistan have demonstrated that Soviet confidence in their ability to exploit the external function of their armed forces has increased, and it is highly probable that nuclear parity has encouraged more assertive Soviet behaviour.

The Soviet Union has continued to expand its nuclear systems in the 1970's and 1980's in such a way that simple deterrence or assured destruction cannot explain. Most significantly, accuracy improvements and the "MIRVing" of "heavy" ICBM's has given the USSR a significant hard target kill advantage over the United States. Soviet concerns over the American improvements of their hard target or counterforce capability are probably "founded upon the desire to maintain a Soviet edge in this area."129 The Soviet Union was also the first to deploy anti-ballistic missile defenses and an anti-satellite capability. The Soviet military have not only improved the survivability of their ICBM's by hardening silos and producing mobile ICBM's, but they have hardened their command and control facilities such that reconstitution after a nuclear attack is possible.130 Although the Kremlin has put more strategic forces in ballistic missile submarines (SSBNs), these systems appear to remain strategic war fighting reserves, and the Soviet Union tends to rely on

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ICBM's for their priority targets.

The concept of fighting limited nuclear war is still rejected by the Soviet elite as an American ploy to make its diversified strategic systems more useful in combat. Not only does the United States have a technological advantage in this domain, but geographical asymmetries could favour the United States in a limited nuclear war. There is however increasing possibility the Soviet Union would respect a limited nuclear war as long as Soviet soil was not targeted. This Soviet rejection of limited nuclear war appears to contradict what otherwise is a consistent war fighting approach, and the explanation likely has more to do with deterring the NATO nuclear deterrent than any other factor. The key variable here is for the Soviet Union to avoid its devastation through escalation to intercontinental nuclear strikes.

Since the Cuban missile crisis of 1962, the Soviet Union has kept the focus of the use of its military power on its conventional capabilities. No explicit nuclear threats have been noted since 1969, but in two cases at least the threat of escalation was sufficiently high to warrant attention. The first case occurred during the 1973 Arab-Israeli War and involved widely perceived Soviet preparations to deploy their airborne forces to protect Egypt from a humiliating defeat. Soviet military posturing made their threat to intervene sufficiently credible that, notwithstanding conciliatory signs from Brezhnev, the United States placed its forces on a global nuclear alert and pressured Israel to stop its


132 Nathan Leites, Soviet Style in War, p. 379.
offensive and respect the ceasefire. After close analysis of the 
Soviet threat it appears more likely that the Soviet Union "did not intend 
actual battlefield intervention, but rather the threat of 
intervention." If this is so, then the real objective of the Kremlin 
may have been to compel the United States to apply greater pressure on 
Israel to cease its operations by threatening a military action that could 
bring superpower forces into mutual conflict. The second case involved 
extensive Soviet military posturing during the Polish crisis with the 
apparent aim of compelling action on the part of the Polish government to 
control Solidarnosc. It is quite plausible that military "exercises" may 
have also been intended to deter NATO reaction to any necessary Soviet 
military action in Poland. Both cases involved implicit nuclear threats 
and a high degree of contingency; deterrence and compellence clearly 
appear in each threat.

The Soviet leaders perceived the need for flexible and accurate 
nuclear systems and appeared to believe that offensive power was essential 
to their claim to superpower status. They viewed with concern United 
States' attempts to contain Soviet force development, claiming the United 
States wanted its deterrence of the Soviet Union to be "more efficient"

133 Stephen S. Kaplan, Diplomacy of Power, p. 656. United States 
intelligence also believed that nuclear materials were deliberately being 
shipped toward Egypt and this may have been with knowledge the United 
States would detect them. (Interview with retired senior officer who 
worked at NORAD Headquarters during the DEFCON 3 alert.)

134 Galia Golan, "Soviet Decision-Making in the Yom Kippur War, 

135 See Soviet Defence Minister Yazov's comments cited in Soviet 
Ermath, "The Evolution of Soviet Doctrine," in Power and Policy: 
Doctrine, The Alliance and Arms Control Adelphi Paper no. 206 (London: 
than Soviet deterrence of the United States. Thus Moscow viewed the American military buildup under Reagan as an attempt by the United States to achieve military superiority. This reflected the Soviet view that nuclear superiority can be a meaningful commodity that at some point translates into political advantage.

In general, since Khrushchev, Soviet leaders have continued to avoid direct nuclear threats against the United States and have tended to rely primarily on their superior conventional forces to provide implicit support for their policies. Nevertheless the Soviet counterforce capability and the nature of Soviet threats indicated that at least some compellent tendencies were imbedded in their nuclear strategy. As demonstrated in 1973, the Soviet Union had shown more interest in exploiting international crises than in preventing them.

3. The Correlation of Nuclear Forces

In the Soviet lexicon, the correlation of forces tends to be viewed in its totality, and the nuclear correlation is therefore seen in a longer term perspective than in the West. The Soviet analysts tend to focus on trends rather than static balances, and in their view the overall

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correlation of forces is shifting in their favour.\footnote{139} Believing that the achievement of parity was not an accident, the Soviet Union appeared determined to seek a "quantitative and qualitative" advantage in weapons and forces to support foreign policy; Soviet declarations to the contrary could have been, at least to some degree, disinformation.\footnote{140} Although many in the West have belittled Soviet technical capabilities to produce first class equipment, Soviet design philosophy has emphasized operational effectiveness through simplicity, and the "consumer sovereignty" of the Soviet Armed Forces ensures that these criteria are met.\footnote{141} Soviet nuclear systems in the 1980’s displayed increasing sophistication, and the variety of yields and accuracy appeared well suited to the operational requirement of attacking military targets.

During this recent period, the numbers of nuclear delivery systems stabilized, even though the total numbers of deliverable warheads increased far beyond that required for assured destruction purposes. The SALT limits, however, have established an upper numerical limit that the Soviet Union will not likely exceed. Increasingly, Soviet political leaders appear to have reached the conclusion that the payoff for additional nuclear systems does not warrant the cost. The realization that a European war could remain conventional for a significant period has also resulted in Soviet command and control changes leading to increased

\footnote{139} Harry Gelman, The Brezhnev Politburo and the Decline of Detente, p. 29. This was particularly true of the Brezhnev era.


centralization and hardening of nuclear assets to protect them from conventional attack. Because the Soviet Union has a comparative advantage in deploying ground forces, a rough equivalence at the strategic nuclear level can provide a "nuclear umbrella" that could allow the Soviet Union to pursue more assertive policies along its periphery. In short, strategic nuclear weapons can deter Western first use while compellence at lower levels can be pursued to modify the international status quo. Notwithstanding Soviet pronouncements of their peaceful intentions, the use of force in Afghanistan and the threat of force in the Polish crisis displayed a certain Soviet confidence in their ability to apply military power to achieve their political aims.

The overall correlation of forces has made these Soviet advances possible, but military power is its essence.

The ultimate purpose of Soviet military power is not simply to deter an attack on the USSR, but to intimidate the opponent to the point of paralyzing his will to resist Soviet geopolitical advances.

Although the above appears to have been generally accepted by the Soviet strategic elite, it is important to note that no clearly defined strategy

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exists to make it happen. The Soviet leadership, however, seems to have been reasonably satisfied with the return on its military investment. To them,

Soviet power is credited with "sobering" the United States and "compelling" it to accept detente, with accelerating the rise of "progressive" forces in the Third world, and generally with preserving world peace...

The American adoption of flexible response inevitably appeared from the Soviet perspective as a United States retreat from the strategy of massive retaliation, and the limited nuclear options, although more disturbing, seemed like an American attempt to regain a lost advantage. The Soviet strategic community concluded that the evolution of United States strategic doctrine was the result of a forced response to the growth of Soviet strategic power.

From the perspective of the correlation of nuclear forces, the Soviet leadership appears to have been seeking advantages on a macro level that could be translated into political significance. There appears no doubt that the Soviet military values military supremacy, but the competition with the United States has made quantifiable nuclear superiority unreachable. Nevertheless the overall search for a favourable correlation of forces means that the Soviet Union would be happy to accept nuclear

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advantages were the United States to default. Although deterrence of American nuclear attack in all conditions probably remains the most important Soviet strategic requirement, Soviet nuclear strategy also displayed compellent characteristics in that the achievement of nuclear advantages over the long term remained a fundamental goal.

4. The Implications of the Search for Advantage

In spite of apparent changes in military doctrine post 1977, a consistent tendency of Soviet military strategy appeared related to a search for some form of usable advantage. Soviet nuclear strategic forces developed to a point where the potential interaction of superpower military strategies actually permitted Soviet political leaders to restrain military spending, without great risk, and to declare that Soviet military forces exist for defensive or deterrent purposes only. In this fashion political asymmetries can be exploited by generating public sympathy in the Western nations that result in greater political pressure to reduce their armaments.

Whether the Soviet politburo was truly seeking military superiority is in some respects irrelevant; what is important is that some elements of the Soviet strategic elite did seriously value this advantage. In this period the Soviet Union was not faced with the choice of accepting parity or superiority; the choice was "between parity and a dangerous competition for superiority, the outcome of which was by no means

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151 Mikhail Gorbachev, cited by Major General Yu Lebedev, "Military and Strategic Parity and the Realities of the Nuclear and Space Age," International Affairs (July 1986), p. 27. See also John Van Oudenaren, Deterrence, War-Fighting and Soviet Military Doctrine, pp. 12-15.
certain. The Soviet search for advantage therefore remained more subtle than an outright drive for superiority, and its goals were directed to the ancient art of winning without fighting. By attempting to deny the United States the ability to use its strategy, the Soviet leaders hoped not only to deter American reaction to Soviet successes but to create a political atmosphere that corresponded with Soviet interests.

The first danger to the West, therefore, is not war as such, but rather the threat of war, and that the West will succumb to that threat, and be gradually Sovietized without ever a shot being fired.

Although such a strategy creates deterrence, its expressed intention is also to compel the United States to accept an increasing Soviet voice in international relations that eventually would lead to increased Soviet influence in the world.

V. CONCLUSIONS

Nuclear strategy in Soviet terms is a component of Soviet military strategy and is subordinated to military doctrine, the political-military strategy of ideological confrontation with the West. While military doctrine has evolved considerably over time, the precise makeup of nuclear strategy has been largely determined by Soviet military officers who appear heavily influenced by traditional concepts of combat utility which they have adapted to the nuclear age. These officers have contributed impressively to a unique Soviet strategic culture that is identifiable and differs in significant ways from that found in the United States. To the


153 See Sun Tzu, The Art of War, pp. 77-78.

Soviet strategic elite, greater military power, including nuclear power, results in greater security, respect and influence in the world, and these attitudes more closely reflect the more traditional themes of the compellent paradigm than those of the deterrent.

During the early period of Soviet nuclear weapon development, nuclear strategy became closely linked with traditional or pre-nuclear strategy to a degree not found in the West. Soviet political and military leaders viewed the nuclear superiority of the United States with respect and set out to close that gap as rapidly as possible. It is perhaps a reflection of Soviet strategic culture that the notion of deterring superior American power did not grow roots as deeply as it did in the West which enjoyed the strategic advantage at the time.

As the Soviet Union began to achieve the capability to attack the United States, a pre-emptive strategy of being first to initiate the decisive use of nuclear weapons became Soviet policy. This reflected an appropriate strategy for a weaker power yet it still carried the ideological connotations of offensive action. While striving to catch up to the United States' nuclear power, the Kremlin's military experts appeared to accept the ultimate usefulness of military superiority.

More recently, with the achievement of parity, the Soviet Union adopted a more assertive foreign policy backed by powerful conventional and nuclear forces. Military elements of the Soviet strategic elite continue to view military superiority as desirable, but competition with the technologically superior United States and the high cost to a stagnant Soviet economy have made this goal unattainable. As evidenced by deterrent declaratory policy and the no first use declaration, Soviet military doctrine has shifted towards assured destruction and deterrence, but these changes do not appear to have been accepted at lower levels.
The analysis of Soviet military strategy to 1986 indicates that it retained an ideologically motivated offensive strategy, as well as a sensitivity to opportunities to seek relative advantage. While the Soviet leaders sought above all to deter a United States nuclear attack on the Soviet Union, they also sought to reap political advantages through compellence when specific occasions presented themselves.

In the Russian language two meanings are often translated as deterrence, "keeping out" and "intimidation." The former usually refers to the Soviet strategic forces and reflects the defence value inherent in strong military forces, but the latter often characterizes the United States strategic forces and reflects the compellent value of a superior position. The Soviet Union acknowledged that deterrence is necessary and that assured destruction obtains, but it appeared loath to accept it as a strategy. Military doctrine appeared to be shifting to a deterrent view of nuclear weapons, but military strategy appeared not to change at all. The fundamental reason may be that the Soviet strategic elite has, for the most part, never accepted the deterrent paradigm nor are they convinced that the United States has. As a consequence the compellent paradigm may more accurately describe Soviet military strategy or at least the thinking behind it from 1970 to 1986.

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155 David Holloway, The Soviet Union and the Arms Race, p. 32-34.

156 Aleksandr G. Savelev, "Averting War and Deterrence: The Approaches of the Warsaw Pact and NATO," Mirovaya Ekonomika I Mezdunarodnyye Otnosheniya (June 1989), translated by FBIS/JPRS 5 October 1989, p. 11. The author attributes all the characteristics of the compellent paradigm to the United States and NATO.
Chapter Five

THE COMPETITION IN ARMS CONTROL

Arms control theory discussed in chapter two provides the intellectual background within which the practitioners of arms control have sought to achieve agreements acceptable to their respective societies. That chapter further developed the theme that there are at least two perspectives which, to a degree, reflect the deterrent and compellent paradigms of strategic thinking. It follows therefore that an analysis of the strategic arms control policies of the superpowers from a paradigmatic perspective should indicate which paradigm tends to dominate.

The focus on the United States and the Soviet Union strategic arms control practices will concentrate on the period 1970-1986. The role of other nuclear powers in strategic arms talks during this period has been minimal and therefore will not be specifically addressed. This in itself raises questions "about the political structure of the world and the distribution of power within it."¹ This study accepts the fact that the superpowers may conceive of arms control to their mutual advantage, perhaps even, at times, to the detriment of the international system.

The initiation of strategic arms control negotiations seemed to imply a commitment by each superpower to institutionalize mutual vulnerability in some form, and yet chapter two demonstrated how each paradigm could in theory support responsible negotiations and the reaching of an arms control agreement. The deterrent paradigm emphasizes the cooperative achievement of a stable balance through mutual assured destruction. It is essentially defensive in orientation and in its purest

form precludes limited and flexible nuclear war as a responsible policy option. The compellent thinker, on the other hand, views arms control as a competitive process, the ultimate logic of which is superiority. The greater the intensity of competition as opposed to cooperation in arms control, the more likely compellent thinking will be present.

This study will focus only on some illustrative examples and is not intended to be a complete review of what is a complex history of detailed arms control negotiations. After a brief review of early nuclear arms control efforts, this chapter will deal in turn with the Strategic Arms Limitation Talks (SALT I and SALT II) and the Strategic Arms Reduction Talks (START). The aim of this chapter is to apply the paradigmatic framework established in chapters one and two in order to determine, to the extent possible, the degree of compellent behaviour in the superpower strategic arms control negotiations.

I. **EARLY NUCLEAR ARMS CONTROL**

The early arms control efforts are important because they helped shape the experiences of those that began the first round of the Strategic Arms Limitation Talks in 1969. These experiences to a degree established our paradigmatic frame of reference.

The most prominent example that appeared relevant to arms control practitioners was the 1921 Washington Naval Treaty that set the ratio of capital ships among the major powers. What the proponents of arms control tended to overlook, however, was the degree of political motivation that made that treaty possible in the first place and then caused it to fall apart. For example, implicit in the agreement was the initial belief that Japan would help protect British and American interests in the Western
Pacific area in return for a certain naval balance. Thus, the Washington Naval Treaty was only really of substantive value as long as the British and Japanese naval treaty existed. In retrospect it is clear that political factors are of key importance in arms control matters.

History also provides ample evidence of the need for some form of arms control to stabilize security relationships and to minimize the prospect of surprise attack. One study in 1883 determined that since 1700, in a sample of about 115 wars, 107 started with fighting rather than a declaration of war and, of those, 41 began with a surprise attack. What happened to the United States and to the Soviet Union in 1941 and in Korea in 1950 were therefore not anomalies but rather marked a considerable degree of continuity with the past.

In the 1930's considerable effort was placed on disarmament and arms control issues. In the West the theoretical approaches noted in chapter two were dominant, but the Soviet Union tended to a more narrow view where all arms limitation fell under the "umbrella" of disarmament. Stalin, however, was more concerned with developing Soviet power:

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2 As Japan expanded her ambitions in China and her naval power to support them, that agreement was no longer valid. See Philip Towle, *Arms Control and East-West Relations* (London: Croom Helm, 1983), p. 172.


...to slow the tempo means to lag. And laggards are beaten. The history of old Russia consisted in being beaten continually for its backwardness.6

Stalin's determination to build Soviet industrial and military power in the early 1930's made the Soviet overtures to initiate global disarmament appear more as political warfare than realistic arms control.7

This theme was repeated as the Soviet Union began to construct a strategic nuclear force in the 1950's. At the surprise attack conference of 1958, both sides talked past each other, but at least the dialogue had started. The right wing of the United States, however, soon accused the Soviet Union of proposing disarmament for political advantage.8 One of the early issues that highlighted these concerns was the proposed test ban where the Soviet Union attempted to put pressure on the United States. By conducting several large nuclear tests and then declaring a unilateral moratorium on all nuclear testing, the Soviet Union undoubtedly hoped to curtail the American nuclear testing programme. When the Soviet Union resumed nuclear testing in 1961 it was with a 57 megaton device - by far the largest nuclear detonation in the world.9 This behaviour clearly evidenced a compellent motive, and the Soviet Union did succeed in testing large nuclear weapons in the atmosphere that the United States could not


duplicate after the Partial Test Ban Treaty was signed. Soviet objectives from the 1930’s to the 1960’s appeared to be primarily directed at blunting the growth of the West’s strategic power in the hope of minimizing their adversary’s strategic advantage.

The next major attempt to control nuclear weapons was initiated by the United States when President Johnson proposed a freeze on offensive and defensive nuclear weapons in January 1964. Like the Baruch Plan of the 1940’s, this proposal if accepted by the Soviet Union would have established a permanent American dominance, denying the Soviet Union the ability to match the United States in strategic systems, to harden ICBM silos or to place SLBM’s at sea. To the Soviet Union the years 1963-1968 were years of sizable projected increases in their nuclear force structure whereas the United States force structure was actually decreasing. The nuclear freeze proposal of 1964, from the Soviet

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13 Nuclear force structure refers to those nuclear capable military systems actually deployed and in operational status. In this study it is used in reference to those systems identified in SALT negotiations. In 1965 the U.S. had 2188 Strategic nuclear delivery vehicles against the Soviet 475, but by 1970 the U.S. had 2175 against the Soviet 1686. The U.S. reductions were due to reductions in bombers. See Hearings before the Subcommittee on Arms Control, International Law and Organization of the Senate Committee on Foreign Relations, ABM, MIRV, SALT and the Nuclear Arms Race (Washington, D.C.: USGPO, 1970), pp. 306-308, and Annex H. See also Robert Ehrlich, Waging Nuclear Peace: The Technology and Politics of
perspective, was totally unacceptable in that it clearly demonstrated that the United States had little interest in allowing the Soviet Union to achieve parity."14

Where the Soviet Union and the United States did reach agreement on arms control issues, the resultant treaties had little to do with nuclear deterrence as such, but were more properly termed confidence building measures.15 In addition to a number of fairly minor treaties, one interesting confidence building measure was the "graduated and reciprocal initiatives in tension-reduction" initiated by Kennedy and reciprocated by Khrushchev in 1963.16 Both leaders were shaken by the Cuban missile crisis of the previous year. This period in the mid to late 1960's laid the path for what transpired in SALT I. Relations between the superpowers gradually improved to the point where serious arms control talks could begin, but the political realities that had been revealed by the USSR in 1961 and by the U.S. in 1964 still lay under the surface.

This section has briefly surveyed some elements that preceded the key time frame of this study to demonstrate those traces of continuity with the past. Clearly, cooperation must be part of any serious arms control dialogue, but prior to the late 1960's it appeared that competition

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prevailed.

II. SALT I

The first SALT discussions between the two superpowers began in November 1969 and the SALT I accord was agreed by mid-summer 1972. This section will analyze the apparent aims, the implied threats and the correlation of nuclear forces that may have affected the final outcome.

1. Strategic Intentions

In retrospect it appears that the two superpowers held at least some different strategic objectives during the SALT negotiation process. The United States for the most part seemed intent on educating the Soviet Union as to the desirability of a stable and mutually acceptable balance of nuclear weapons, but the Soviet Union proved less than receptive to these ideas and more interested in protecting its plans to deploy a new generation of ICBM's.

The analysis of the United States aims in SALT I is made more difficult by the process, in particular the back channel negotiations conducted by Henry Kissinger which at times directly contradicted the United States position officially tabled at the negotiation sessions in Europe.17 This confusion in United States policy helped to lower the effectiveness of one of the key U.S. aims in SALT which was to stop Soviet

ICBM and SLBM launcher construction programmes. The United States, at least initially, hoped that the Soviet Union would agree to accept limits on strategic launchers that would be in rough numerical equivalence to those of the United States. In early 1970 the United States first proposed to limit ballistic missiles to 1710 launchers on each side, then when that was rejected, urged phased reductions of 100 ballistic missiles a year until equal levels of 1000 ballistic missiles were reached. Throughout the SALT I process the United States sought to restrain, albeit unsuccessfully, the pace of Soviet ballistic missile deployments.

Although the Soviet Union's primary motive in SALT I appeared to be to enshrine global acceptance of Soviet strategic parity, considerable doubt over the actual decision making process remains because of the high degree of Soviet secrecy that inevitably masks our understanding of true Soviet aims. According to one very good study, the SALT I agreement offered the Soviet Union a guarantee of their strategic nuclear equality with the United States and substantial other benefits at the price of hampering their pursuit of strategic superiority.

During the negotiations, however, the Soviet representatives also took great care to seek an accord that would permit the deployment of their newer and more capable ICBM's. Another Soviet objective may also have been "to promote circumstances that would allow the Soviet Union to reduce

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18 Gerald Smith, *Doubletalk: The Story of SALT I*, p. 156.

19 Ronald E. Powaski, *March to Armageddon: The United States and the Nuclear Arms Race, 1939 to the Present* (New York: Oxford University Press, 1987), p. 135. This initial proposal included SLBM's and a ban on MIRV's but was tied to on-site verification inspections.


the dimensions of the United States' lead in ABM technology. The combination of the above points prompted the United States Secretary of Defence to doubt that the Soviet Union entered the arms control negotiations with a shared deterrence objective. In fact, it is probable that Marshal Grechko's good relations with Brezhnev and his elevation to Politburo membership gave him the ability in effect to tell the United States "to take or leave" SALT I with a three to two ratio of Strategic Nuclear Delivery Vehicles (SNDVs) in favour of the Soviet Union. At the very least his power probably allowed the military to exert a strong conservative influence in SALT I decision-making. In something so fundamental to Soviet security, it is quite likely that the Soviet leaders would wish military acceptance for the first SALT agreement. That military input may in part explain why the Soviet Union clearly rejected any real constraints on its ballistic missile improvement programmes in the SALT I accord.

In any event, as a result of Soviet intransigence, the United States agreed to establish numerical offensive limits that appeared to permit all Soviet and American planned strategic programmes to proceed without alteration. For the United States, the acceptance of this accord

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demonstrated that the United States military had, in part, lost its fight to retain nuclear superiority as a strategic objective.\textsuperscript{25} Thus in SALT I both superpowers appeared, at least on the surface, prepared to accept, in principle, limitations that would preclude the near term attainment of nuclear superiority. The agreement to limit ABM’s further indicated that the superpowers had accepted a stable nuclear relationship, but doubts remained over long-term political objectives. The SALT I accord was the first major strategic arms agreement and thus an important precedent. As a first step toward controlling and stabilizing what had been an unlimited arms competition, it exhibited outwardly many characteristics of the deterrent paradigm. Yet, neither superpower compromised anything that it was not earlier prepared to give up, and the competitive nature of certain proposals and objectives suggests that the compellent paradigm may offer an alternate explanation of political arms control.\textsuperscript{26}

2. The Threat of Force

In an arms control negotiation that depends heavily on mutual cooperation, direct nuclear threats clearly have little utility, but implicit threats remain embedded in each nation’s force structure decisions and even in certain arms control proposals. What one nation perceives as a reasonable hedge against what the opponent might be capable of doing is seen by the other as a threat. Those weapons perceived as


most threatening are those that the other side tends to hold highest in their hierarchy of military requirements, particularly in the Soviet case.27

During SALT I negotiation the United States viewed the steady Soviet ICBM build-up as a significant threat, and the USSR perceived the more successful American MIRV and ABM programmes as technological threats. The United States in particular felt that the Soviet heavy ICBM’s were serious potential threats because they could and probably would eventually carry a larger number of MIRV’s than could smaller American ICBM’s. The more warheads carried, the greater the probability that counterforce attacks could be effectively launched. The Soviet negotiators viewed the American forward based nuclear systems (FBS) with equal concern because of their proximity to the Soviet Union. Thus, American efforts in 1970 to stop the production or reduce the numbers of Soviet heavy ICBM’s in conjunction with the United States proposals to build more ABM sites for each Soviet site or to freeze MIRV technology could be considered as implied threats.28 The United States was threatening to outstrip the USSR in MIRV and ABM technology.

Thus to a degree, technological competition for strategic advantage formed the basis for those threats implicit in the SALT I negotiating period. The key Soviet concern centered on the ability of the United States to develop quickly and deploy sophisticated weapon systems that


28 Ronald E. Powaski, March to Armageddon: The United States and the Nuclear Arms Race, 1939 to the Present, pp. 135-137. The United States proposed to have four ABM sites at missile fields for one Soviet ABM site around Moscow. The result of these various proposals, all offered in 1970, would have given the United States a significant military advantage.
would take the Soviet system considerably longer to counter or replicate.\(^{29}\) The United States had clearly demonstrated the ability to rapidly build qualitatively and quantitatively superior forces in the early 1960's, and the Soviet military feared that the United States could do so again if not constrained by arms control.\(^{30}\) The opportunity to limit United States defence programmes to a large extent, therefore, is what motivated the Soviet leaders to accept negotiated limits on their own forces. In this manner the Soviet Union probably has seen "considerable advantage in averting what appeared to be a costly, unpredictable and disadvantageous competition."\(^{31}\)

The combination of MIRV and ABM technology could eventually give significant nuclear strategic advantage to the United States. Soviet analysts from 1968 to 1974 argued that

the United States military industrial complex redoubled its efforts to gain one sided advantages vis-à-vis the USSR, especially in MIRVing, when SALT I seemed imminent.\(^{32}\)

Soviet and American military officers alike realized that accurate MIRV's coupled with an effective ABM could result in a credible first strike capability. According to the chief American negotiator, MIRV's could not be negotiated in SALT I because the United States preferred to retain its technological advantage and the USSR saw the enormous downstream potential


\(^{31}\) Robert J. Einhorn, Negotiating from Strength: Leverage in U.S.-Soviet Arms Control Negotiations, p. 38.

that MIRV's offered to the Soviet Union with its larger ICBM's.\textsuperscript{33}

The only feasible means with which the Soviet Union could readily
counter the American technological lead was to build greater numbers of
ICBM's and to limit ABM's. According to Gerald Smith, the Soviet
strategic build-up in 1969-1971 was developing such momentum that
President Nixon may have felt those years offered the last chance to deal
with the USSR on equal footing.\textsuperscript{34} The United States leaders held a
certain fear of Soviet intentions. Although the Soviet negotiators had
been straightforward about their requirement for larger silos to house the
SS-19 replacement for the SS-11, Kissinger later accused them of duplicity
and many senior United States leaders believed him.\textsuperscript{35} The result of this
kind of behaviour was an increasing perception that the United States
needed to be strong to negotiate successfully with the Soviet leaders.
This was evidenced by the decision to accelerate the Trident programme by
three years in order to present the Soviet Union with an upcoming system
as a "bargaining chip."\textsuperscript{36}

Because each superpower proceeded cautiously in SALT I, a great deal
of mutual mistrust prevented the achievement of a more comprehensive
agreement. Nevertheless, if it is viewed as the first steps toward an


\textsuperscript{34} Gerald Smith's remarks are in Michael Charlton's excellent book,
\textit{From Deterrence to Defence: The Inside Story of Strategic Policy}
(Cambridge, Massachusetts: Harvard University Press, 1987), p. 32. The
Secretary of Defence, James Schlesinger was also concerned with breaking
the momentum of Soviet ICBM deployment patterns; see his testimony before
the Subcommittee on Arms Control, International Law and Organization of
the Senate Committee on Foreign Relations, \textit{U.S.-U.S.S.R. Strategic Forces}

\textsuperscript{35} Raymond L. Garthoff, \textit{Detente and Confrontation: American-Soviet

Spending on Trident was moved forward to provide the first submarine in
acceptance of the institutionalizing of MAD, the first SALT accord appears to reflect the stable balance characteristic of the deterrent paradigm. During the SALT I process, however, each superpower did demonstrate a tendency to view each other's strategic arms construction programmes and technological developments as threats designed to achieve potential advantage, a characteristic of compellent thinking.

3. The Correlation of Nuclear Forces

Because the SALT I accord imposed no real constraints on offensive force development for either superpower, it really had a marginal effect on the offensive balance. It permitted MIRV deployment for the United States and allowed the Soviet Union to deploy up to 2568 ballistic missiles, a figure they never actually reached. The lasting achievement, at least to date, of the SALT I accord, however, was the agreement to limit ABM's. This section will analyze the correlation of nuclear forces, paying particular attention to the ABM agreement.

The quality of nuclear forces was not a central issue in SALT I, but nevertheless it did have a bearing on the negotiations and the final accord. The Soviet Union, for example, negotiated with great care to avoid interfering with the deployment of its new generation of ICBM's which were expected to be technically far superior to the earlier SS-11 missiles. Critics of SALT I in the United States were extremely disappointed to discover that the Soviet replacement ICBM's had about

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37 David Holloway, The Soviet Union and the Arms Race, p. 47.
three times the throw weight of the SS-11.\(^{38}\) One objective of the United States in SALT I was to constrain or reduce Soviet forces so that they could only be used effectively against United States population and urban centers, but these new missiles appeared designed to eventually carry enough MIRV warheads to cover the entire target spectrum.\(^{39}\) What made this problem even more disturbing was the fact that the SALT I accord hampered the United States from developing its own counterforce capability because it effectively foreclosed the upgrading of its silos.\(^{40}\) Nevertheless, for the United States to agree to Soviet quantitative superiority in SALT I, the United States at the time must have had high confidence in its qualitative advantage based for the most part on its technical lead in MIRV's.

The numerical balance throughout the SALT I process appeared to assume increasing importance. One observer noted a shift in emphasis in 1972 "from an interest in the character of strategic weapons to an interest in numbers."\(^{41}\) The conclusion of SALT I giving a significant numerical advantage to the Soviet Union probably contributed a great deal

\(^{38}\) The SS-11 was partially replaced by the SS-17 and SS-19, both considerably larger. See Colin S. Gray, "Strategic Forces and SALT: A Question of Strategy," Comparative Strategy 2 (Number 2, 1980), p. 127. Throw weight refers to the ability of a given missile to carry a payload over a given distance. The greater it is, the more firepower a missile can deliver in either the form of larger or multiple warheads.


\(^{41}\) Thomas C. Schelling, "What Went Wrong with Arms Control," in Oyvind Osterud, ed., Studies of War and Peace (Oslo: Norwegian University Press, 1986), pp. 99-100. This work contains a selection of very good articles.
to this shift. One of the reasons the Soviet negotiators insisted on greater numbers was to in some way compensate for the United States FBS deployed in Europe. Soviet officials repeatedly raised the FBS issue and at one point even noted that the equivalent megatonnage of the American FBS was greater than that deployed on Soviet SSBN's.42

With respect to combat utility of strategic nuclear weapons, each superpower in SALT had to accept limitations, but most importantly it was the United States that had to accept Soviet numerical parity. The Soviet Union in fact refused to discuss qualitative limits on their forces; their interest lay, not in sanctioning America's advantages, "but in cancelling them by some other means."43 To obtain the SALT accord the United States was compelled to "discount" its strategic advantages and recognize the right of the USSR to catch up with the United States.44 This notion, however, was not universally acceptable to American leaders and strategists. Immediately prior to SALT, President Nixon noted the need for a dominant nuclear posture as a check on Soviet expansionism and as a source of suasion to encourage moderation and accommodation to Western interests.45 One of the key issues that caused a shift in United States policy was the difficulty the United States leaders had in satisfactorily

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42 Gerald Smith, Doubletalk: The Story of SALT I, p. 92. See also Raymond L. Garthoff, Perspective on the Strategic Balance (Washington, D.C.: Brookings Institution, 1983), pp. 19-20. FBS were capable of destroying in one-way attacks 20 per cent of Soviet ICBM/MRBM force or 25 per cent of Soviet population.


explaining their ABM programme, particularly in the climate of SALT and detente. The administration even raised the spectre of a future Chinese nuclear threat as part of the initial justification for ABM.

The ABM treaty was the most significant aspect of SALT I negotiations in that it appeared to herald the acceptance of a stable nuclear balance based on mutual assured destruction. The United States probably agreed to it because ABM's were not yet acquired or deployed, their efficacy was questionable, they were enormously expensive and it was increasingly difficult to achieve a consensus on how to handle them - unless they were party to an agreement with the Soviet Union. Why the Soviets agreed to it was more controversial. In 1967 Kosygin had told President Johnson that a ban on ballistic missile defences was "the most absurd proposition he had ever heard." Even as the ABM Treaty was being signed, Soviet leaders were according civil defence in the USSR an extremely high priority. Because Soviet military doctrine continued to maintain its commitment to strategic defence, it appeared that other considerations may have motivated the Soviet Union.

Several analysts have concluded that an important concern of the Soviet Union was to place constraints on the more technically advanced United States ballistic missile defence activities. The Soviet ABM had proved to be a disappointment to the Soviet military, and by 1968 there

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was a "sharp drop in the frequency of claims to an effective ABM defence of the USSR." Although Soviet leaders did appear, after a time, to accept the logic that ABMs were a threat to MAD stability, they remained skeptical as to its desirability or the United States' acceptance of MAD. Thus they probably accepted the ABM Treaty as a second choice. Henry Kissinger was convinced that the Soviet leaders "wanted to stop the only strategic programme we were actually building."

From the Soviet viewpoint, the United States was prepared to negotiate SALT because of a fundamental change in the Soviet-United States correlation of nuclear forces. From the official American perspective the first SALT agreements were "without question in the American national interest" for they "capped" the Soviet strategic construction programmes and yet allowed an American technological lead. For the right wing in the United States, however,


the Soviets had worked out a highly one-sided concept of what the talks should accomplish, and...their goal was an agreement that would enhance Soviet power at the expense of the U.S.\textsuperscript{54} Thus, two distinct views exist that roughly parallel the deterrent and compellent paradigms, and so far the analysis of SALT I demonstrates that compellent thinking was evident in both superpowers.

4. The Paradigmatic Implications of SALT I

Which paradigm dominated the SALT I outcomes is difficult to establish. To the extent that the assumptions have changed since the 1950's and 1960's, arms control has become a more complex process.\textsuperscript{55} What appears one way on the surface may be subtly different in substance.

In the political framework of detente, most analysts focused on the United States' acceptance of rather than the Soviet achievement of parity. Nowhere was parity defined. What SALT I did do was acknowledge the United States acceptance of the Soviet Union as a "political and psychological equal."\textsuperscript{56} What SALT I did not do was establish superpower agreement that reflected military equality. It established quantitative not qualitative limits, but the technological competition continued.

In SALT I, the two sides were not really addressing a common set of problems. Asymmetries in fundamental national assumptions caused the United States to view SALT as a process separate from other security activities and the Soviet Union to see it as a small part of a much


\textsuperscript{56} William R. Kintner and Robert L. Pfaltzgraff, eds., SALT: Implications for Arms Control, p. 399.
One respected observer also noted that in the United States the influence of the military was in decline whereas in the Soviet Union it appeared to be in the ascendancy. Because the military seem to gravitate naturally to a war fighting perspective, increased military influence could indicate greater compellent tendencies.

The paradigmatic analysis shows each power had specific objectives which could be explained by either paradigm. Both appeared very concerned over technological developments to the point of feeling threatened by the other. On the surface the ABM Treaty and the apparent acceptance of mutual assured destruction with offensive limits appears to indicate a dominant deterrent paradigmatic correlation, particularly in the United States. But further analysis reveals that a compellent explanation of the SALT I process, particularly with respect to Soviet views, is a plausible alternative.

III. SALT II

Immediately after SALT I was signed in May 1972, the superpowers began a dialogue on SALT II, but they could not agree on a second treaty until June 1979. This treaty, signed by President Carter, was never ratified by the United States primarily due to the deterioration of political relations and the consequent loss of trust between the superpowers. This section will analyze the SALT II process using the same framework as the preceding section.

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57 Gerald Smith, *Doubletalk: The Story of SALT I*, p. 455.

1. Strategic Intentions

Initially it appeared that superpower arms control objectives did not appreciably change, and the SALT I process continued unaltered until the autumn of 1974 when the Vladivostok accord was reached. This framework was the result of a compromise in which the United States abandoned its strong efforts to cut back Soviet throw weights and the Soviet Union dropped its insistence that FBS be included. In the United States this compromise was never totally accepted; the liberals felt the overall limits were set too high, and the conservatives feared that dropping the throw weight issue was a fundamental error. This compromise was also not without controversy in the USSR as Brezhnev reportedly had to "spill political blood" to achieve this accord. Beginning in the mid-1970's a deterioration in political relations slowly began to erode mutual trust and confidence such that the tensions inherent in the arms control process began to surface.

In the United States, both the liberals and the conservatives began to attack the arms control process based on the Vladivostok Accord, thereby gradually eroding its political support. By 1977 Harold Brown, the United States Secretary of Defence, had convinced President Carter to depart from the Vladivostok framework by proposing to cut one-half of Soviet heavy ICBM's. This proposal, if accepted by the Soviet Union, would have significantly hindered the Soviet pursuit of a hard target kill capability against United States ICBM's. Furthermore, the United States

59 Ronald E. Powaski, March to Armageddon: The United States and the Nuclear Arms Race, 1939 to the Present, pp. 151-152.


61 Raymond L. Garthoff, Detente and Confrontation, p. 804.

62 David S. Yost, European Security and the SALT Process, p. 44.
Secretary of State, at least for a time, viewed arms control as a manipulative instrument for controlling Soviet behaviour. With increasing global superpower rivalry, the United States appeared to be introducing new objectives in the SALT process.

The Soviet Union continued to regard arms control as a political struggle, a protracted test of will, skill and resources. Soviet arms control proposals, for the most part, continued to appear designed to generate tensions among NATO members, to stimulate public concern, and to achieve limits on Western forces without reciprocal limits on Soviet forces. During SALT II the American arms control community began to lose their cultural myopia and relinquish their evangelical objectives of educating the Soviets as to the virtues of deterrence. Throughout the SALT II negotiations the Soviet Union appeared primarily concerned with limiting the ability of United States nuclear weapons to support American foreign policy.

With respect to the degree each superpower was willing to support the status quo of the nuclear balance, SALT II saw some shifts in emphasis. The Soviet Union clearly stopped well short of endorsing the existing


nuclear equilibrium. Rather, the USSR endeavoured to persuade the United States to accede to a "fundamental restructuring" of the old international order, in large part based on a new correlation of forces. The "hawkish" element in the United States became convinced that American "renunciatory passivity" in the face of the Soviet nuclear build-up compromised the utility of arms control as a respectable tool of strategic policy. Pressure began to build in the United States for a more hard line response. In the Carter administration, some arms control initiatives were even undermined by Brzezinski and Schlesinger who sought to protect the United States' ability to produce nuclear weapons and conduct the minimum number of tests necessary for the United States nuclear weapons programme. As SALT II progressed, the United States negotiators increased their efforts to limit Soviet ICBM's, the fundamental objective of which was to reduce Soviet MIRV's. The SALT II process was only able to consolidate or manage "the more satisfactory aspects of the political and military status quo," but other key elements remained beyond agreement. An example of the underlying tension was that even the signed treaties on the Nuclear Threshold Test Ban (1974) and Peaceful Nuclear Explosions (1976) had never been submitted for


70 Strobe Talbot, End game: The Inside Story of SALT II, p. 127.


The last aspect of superpower objectives relates to the notion of improving one's international political position with arms control. For the Soviet Union in this period, arms control was an adjunct to military power and not necessarily the primary means to safeguard Soviet security.\footnote{Helmut Sonnenfeldt and William G. Hyland, Soviet Perspectives on Security. Adelphi Paper 150 (London: International Institute for Strategic Studies, 1979), p. 22. See also Arnold L. Horelick, "The Strategic Mindset of the Soviet Military," Problems of Communism 26 (March-April 1977), p. 85.} As a result, the USSR avoided presenting concrete proposals that involved constraining or restructuring its own nuclear force posture.\footnote{Harold Brown and Lynn Davis, Nuclear Arms Control Choices (London: Westview Press, 1984), p. 36. This aspect has changed post 1986.} The United States on the other hand repeatedly tabled arms control proposals that have had the ambitious goal of eliminating worrisome force asymmetries that it was not prepared to counter through unilateral defence efforts.\footnote{Robert J. Einhorn, Negotiating from Strength: Leverage in U.S.-Soviet Arms Control Negotiations, p. 39.} The SALT II process showed that if there was any convergence in strategic thinking it may be that the United States was beginning to reflect the USSR in strategic theory.\footnote{Coit D. Blacker and Gloria Duffy, eds., International Arms Control: Issues and Agreements (Stanford, California: Stanford University Press, 1984), p. 340.} The United States would not accept Soviet arms control proposals that might preclude the deployment of MX or Trident.

Strategic intentions of both superpowers in SALT II suggested that each was increasingly inclined to seek some advantage as a tactical goal...
in the negotiations. Notwithstanding this tendency, one study determined that no arms race existed and that in terms of strategic spending the logic of the weapons build-up was internally, not externally, motivated. One implication is that the motivation for these weapons has less to do with pure deterrence than with other objectives, some of which, during the SALT II process, were compellent in nature.

2. The Threat of Force

As political tensions increased between the superpowers, it was perhaps inevitable that at some point explicit threats would be made. SALT II was marked by at least one overt threat and several implied threats as the negotiations dragged on.

The one explicit threat was made by the United States in 1977 after the Soviet Union had totally rejected President Carter's deep reductions proposals. He declared at a news conference 30 March that

> if we feel at the conclusion of a month's discussions that the Soviets are not acting in good faith with us and that an agreement is unlikely, then I would be forced to consider a much more deep commitment to the development and deployment of additional weapons.

This threat implied that the United States would deploy the hard target capable MX unless the Soviet Union accepted the one-sided United States "deep cuts" proposals, and this was not well received in Moscow. When

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Carter received no favourable Soviet response, he used the opportunity to authorize the Mark 12A warhead deployment on the Minuteman 3 missile, a hard target capable system. In terms of obtaining an advantage for the United States in arms control, this threat was a total failure, but its primary impact on Moscow may have been to remind Soviet leaders that the United States technological lead still posed a significant threat.

Soviet concerns during SALT II were therefore little different than during SALT I. The Soviet Union appeared reluctant to make an arms control commitment in any area where the Soviet Union lagged for fear of being unable to catch up. New technology and new weapons take years to develop and could very easily be subject to arms control if sufficient political will existed. Arms control for the Soviet Union still tended to be primarily a political matter, and therefore it remained unrealistic for some Americans to expect that SALT II in itself could alleviate the major sources of military instability. Nevertheless the underlying premise in the Carter "deep cuts" proposal seemed to be that

the United States had a compelling technological advantage and new weapon systems that can force the Russians to accept fundamental changes in nuclear arsenals or be worse off than the United States if there is no agreement.

One of these new weapons that United States technology had built was the strategic cruise missile, and the Soviet SALT negotiators struggled to

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80 Robbin F. Laird and Dale R. Herspring, The Soviet Union and Strategic Arms, pp. 118-119. This was in May, 1977.


limit its deployment. The cruise missile posed serious arms control difficulties because it was small and not readily verifiable, and these difficulties were only partially offset by the fact that they are not good first strike weapons.\(^4\) The United States Department of Defence initially concluded that it was possible to add crucial support to this programme by calling it a "bargaining chip" in SALT, but during the negotiations with the Soviet Union the Pentagon was unwilling to give it up.\(^5\) Clearly, "new" military systems such as cruise missiles and Trident could only be funded for essential military purposes and thus in the final analysis make poor bargaining chips.\(^6\) In fact, the United States appeared quite prepared to exploit its cruise missile advantage as a response to the expansion of Soviet military power.\(^7\) The Soviet Union on the other hand proposed limits on air launched cruise missiles (ALCM's) that seemed calculated "to narrow existing asymmetries between the technologies" of the superpowers probably because the ALCM threatened to reverse the trends in the power balance.\(^8\) The United States response to the perceived

\(^4\) Charles A. Sorrels, U.S. Cruise Missile Programmes: Development, Deployment and Implications for Arms Control (Oxford: Brassey's Publishers, 1983), p. 178. Cruise missiles are slow and can take several hours to reach their targets.


Soviet counterforce threat was to rely on its technology to field new weapons that were far more sophisticated and could threaten the USSR in different ways.

The increased weapon survivability provided by small, mobile cruise missiles also complicated arms control because it created verification problems. The reliance on national technical means to verify compliance with arms control agreements has not been sufficient to satisfy the United States Congress.\textsuperscript{89} Not all tests can be completely monitored and evidence of cheating is rarely conclusive even though both superpowers have tacitly agreed to act with restraint with respect to interfering with each other's satellites.\textsuperscript{90} Unfortunately the national technical means used by the United States to monitor compliance with arms control agreements are the same means used to collect intelligence on all Soviet strategic activities.\textsuperscript{91} Thus much of the verification argument is clouded by the concern of the United States not to reveal too much of its true intelligence collection capabilities, and it could well be that certain Soviet "violations" have been specifically intended to test or confirm...
these American capabilities.\textsuperscript{92} The Soviet anti-satellite programme has generated a great deal of United States concern, but it has not developed into a very capable system. The SALT II agreement, in spite of several technical difficulties, made excellent progress in verification and has been called "an historic accomplishment" in this field.\textsuperscript{93}

During the SALT II negotiations the Soviets continued to add strategic warheads to their nuclear arsenal, and the United States continued to rely on superior technology. Carter's overt threat, the length of the negotiations and the failure of the United States to ratify the treaty all testified to the increased political competition to win a more favourable agreement.

3. The Correlation of Nuclear Forces

SALT II limits were set at levels only slightly lower than those of SALT I, but a series of sub-limits were probably of greater significance. Overall, offensive forces were capped at 2400 strategic nuclear delivery vehicles until 1981 when only 2250 were permitted. The ceilings on MIRVed ICBM's, MIRVed ballistic missiles including SLBM's, and all MIRVed ICBM's and SLBM's plus ALCM equipped aircraft were set at 850, 1200 and 1320 respectively. Thus in SALT II, some efforts were made to control the qualitative aspects of strategic weapons.

During the SALT II process, significant technical progress resulted in the deployment of qualitatively superior systems especially in the Soviet force structure. In particular, improvements in MIRV technology resulted in significant increases in accuracy and lethality during this


period. The control of accuracy however was not dealt with by SALT, even though the means to do so through testing limitations were available. This tendency to avoid limiting the qualitative aspect of nuclear arms is the result of a technological competition that neither superpower seemed prepared to restrict. The United States sought to maintain its technical advantages, and the Soviet Union attempted to contain those American advantages without agreeing to any limitations that could substantially hinder its own programmes to catch up. By not agreeing to address this qualitative competition the superpowers were exhibiting tendencies to develop counterforce weapons characteristic of the compellent framework.

The quantitative aspect of SALT II resulted in equality of limits in deference to the political requirements of the United States but at levels acceptable to the Soviet Union. Thus, the limits on the United States nuclear forces were actually higher in SALT II than they were in SALT I. According to Henry Kissinger in 1974 the only way the United States could have convinced the Soviet Union to accept lower numerical limits would be to drastically increase defence spending and to hold the increase for a number of years, long enough to convince the Soviets that we were going to drive the race through the ceiling with them.

Such thought creates a danger that arms control can create additional or

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unnecessary requirements that can distort military planning,\textsuperscript{97} and to a certain degree the United States hoped to use the threat of major cruise missile deployments as leverage to obtain lower limits. Carter in March 1977 went considerably further when he proposed deep cuts that would probably have emasculated the projected Soviet five-year plan resulting in the dissolution of a number of design bureaus and support institutions.\textsuperscript{98} The Soviet Union's outright rejection of this proposal attested to their determination not to allow arms control to drive Soviet military requirements.

Carter's proposal was also viewed in Moscow as an attempt to channel the superpower strategic competition into areas dominated by the United States to produce a one-sided advantage.\textsuperscript{99} Thus, the Soviet leaders probably attributed to the Americans the belief that some kind of nuclear superiority does matter. Various other analysts also noted that the debate in the United States over SALT II was really over how far the United States acceptance of nuclear war fighting should be allowed to go.\textsuperscript{100} The Soviet Union probably would have preferred nuclear superiority as well but for the extremely high costs and the unlikelihood of actually attaining it. Not having a SALT agreement could allow some temporary Soviet advantages but the United States with its superior economic base could always overtake the Soviet Union again as it did in the 1960's. Therefore, the conservative minded Soviet leaders probably accepted some

\textsuperscript{97} See Lawrence Freedman, \textit{Arms Control: Management or Reform}, p. 72.


constraints on their force structure to ensure the United States was at least equally constrained. Raymond Garthoff, a respected analyst, insists that the SALT II agreement caused the Soviet Union to cancel construction of about 50 SS-17 and 50 SS-19 silos.

During the SALT II negotiations each superpower wanted an agreement that would at least minimize risks and reduce or limit the levels of strategic weapons somewhat. The Soviet military's principal objective in SALT was to assure no disadvantage and to retain some advantage if possible. The United States was seriously concerned over the growing Soviet hard target kill capability that would provide the USSR with war fighting advantages. The competitive search for qualitative advantages dominated SALT II, and the inability of the superpowers to agree to control this phenomena demonstrates strong compellent tendencies.

4. The Paradigmatic Implications of SALT II

As political relations between the Soviet Union and the United States deteriorated, tensions over SALT II became exacerbated. At least one element in American politics sought to recoup the "losses" of SALT I which resulted in more assertive United States behaviour. The Soviet Union's approach to SALT II was very similar to that followed in previous negotiations; in fact, the Soviet leaders appeared to be quite disturbed

101 The nature of the compromise is spelled out in the United States Arms Control and Disarmament Agency, 1980 Annual Report, p. 58. See also Samuel B. Payne, The Soviet Union and SALT, pp. 77-78.


when Carter attempted to depart radically from the Vladivostok accords, which maintained strong continuity with SALT I.

The use of overt threats indicates that the political framework within which arms control was being negotiated was changing.

Business can no longer be conducted as usual, because the basis has changed and a new framework has not yet been established.104

The ultimate truth of that statement was that the SALT II agreement was a reasonably sound agreement that the United States refused to ratify. If one were to examine the SALT II treaty on its technical merits, it is difficult to see how it can be opposed unless one rejects its fundamental start point.105 Soviet negotiating behaviour and objectives remained fairly constant from SALT I and were not marked by anything extraordinary.106 This deterioration in the political framework appears to have as much to do with American reactions to Soviet foreign policy in the Horn of Africa, Angola and Yemen as with developments in arms control itself. The revolution in Iran and the Soviet invasion of Afghanistan finally made it impossible for any American administration to get SALT II ratified. The increased influence of the right wing in the United States corresponded with the decrease in American global influence, but the SALT II process and treaty became the scapegoats. Because the United States had always held high expectations for SALT, its failure and the realities of the Soviet strategic build-up proved to be a bitter disappointment.


The Soviet Union in SALT II displayed an understanding of deterrence but was not about to give up military advantages if they could be found. The United States became more assertive and made several proposals to draw down the Soviet forces and even attempted to improve its own military position. Stability in SALT II appeared to be a secondary issue in what became a technological competition to achieve advantage.

IV. START

The third and most recent phase of the superpower arms control negotiations began with the signing of the SALT II treaty and concludes with the summit meeting of October, 1986, in Reykjavik, Iceland. This period was marked by highly polemical rhetoric particularly from the conservative administration of Ronald Reagan. As was increasingly evident in SALT II, the worsening political relations between the United States and the Soviet Union had an increasing impact on arms control and tended to shape the START nuclear negotiations.107

1. Strategic Intentions

From 1979 to 1986 political relations between the superpowers continued to deteriorate over the Soviet invasion of Afghanistan, turmoil in Poland and the Soviet destruction of a civilian airliner. No major arms control agreement was reached in this timeframe, yet important negotiations took place at all levels. Of major concern to the USSR was the American commitment to the strategic defence initiative (SDI), and to the United States the most significant factor was the growing Soviet capability to destroy American ICBM's with only a fraction of Soviet

missiles. In this atmosphere, arms control negotiations became in some ways more of a propaganda exercise as each side appealed to the public media with its proposals.

The Reagan administration had campaigned stridently against the SALT II accords calling it a "fatally flawed" agreement. As noted in chapter three, the United States appeared to have introduced significant compellent objectives that affected its approach to arms control. Critics of this administration considered that Reagan had little use for arms control, and negotiations were simply a political ploy "to keep United States allies reasonably satisfied and United States voters reasonably quiescent." But one observer noted a fundamental change in arms control that amounted to a "paradigm shift" where the degree of strategic vulnerability became of paramount importance. Along the lines of original arms control theory, this concept accepted the notion of competition that has many objectives, not all of which are shared. Strategic defences became a central and fundamental objective of Reagan that could not be negotiated away in the arms control process.

The Soviet Union's view as to the utility of nuclear weapons did not change from the earlier SALT process, and during this period, the Soviet leaders appeared more genuinely interested in serious arms control

108 Michael MccGwire, Military Objectives in Soviet Foreign Policy, p. 265.


negotiations than their American counterparts. While Soviet political leaders seemed increasingly prepared to accept mutual vulnerability as an obvious reality, military officers in the Soviet Union continued to reject it as a fundamental objective. Although the Soviet Union continued to assign high priority to missile and space defence, it strenuously opposed the American SDI in arms control negotiations. This stance probably reflected Moscow's reservations that it could only lose in a BMD competition with the United States rather than a broad doctrinal conviction about the desirability of mutual vulnerability as a long term strategy.112

Another major Soviet arms control objective was to block the proposed American deployment of Pershing II and ground launched cruise missiles (GLCM) to Europe as part of the modernization of NATO long range theatre nuclear forces.113 European concerns expressed strenuously by Helmut Schmidt in 1977, over maintaining NATO's link to the American nuclear deterrent, resulted in NATO adopting in 1979 a twin track plan that provided for American deployments of intermediate range nuclear missiles beginning in 1983, if an arms control agreement to reduce Soviet theatre nuclear power could not be reached. The Soviet Union strenuously opposed the introduction of a "new" capability into Europe. Soviet and United States efforts to deal with this problem will be discussed in subsequent parts of this dissertation.

In this period the Soviet Union also declared a "no first use" policy for nuclear weapons that at least on the surface demonstrated increasing


113 Michael MccGwire, Military Objectives in Soviet Foreign Policy, p. 266.
reliance on deterrence, but it also put considerable political pressure that acted as a brake on United States policy to modernize its strategic forces. The Soviet Union sought to blunt the war fighting orientation of the Reagan administration that appeared aimed at restoring American nuclear superiority.

In terms of the status quo of strategic weapons or arms control negotiations, Ronald Reagan's policies signified an important change to Soviet leaders. In a "striking departure" from SALT, the United States was now rejecting the concept of mutual deterrence or stable balance. President Reagan in March, 1983, announced his SDI programme and declared his ultimate intention to make nuclear deterrence obsolete. Although one of his close advisors had no doubts about his deep personal commitment to significant arms reductions, the United States proposals in START were decidedly one-sided. Reagan's Eureka College speech in May, 1982, unveiled the first American START proposal that would have required the Soviet Union to scrap one-half of its modern MIRVed missiles to remain within the proposed limit of 2500 warheads on ICBM's.

Although the Soviet Union was beginning to accept the concept of a stable balance of nuclear weapons as a possible objective, the Soviet military continued to define deterrence in war fighting terms. To a Marxist theorist the premise that weapons contribute to the risk of war is


The major Soviet concern with SDI and significant reductions had more to do with the fear of United States technology than the concepts themselves. Arms control to the Soviet Union is an instrument to selectively negotiate certain weapon deployments to attempt "to remain technologically competitive with their most innovative opponents." Soviet negotiators have sought to block any United States efforts to improve its relative strategic position and have been primarily interested in containing technological advances in United States nuclear capabilities and space based systems that could ultimately threaten Soviet ICBM's and compel a costly restructuring of Soviet strategic forces.

The Soviet response to the Eureka College proposal was to call for a freeze on all nuclear weapons deployments, the main aim of which was probably to halt American technical progress.

In terms of long term political values, the Soviet leaders anticipated political conflict with the United States, and their enormous investment in strategic forces was intended as a diplomatic as well as a military instrument. The major problem for the Soviet Union in the 1980's, however, was that the high cost of these weapons propelled arms control into being an increasingly prominent factor in Soviet politics.

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117 Barry Blechman, "Do Negotiated Arms Limitations Have A Future?" Foreign Affairs 59 (Fall 1980), p. 106. See also Anne T. Sloan, "Soviet Propositions on Strategic Arms Control and Arms Policy: A Perspective Outside the Military Establishment," in Roman Kolkowicz and Ellen Propper Mickiewicz, eds., The Soviet Calculus of Nuclear War, p. 121.


Arms control could free important resources which might otherwise be spent on defence.\footnote{Rebecca Strode, "The Soviet Armed Forces: Adaptation to Resource Scarcity," \textit{The Washington Quarterly} 9 (Spring 1986), p. 67. In the 1980's even the Strategic Rocket Forces have suffered budget cutbacks. See p. 56. The December 1988 Soviet announcement of conventional force reductions was also probably motivated by budgetary considerations.} In spite of evident pressures to reduce military spending on strategic weapons, the Soviet Union has no intention of falling behind the United States as happened in the 1950's and 1960's. A senior Soviet negotiator summed up an underlying Soviet objective in START:

\begin{quote}
Before we had to negotiate from a position of being five years behind. Now we're not behind you. Nor do we intend to be, ever again.\footnote{The official was Osadchiyev in 1983 cited by Strobe Talbott's excellent book, \textit{Deadly Gambits: The Reagan Administration and the Stalemate in Arms Control} (New York: Alfred A. Knopf, 1984), p. 298.}
\end{quote}

To the United States, the Soviet Union may even have had a margin of superiority in 1980 that the Reagan initiated defence build-up intended to erase. Allegations that the Soviet Union had violated the 1925 chemical weapons protocol raised concerns that the Soviet Union was prepared to violate any arms control agreement if those transgressions would serve their interests.\footnote{Mark C. Storella, \textit{Poisoning Arms Control: The Soviet Union and Chemical/Biological Weapons} (Washington, D.C.: Institute for Foreign Policy Analysis, 1984), p. X.} Since the Republican Party platform called for the re-establishment of military and technological superiority over the Soviet Union, one objective in START appeared to be to effect nothing less than a complete overhaul of the Soviet strategic forces and establish major
changes in the nuclear balance, with Soviet cooperation or without.  

In START the objectives of the superpowers were such that no agreement was possible in the short term, and it took over 2 1/2 years for the first formal negotiations to take place. Although each superpower appeared increasingly prepared to reduce strategic weapons, it wanted to do so in such a manner that was as advantageous as possible. While arms reductions could reflect deterrent thinking, the concept of using these reductions to achieve a strategic advantage of any kind more closely paralleled the compellent paradigm of strategic thinking.

2. The Threat of Force

The START process particularly in the early 1980's was marked by an increased frequency of threats originating from both sides. The lack of evident progress and the poor political relations between the superpowers further exacerbated the tensions in arms control that to varying degrees had been evident throughout SALT I and SALT II.

The Soviet leaders probably felt that the initial Reagan START proposals were a serious threat before world opinion. According to a senior Soviet official, the Eureka College proposal and the various build-down proposals appeared to be designed "to emasculate" Soviet strategic forces. Even the United States Secretary of State felt the Eureka College proposal was designed for maximum political advantage; it was a


"non-negotiable package" and "a two-faced proposal." By encouraging more SLEB’s and fewer ICBM’s, these proposals also appeared designed to channel the strategic competition into areas of American technical advantage.

The United States still felt that the growing Soviet technical capability to destroy American ICBM’s with only a fraction of its strategic force posed a serious threat. The Soviet proposal of a nuclear freeze, because of its political support in the United States, threatened to consolidate this Soviet advantage, and a freeze proposal was only narrowly defeated in the United States Congress. The rapid Soviet build-up of the SS-20 Intermediate Range Ballistic Missile (IRBM) in Europe was also perceived as a threat by the Reagan administration. Richard Perle was convinced that the Soviet Union had deliberately deployed more SS-20 missiles than were really required so as to threaten NATO, to achieve an advantageous arms control leverage and to circumvent the SALT limits.

The INF talks also sparked some threats that contributed to the deterioration of the arms control process. The Soviet leaders clearly perceived NATO plans to deploy the Pershing II to the Federal Republic of Germany as a serious threat, and in turn Brezhnev threatened in 1982 to place the United States in "an analogous position" if the United States


127 Edwina Moreton, "Untying the Nuclear Knot," in Gerald Segal et al., Nuclear War Nuclear Peace (New York: St. Martin's Press, 1983), p. 60. The extent of this advantage will be made more clear in chapter seven.

128 Strobe Talbott, Deadly Gambits: The Reagan Administration and the Stalemate in Arms Control, pp. 59-60. See also p. 44 for a discussion of the link between SS-20 and SALT limits.
proceeded with NATO INF modernization. The Soviet Union also threatened to walk out of the INF and START negotiations if American deployments began, and to deploy even more missiles to East Europe. When the Soviet Union was unable to influence the West German election and NATO deployments began, it followed through on each threat by walking out on arms control talks, increasing numbers of SSBN's in forward deployment areas and moving some extra missiles into East Europe. The public nature of the arms control dialogue in INF and START literally forced the Soviet Union to follow through in each case even though this was apparently resisted by the Soviet military.

The START negotiations continued to stumble over specific aspects of American technical superiority primarily because these issues were perceived as fundamental concerns by the Soviet Union. With increased Soviet research into defence technologies in this period, the Soviet motivations for opposing the SDI appeared to still be based on the fear that the United States was significantly ahead in strategic defensive technology. American offers to sell this expensive technology to a Soviet Union having economic difficulties would be tantamount to nuclear

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blackmail, if they were believable. Discussions over when to field this technology formed the essential sticking point, with the Soviet Union insisting on the longest possible timeframe before either side would give the requisite six-month notice to abrogate the ABM Treaty. The United States, however, seemed prepared to use SDI as a lever to bring the Soviet leadership face to face with its shortcomings or even as a vehicle to degrade party influence.

Although the Reagan administration did not agree with SALT II, it has largely continued to abide by its limits. The Soviet Union also claims to be following SALT II limits, but the United States has on several occasions charged the Soviet Union with treaty violations. The chief American START negotiator, Edward Rowny, finally threatened that unless the Soviet leaders stopped violating the SALT II Treaty and "dramatically change their behaviour," the United States would proceed with a major strategic modernization programme.

During the START process, the use of threats became much more frequent as confrontation and competition increasingly marked the arms control process. Each superpower attempted to consolidate its advantages

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133 Tom Gervasi, *The Myth of Soviet Military Supremacy* (New York: Harper and Row, 1986), pp. 18-19. This work does a good job debunking the somewhat alarmist right wing concern over Soviet military power.


and minimize its disadvantages through the medium of arms control. The Soviet Union sought to retain its advantage in land-based accurate ICBM warheads, and the United States sought to gain maximum leverage to reduce Soviet warheads through a strategic build-up of MX, Trident and B-1 strategic systems. The United States refused to compromise on SDI and threatened the USSR with the future achievement of a counterforce and damage limiting capability that could facilitate a first strike. The nature and frequency of implied and direct strategic threats strongly reflected the search for advantage in the compellent paradigm.

3. The Correlation of Nuclear Forces

START, at least as of the Reykjavik summit between Reagan and Gorbachev, had produced no agreement on strategic arms reductions. The proposals and public declarations of each superpower were such that each appeared to be seeking an agreement that would provide it a comparative advantage over the other.

What in SALT was a quantitative competition in strategic weapons was now a qualitative one where criteria such as accuracy, lethality and survivability became most important. Although strategic defence was a major component of the United States policy towards arms control from 1983 on, the prospect of trying to defend against a nuclear attack has never been absent.\textsuperscript{137} Even a top Soviet scientist noted that ABM limitations had no impact whatsoever on his work on Soviet ballistic missile defences.\textsuperscript{138} The concept of strategic defence including those elements


\textsuperscript{138} The scientist was Anatoly Fedoseyev, cited in Stephen P. Adragna, On Guard for Victory: Military Doctrine and Ballistic Missile Defence in the USSR (Washington, D.C.: Institute for Foreign Policy
based in space had become so well established that only those who believed in mutual assured destruction as a central component of strategic stability objected to it.\(^{139}\) The role of strategic defences appeared to be increasingly accepted in Moscow and Washington, but the key concerns appeared to be over timings and comparative advantage. One very positive aspect of defences was that they were easily distinguishable from offensive systems, thus precluding an even greater security dilemma.\(^{140}\)

During the START negotiations each superpower proposed reductions in strategic weapons but the quantities of strategic warheads on each side actually rose. Clearly, quantitative arms racing is where the Soviet Union has a comparative edge, and the Soviet proposal to freeze strategic weapons in January, 1983, appeared designed to take advantage of the recently completed Soviet build-up and limit American strategic modernization programmes.\(^{141}\) The increasing numbers of strategic warheads conflicted with the declaratory intentions of each power to reduce nuclear arsenals.

Each superpower in this period accused the other of striving for nuclear superiority. Reagan announced at a press conference "that on balance the Soviet Union does have a definite margin of superiority," and he felt that that margin created a "window of vulnerability" for the

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After the Reagan-Gorbachev summit meeting in Geneva, Gorbachev maintained that the United States was trying to achieve nuclear superiority. The Soviet Union was particularly alarmed that each American arms control proposal appeared to rest on the linking of nuclear arms reductions to the reduction of Soviet influence, military capabilities and "objectionable behaviour." The arms control proposals of the Reagan administration offered the Soviet Union little prospect for enhancing their strategic position. In particular, the Reagan administration has taken a very narrow interpretation of the 1972 ABM Treaty that could permit SDI deployment, in spite of its not being a broadly held view. The increasing accuracy and hard target kill potential of modern systems when coupled with even a marginally effective defence could provide a useful war fighting capability.

The concept of strategic defence imposes a new standard on the stability equations. The gradual but steady drift away from mutual assured destruction as a central requirement for nuclear stability was sanctioned by the Scowcroft commission set up to achieve greater consensus in American strategic policy. The combination of some strategic defence and a policy of deceptive basing (mobile ICBM's) can in fact

146 Brent Scowcroft, comments in Michael Charlton, *From Deterrence to Defence: The Inside Story of Strategic Policy*, p. 105.
achieve a cost effective degree of ICBM survivability. 147 Both
superpowers in the START timeframe were developing strategic point
defences and mobile ICBM's to enhance the survivability and therefore the
combat utility of its nuclear forces. This concept fits much better with
the broader Soviet approach to stability which depends on renouncing the
development and deployment of "new" weapon systems, renouncing the first
use of nuclear weapons, but rejecting the notion of total Soviet
vulnerability. 148

During the START negotiations each superpower declared its
willingness to reduce the quantity of nuclear weapons, but each sought to
do so on its own terms. The strategic shift toward defences gathered
increased momentum and served to intensify the arms control competition
which had become one almost completely based on technology. At least for
the first seven years of START, this analysis indicates that the United
States had indeed shifted noticeably into a compellent framework while the
USSR still displayed some compellent characteristics.

4. The Paradigmatic Implications of START

During the START negotiations political relations between the Soviet
Union and the United States deteriorated even further from those which
existed in SALT II. Each superpower appeared to be attempting to achieve
unilateral advantage from its arms control proposals that almost seemed
reminiscent of their political disarmament efforts in the 1950's. But at
the same time START was also touching the core of each superpower's

147 Raymond E. Starsman, Ballistic Missile Defence and Deceptive

148 Ellen Propper Mickiewicz and Roman Kolkowicz, International
security, and this implied that negotiations would be more difficult and concessions more modest than was the case in SALT.\textsuperscript{149}

In START, the tenuous linkage between INF and strategic weapons that was barely containable in SALT II came undone and two levels of nuclear negotiations were established.\textsuperscript{150} The political campaigns by each superpower to "win" its objectives in the NATO theatre nuclear force modernization issue had a major impact on START for two reasons. It diverted attention from the START process, and it threatened the Soviet Union in a way that it considered "strategic." It also became clear that since the Soviet Union was unlikely to agree to accept the one-sided United States "strategic" deployments, no real progress in START could be made until the INF issue was resolved.

In the START negotiations, it appears that each nation sought to achieve advantage with each of its proposals. The United States was committed to SDI and strategic force modernization of technologically advanced weapon systems so it refused a nuclear freeze. The Soviet Union had finally reached its strategic force structure objectives in the early 1980's, and felt that the ICBM advantage it enjoyed was balanced by American superiority in SLBM's and bombers. To Soviet leaders the prospect of unequal reductions would return the USSR to an inferior strategic position. It may also be that the Soviet Union felt much more comfortable with a slight quantitative advantage due to its nagging fear of American technological momentum. In any event, the Soviet Union in


START would surrender no advantage, and the United States, notwithstanding its efforts, did not have the leverage to force them to do so.\(^{151}\) The increased frequency of threats and the one-sided nature of the arms control proposals meant that START was increasingly a political process. Consequently, it appears that arms control may have been relegated to a more modest position within the strategic debate.\(^{152}\) Thus, each superpower was able to declare its willingness (and this commitment could be genuine) to seek strategic arms reductions while increasing its deployments and tabling proposals in public that would result in unilateral advantages. Consequently, at the Reykjavik summit when Gorbachev proposed abolishing nuclear weapons, each leader pursued a chimera by declaring himself more ready than the other to reduce nuclear arms, to a degree that their respective strategies could probably never accept.

The compellent paradigm, then, offers a useful explanation of the thinking behind the START process as each superpower repeatedly evidenced a political desire to improve its strategic position through selected arms reductions. Each attempted to harness public opinion in its efforts to direct arms control onto a course where it could optimize its technical advantages in what was an increasingly political competition.

V. CONCLUSION

Even though the arms control process has been subjected to some


significant political shifts, this review has noted a remarkable continuity in strategic arms control assumptions. The Soviet Union consistently assumed that the United States would use the negotiations to incrementally achieve military advantage, relying on its superior economy and open political system to compel the Soviet Union to make concessions. The Americans, at least initially, had excessive confidence that the Soviet Union would eventually, and without criticism, accept the concept of strategic stability. After 17 years of strategic arms control negotiations each side still believed the other was attempting to make its strategy unworkable and thereby undermine its security. These latter perceptions more closely reflect the attitudes characteristic of compellent thinking.

Although in arms control theory several different views of arms control exist, in practice these contending viewpoints can be reduced to those of strategists and arms control advocates. A strategist seeks unilateral advantage for his country, often in a competitive sense, while an arms control advocate wants increased security and decreased risks for all parties, usually through mutual cooperation. Both superpowers have had people in influential positions who held each of these beliefs, and it is worth noting that these views correspond closely with the compellent


155 David Holloway, The Soviet Union and the Arms Race, p. 72.

and deterrent paradigms. It is primarily due to the influence of arms controllers that arms control talks such as SALT I began, but once the negotiations were underway there appeared to be an inescapable tendency for each government to use them to maximize its advantages and minimize its disadvantages. Once a strategic perspective gains the upper hand, the tendency appears to be towards reinforcing the belief that political and military gains can be obtained from some advantage in nuclear weapons.

When SALT began in 1969, the deterrent paradigm was clearly the dominant Western model, and the arms control community in the United States expected that, as negotiations continued, the USSR for the most part would adopt it. SALT I to a large degree was probably a negotiation between people who held fundamentally different paradigmatic views. While the final product appeared to have substantiated the expectations of the United States arms control community, the Soviet rationale for signing it was probably very different. Even in the United States, significant evidence of compellent nuclear thinking existed, but many still felt the United States forces to be so superior to the Soviet forces that there was no major concern over SALT I in an era of detente. As a result of different paradigmatic views, however, the United States conceded a significant quantitative missile advantage to the USSR and agreed to limit its most threatening programme.

It was only after the Soviet Union had continued to modernize and improve the qualitative aspects of its ICBM force that the United States

157 Phil Williams, comments in Oyvind Osterud, ed., Studies of War and Peace, pp. 110-111.

realized that the Soviet Union did not necessarily share the same assumptions of deterrence. The United States attempted to use SALT II to rectify the perceived imbalance of SALT I, but the Soviet Union insisted in maintaining the principles on which SALT I was based. The START negotiations continued a struggle for technical advantage through arms control as the United States attempted to use strategic reductions to reduce the Soviet ICBM force. The United States shift in thinking toward strategic defences was particularly worrisome to the USSR, and it steadfastly refused to reduce its force structure unless SDI was part of the package. Even though Soviet leaders increasingly valued deterrence of nuclear was as their most important objective, the sustained emphasis on strong forces capable of fighting if necessary indicates that underlying Soviet strategic thought appears to have remained fairly constant. The United States seems however to have conducted a paradigm shift from deterrence to compellence in the period of this review.

Over the period covered, both superpowers expanded their objectives to be pursued with strategic arms control but appeared to reduce their expectations for success. Because there was little evidence to indicate that unilateral restraint by one superpower will induce a positive reaction from the other, both sides have continued with force modernization programmes. The START debate in the Western media was probably more directed at the attitudes of Western Europeans than the substance of arms control. Increasingly, arms control praxis came to reflect the compellent framework as each side carefully protected its best


war fighting systems and sought to negotiate away those of the opponent. The notion that the compellent paradigm has come to dominate superpower strategic arms control parallels the results from the analysis of American and Soviet declaratory nuclear strategy in chapters three and four. At the very least, the compellent paradigm offers an increasingly plausible explanation for superpower arms control behaviour from 1970 to 1986.
Chapter Six
THE COMPETITION IN ALLIANCE STRATEGY

As the central alliance for each superpower, NATO and the Warsaw Pact have played a pivotal role in the nuclear dimension of Soviet and American strategy. When the economies and populations of the various non-Soviet European countries are considered together, it becomes evident that a politically united Europe could easily compare to either superpower in potential power. Thus a political competition for influence in Europe has been an inevitable by-product of a bipolar world with the intensity of the rivalry exacerbated by the Soviet perception that as a European power, it has greater legitimacy in its quest.

The advent of nuclear weapons has superimposed the risk of nuclear war over the political competition in Europe. The bi-polarity of the international system from 1970 to 1986 and the power of nuclear weapons together appear to have enhanced the utility of alliances.\(^1\) To a degree NATO and the Warsaw Pact are a medium the two superpowers have adopted to manage, legitimate and implement their nuclear strategies. In the nuclear era, however, alliances expose their members to such unprecedented risks that these weapons have assumed a central role affecting alliance relationships.\(^2\) The relationship between alliance strategy and superpower nuclear strategy is thus of fundamental

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importance, and a knowledge of how the former operates may shed some light on the latter.

The role of strategic and theatre nuclear weapons in each alliance is ostensibly to deter the other side from initiating a conflict or from escalating to nuclear first use once war begins. Simply put, it is the manipulation of strategic risk via the prospect of escalation to seek policy objectives. Because Europe is so important to the superpowers, each has deployed a vast array of forces that include both conventional and nuclear weapons. For much of the period under review in this chapter the integration of conventional and nuclear forces in each alliance has been so complete that military commanders would be under pressure to use nuclear weapons early in any conflict. It is this integration of nuclear weapons into conventional forces that complicates the application of nuclear strategy and the conclusion of arms control agreements. Since conventional forces are commonly understood to have defensive and offensive utility as described in chapter one, nuclear forces that are closely integrated with conventional forces may be expected to have or be viewed as having deterrent and compellent utility.

This chapter will analyze the alliance strategy of each superpower during the period 1970-1986 to assess which paradigm best reflects their nuclear strategies. The first section describes in general the situation on the central front of NATO and the Warsaw Pact, the second investigates NATO strategy and the third examines Warsaw Pact strategy. Detailed examination of the United States and Soviet intercontinental forces has been left for subsequent chapters.

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I. THE SITUATION ON THE CENTRAL FRONT

The central front of NATO and the Warsaw Pact is the military center of gravity of the two alliance systems. The outcome of any future battle between these alliances would probably be decided by the results of this major contest which would for the most part probably be fought on German soil. The partition of Germany and the role of each German state in its respective alliance system has served to highlight a delicate political situation where a special relationship between each superpower and its German ally has been required. Because the role of strategic nuclear weapons can only be properly understood if the role of conventional forces and other nuclear weapons is clear, this section examines the complete spectrum of alliance military forces.

As cold war became fact, NATO and eventually the Warsaw Pact developed into effective military organizations that could fight should the need arise. From the outset, however, a major asymmetry existed in that the Soviet Union had a large numerical advantage of conventional forces which the United States tended to offset through its advantage in nuclear weapons. Early efforts to get the superpowers to withdraw their troops from Central and Western Europe faltered primarily due to complications for internal relations within the two alliance systems. The Soviet Union undoubtedly felt more secure with troops in central Europe but an equally significant reason may have been Western Europe's

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insistence that the United States maintain troops in Europe as a visible link to American strategic nuclear weapons. One of NATO’s central problems has been maintaining the credibility of American nuclear intervention and retaliation in the face of a growing Soviet capability to devastate the United States.\footnote{No alliance commitment can be separated from the analysis of the immediate balance of forces. See Paul K. Huth, Extended Deterrence and the Prevention of War (London: Yale University Press, 1988), p. 215. See also Robert E. Osgood, Limited War Revisited (Boulder, Colorado: Westview Press, 1979), p. 5.}

The total balance of NATO and Warsaw Pact forces is best understood by examining the alliance force structure from four perspectives: conventional forces, short range tactical nuclear weapons, longer range theatre nuclear weapons and strategic or intercontinental nuclear systems. In the 1950’s NATO was clearly superior in all categories of nuclear weapons but, even after the rearmament of West Germany, still lacked the conventional strength of the Warsaw Pact. By 1967 when NATO adopted a flexible response strategy, the Soviet Union had built an advantage in long range theatre nuclear systems to supplement its conventional superiority, but the United States retained significant advantages in short range and in intercontinental nuclear weapons.\footnote{Phillip A. Karber, “The Battle of Unengaged Military Strategies, in Uwe Nerlich, ed., The Soviet Asset: Military Power in the Competition Over Europe (Cambridge, Massachusetts: Ballinger Publishing Company, 1983), p. 228.} From 1970 to 1986 these conditions gradually shifted to the benefit of the Soviet Union as it continued to develop its nuclear and conventional force structure.

The conventional advantage of the Warsaw Pact over the NATO forces in 1986 was in the order of about two to one by most quantitative indicators. Two recent Supreme Allied Commanders Europe (SACEUR) have expressed concerns that the Soviet Union will continue to widen and manipulate their
conventional advantage to the point that NATO "will find itself vulnerable
to Soviet intimidation and coercion." In fact the Soviet Union increased
combat power in its existing units such that from 1965 until the late
1970's about 30 division equivalents were added to Warsaw Pact forces.
This force improvement prompted alarms that the Warsaw Pact was close to
achieving a "decisive conventional military superiority," but more sober
judgements noted the improved ability to defend urbanized Europe and
concluded neither side had, as of 1986, a decisive advantage. It is
worth noting however that a two to one numerical advantage, while not in
itself decisive, provided the Soviet Union with a conventional
quantitative edge that was about twice as great as that enjoyed by Germany
over France and Britain in 1940.

One major concern that has always existed but appears to be mounting
is the potential degradation of nuclear means in conventional war. Soviet
frontal aviation for example could successfully interdict NATO theatre
nuclear weapons (TNW) in one to four days if other targets were ignored.

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The pressure in a crisis to disperse nuclear weapons to increase their survivability to conventional attack is increasing, and thus incentives to preempt with nuclear weapons have probably increased.  

Nuclear weapons have been important to each superpower, but NATO has relied heavily on tactical nuclear weapons to replace force goals for conventional forces that proved unattainable. The Soviet Union also deployed tactical nuclear weapons to support its concept of rapid offensive operations that required complete integration of nuclear firepower into the manoeuvre of Soviet and Warsaw Pact forces. The numbers of tactical nuclear weapons expanded significantly until by 1973 NATO had well in excess of 7,000 warheads, most of which were short range artillery shells. The initial Soviet preference on the other hand was for longer range rockets and missiles that had more controllability and greater invulnerability. Recently NATO has reduced its European stockpile of short range tactical nuclear weapons, but the Soviet Union has introduced greater numbers of nuclear capable artillery. The evident superiority that NATO held in 1950's and 1960's in battlefield (short

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14 Lisbon force goals for NATO were originally set at 96 Divisions in 1952. In 1955 a 26 Division force was created and 15,000 nuclear weapons were required to make up the difference. See Donald R. Cotter, James H. Hansen and Kirk McConnell, The Nuclear Balance in Europe: Status, Trends, Implications (Washington, D.C.: United States Strategic Institute, 1983), p. 4.


range) nuclear weapons has eroded until, in the 1980’s, the Soviet Union has reached parity in this area. Improvements in Soviet nuclear force posture appear deliberately aimed at achieving at least parity at each level of capability.¹⁷

The Soviet Union’s propensity to concentrate on missiles had accorded the Warsaw Pact an advantage in theatre nuclear forces for two reasons. Firstly the greater range of Soviet systems provided improved and rapid target coverage of NATO, and secondly any NATO retaliation against several of these systems would have to be against Soviet territory, a step NATO may be reluctant to take.¹⁸ These advantages more than compensated the Soviet Union for the earlier NATO numerical advantage in short range systems. Furthermore, in long range theatre systems (INF) in the early 1980’s the Warsaw Pact was said to have as much as a ten to one advantage.¹⁹ The reason for this asymmetry was the difference in roles. Whereas NATO INF were designed primarily to provide a link to the United States strategic nuclear forces, the Soviet Union was planning to destroy all NATO TNW as well as support an offensive into Western Europe.²⁰


¹⁹ Donald R. Cotter, James H. Hansen and Kirk McConnell, The Nuclear Balance in Europe: Status, Trends, Implications, p. 3. The Soviet Union had enough TNW to cover most of Western Europe with 10 psi overpressure from nuclear blasts. Other assessments claim the Soviet advantage was not as great, but all assessed a significant Soviet advantage in this area. This advantage has been reduced but not eliminated by the 1987 INF Treaty.

more fundamental problem with INF is that they were designed for first use, and this probably helped account for the intensity of the Soviet reaction to the NATO decision in 1979 to deploy long range missiles to Europe. From 1970 to 1986 the Soviet Union maintained and increased its advantage in INF, but it never relented in its efforts to prevent NATO deployment, and when that failed, to remove NATO's INF nuclear missiles through negotiations.

The final dimension of alliance military strategy refers to the intercontinental strategic systems that form the last resort up the ladder toward escalation dominance. The most significant event in the years 1970-1986 was the Soviet achievement of strategic parity in the eyes of all alliance members. By 1982 senior United States officials accorded the Soviet Union a three to one advantage in ICBM's. The impact of this major shift in the correlation of forces created difficulties for the United States in NATO and caused it to pay closer attention to its alliance partners. The general consensus in the 1950's and 1960's that allowed the United States considerable latitude in handling nuclear matters had eroded. If nothing else the enhanced radiation warhead episode demonstrated that the United States could no longer act unilaterally in nuclear matters. NATO strategy under these new conditions appeared in a different light:


Under conditions of strategic parity and theatre nuclear inferiority, a NATO nuclear response to a non-nuclear Soviet aggression in Europe would be a questionable strategy at best, a self-defeating one at worst.  

Assessments of the outcome of possible war in central Europe are still very much dependent on assumptions as to how such a war might start. In general the more that combat assessments move away from gross numbers of units or equipments and attempt to portray interactions, constraints and capabilities, the more even the balance appears.  

The Director of the United States Defence Intelligence Agency felt that the overall balance was fairly stable and that the USSR perceives that NATO would be a clearly matched opponent. Even though the Warsaw Pact has a superior strategic position, stronger conventional forces, and an offensive strategy designed to utilize these advantages, NATO has excellent prospects for a successful defence if it is fully deployed. One respected analyst believes that Soviet operational research reveals that the Warsaw Pact cannot win under such conditions. The real problem then becomes one of how much warning NATO has and whether NATO leaders are

prepared to deploy their forces based on what would undoubtedly be conflicting and partial information. If NATO were about to begin mobilization of its forces and dispersal of its nuclear weapons from central storage areas, the Soviet leaders would see their military advantage receding and would, in such a crisis, be under intense military pressure to pre-empt.  

In such a situation Soviet leaders would probably devote considerable effort to convincing NATO leaders that no Soviet attack was imminent. This could allow for the defusing of a serious crisis or it could secure strategic political surprise for a Soviet attack. The point at which war begins will have tremendous consequences on its results. Since some of NATO's strongest forces must deploy from the United States and all must move forward to their deployment areas, the Soviet Union has less need to mobilize prior to a NATO/Warsaw Pact war and even then some Soviet preparation could begin surreptitiously. In the 1980's a number of significant Confidence and Security Building Measures have been introduced that significantly reduce NATO concerns about the possibility, however remote, of a surprise Soviet attack.

One final aspect of an alliance's ability to withstand the rigours of war is its social cohesiveness, an often forgotten dimension of strategy. NATO and the Warsaw Pact would each experience varying problems, but the most significant problem in a major crisis may well be


30 About four days warning is needed to prepare NATO sufficiently to withstand a Warsaw Pact attack.

the cohesion of the Warsaw Pact alliance. The Soviet goal of maintaining tight control of its military alliance appears incompatible with the equally important goal of maintaining political stability in Eastern Europe. The loyalty of the non-Soviet Warsaw Pact armed forces in combat remains questionable.

From 1970-1986, in addition to strategic arms control discussed in the preceding chapter, a number of efforts at conventional and theatre nuclear arms control have been made, but no significant breakthrough occurred during this period. These arms control efforts, concentrating on reducing conventional and INF forces in Europe, encountered no more success prior to the Reykjavik summit in 1986 than the START negotiations in the same period in spite of strong popular pressure in Western Europe to reach an agreement. In 1987, however, United States and the Soviet Union finally signed an INF Treaty that succeeded in eliminating land based long range theatre nuclear missiles from the European confrontation.

During this period prior to 1986 the Soviet Union increased its advantage in conventional forces, and it attained at least parity in battlefield, intermediate and strategic nuclear weapons. In the 1980's the conventional balance has been an increasing concern to NATO headquarters as confidence in early resort to nuclear weapons recedes.

This situation does not provide any assurances to Soviet leaders that they

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33 These efforts included in particular the Stockholm Conference on Confidence- and Security-Building Measures and Disarmament in Europe and the negotiations on Mutual and Balanced Force Reductions.

could win should war occur, but it probably imbues them with an increased
degree of confidence that the Western European nations may be slightly
more accommodating to Soviet interests. If war occurs, the outcome would
be determined by two variables - the degree of NATO preparation, and the
method in which nuclear weapons are introduced, if they are used at all.

II. PARADIGMATIC ANALYSIS OF NATO STRATEGY

From the outset NATO was conceived as a political alliance designed
to counter Soviet power and maintain Western European countries as free
democracies. Although the military dimension of the alliance has steadily
assumed greater importance, the need to match the Soviet Union's military
power was evident even before NATO's formation in 1948. The British
ambassador to France noted in 1947 that had Britain and France maintained
their military strength after World War I, they could have probably
prevented World War II. To counter the array of Soviet armies opposite
Western Europe, NATO needed the power of the United States; therefore
Western European and American security were officially coupled in 1948. This marked the first time that a group of proud and ancient powers became
dependent on the protection of a government three thousand miles away.

Over a period of about five years, nuclear weapons became the
foundation of alliance strategy, and massive retaliation called for
strategic bombing of the Soviet Union in the event of a Soviet incursion
of any sort into Western Europe. The essential difficulty with this


strategy was that it called for massive nuclear first use without public opinion being prepared to support such a step.\textsuperscript{38} With the advent of a Soviet ability to retaliate in kind, at the insistence of the United States and over the objections of France,\textsuperscript{39} NATO finally agreed in 1967 to adopt the strategy of flexible response where NATO would select the appropriate response to any Soviet move.

This section will apply the paradigmatic framework to the NATO strategy of flexible response, 1970-1986. The NATO political objective, the implied threats to use military force, and the correlation of nuclear forces guide the following paradigmatic analysis.

1. The Strategic Intentions of NATO

NATO was founded as a defensive alliance to deter further Soviet encroachment into Western Europe. As previously noted, the ratio of conventional forces between NATO and the Warsaw Pact virtually precluded any significant offensive capability against the Soviet Union. Nevertheless the Soviet Union perceives the deterrence policy of NATO as an active one "that asserts hostile intent."\textsuperscript{40} A closer examination of NATO's objectives, particularly with respect to the use of nuclear weapons, is now in order.

NATO is divided by geographic asymmetry, essentially between the United States and Western Europe. From 1970 to 1986 the United States has concentrated on enhancing the credibility of using nuclear weapons by


\textsuperscript{39} France withdrew its forces from the NATO military command structure in 1966, primarily over nuclear strategy.

introducing limited nuclear war fighting concepts, but the Europeans, who
appear to see any Soviet move as less probable, insist on rapid escalation
to intercontinental weapons to avoid the threat of prolonged conventional
or nuclear war limited to Europe.\textsuperscript{41} Notwithstanding the differences over
how to employ nuclear weapons, NATO is united behind the principle of
nuclear first use, an essential pillar of alliance strategy.\textsuperscript{42} As the
capability of non nuclear weapons has steadily improved, however, the
concept of deterrence has tended to expand to include conventional forces.
This results in a greater blurring of the nuclear threshold which
emphasizes the high degree of integration between conventional and nuclear
weapons in NATO, at least until such time as an all conventional defense
is considered feasible.\textsuperscript{43} This tends to exacerbate the tensions between
Western Europe which seeks the promise of quick escalation to enhance
deterrence, and the United States which seeks the basis for war fighting
or war termination functions.\textsuperscript{44} Although recent efforts to improve
conventional defences are significant, they depend on 3% increases in

\textsuperscript{41} See Michael Howard, "On Fighting a Nuclear War," \textit{International
Security} 5 (Spring 1981), p. 8; and Catherine M. Kelleher, "Thresholds
and Theologies: Time for a Critical Reassessment," in William J. Taylor,
Steven A. Marranen and Gerrit W. Gong, eds., \textit{Strategic Responses to

\textsuperscript{42} See testimony of Vice Admiral Gerald Miller, former Deputy
Director of Joint Strategic Target Planning Staff, \textit{First Use of Nuclear
Weapons: Preserving Possible Control}, Hearings before the Subcommittee of
International Security and Scientific Affairs of the House Committee on

\textsuperscript{43} See Carl Builder, \textit{The Prospects and Implications of Non Nuclear
Means for Strategic Conflict}. Adelphi Paper 200 (London: International
Institute for Strategic Studies, 1985), pp. 29-30. See also Major Dorn
Crawford, "The Operational Level of Deterrence," \textit{Military Review} 68

\textsuperscript{44} Catherine M. Kelleher, "Nation-State and National Security in
Post War Western Europe," in Catherine M. Kelleher and Gale A. Matton,
ed., \textit{Evolving European Defence Policies} (Toronto: Lexington Books,
1987), p. 3.
defence spending for many years, and thus offer no short term solution. Present NATO strategy is essentially a compromise between the need to deter and the need to fight which still depends heavily on the utility of nuclear weapons.

The tensions between the strategic objectives of Western European countries and those of the United States also extend to some differing views of the European status quo. During the 1970-1986 period Western Europeans tended to view NATO strictly as an alliance limited to the defence of NATO countries, but the United States still tends to see the Alliance as the cornerstone of its worldwide network dedicated to the containment of Soviet influence. The United States aspires to retain its "freedom of action" to pursue "world power" in competition with the Soviet Union and to maintain the credibility of American national strategy. When Zbigniew Brzezinski came to the Carter administration he brought with him the notion that the United States should have as its objective the undoing of the European partition. The Reagan administration has also become attracted to the theme of somehow trying to

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roll the Soviets back from East Europe. To maintain the fundamental tenet of NATO alliance cohesion, however, these United States sentiments have been downplayed and are not part of NATO's declared strategy.49

Because NATO is made up of several states who inevitably have several diverse views, the need for alliance cohesiveness is paramount. There has therefore been strong support in NATO for maintaining the status quo that essentially stemmed from the bipolar international system and the Federal Republic of Germany's tacit acceptance of the maintenance of the division of Germany.50 Nevertheless the inevitable tensions inherent in such a diverse alliance have caused some speculation as to the inevitable decline of NATO over time. These observations are rooted in the waning belief that the United States will continue indefinitely to shield Europe with its strategic nuclear weapons in the face of certain destruction.51

The underlying political values of NATO are difficult to discern due to the fact that the Alliance is made up of different sovereign states who pursue national interests that are overlapping but are not identical.52 In general the West European countries have tended to treat the Soviet Union on non-ideological grounds such that trade agreements and relaxed


tensions have been a positive experience, contrary to the more distant, ideological and zero sum view often held in Washington. Even though controversy is at times evident over important values, NATO remains united in its support of defending NATO governments from Soviet intimidation and NATO territory from Soviet encroachment.

By virtue of the principle of the lowest common denominator, NATO has determined its fundamental political objective, deterring aggressive Soviet actions. Officially NATO is seeking only what’s necessary for its military security without striving for superiority or seeking security at the expense of the Soviet Union. Senior American officials believed that their participation in NATO holds their allies together and prevents them from seeking greater accommodation with the Soviet Union. Thus the strength of NATO during the period under review has been tied to the United States and its nuclear weapons. What makes extended deterrence workable is the basic recognition that defending Western Europe is essential to the independence and security of the United States.

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In general, NATO strategy is one that from the viewpoint of strategic intentions appears to fall within the deterrent paradigm except for the high value placed on the utility of nuclear weapons to stop other than nuclear provocations. The commitment of NATO to nuclear first use, therefore, is a threat that bears closer examination.

2. The NATO Threat of Force

No specific NATO overt threats are known to have taken place, but the NATO determination to use nuclear weapons to deter non nuclear actions serves an important if tacit function. NATO strategy as outlined in the NATO document, MC-14/3, identifies three levels of war all of which could be fought with nuclear weapons: direct defence with whatever weapons are authorized, deliberate escalation, and general nuclear response against the Soviet Union.\(^{57}\) Deliberate escalation is defined as the attempt to defeat an aggressor by deliberately raising, but where possible controlling, the scope and intensity of combat, making the cost and risk disproportionate to the aggressor's objectives and the threat of general nuclear response progressively more imminent.\(^{58}\)

NATO strategy is based on a triad consisting of conventional forces, theatre nuclear forces and United States strategic nuclear forces, but it is the deliberate threat to escalate rapidly any conflict to intercontinental nuclear war that really underpins the defence of NATO. Analysis of this nuclear threat involves a closer look at nuclear targeting, the prospects for controlled escalation and the contingency of actual use. This section concludes with a look at a specific United

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57 United States Security Issues in Europe: Burden Sharing and Offset. MBFR and Nuclear Weapons, p. 19. MC-14/3 is a NATO Military Committee classified document produced in 1967 that encapsulates the current NATO military strategy.

58 Ibid.
States threat to involve NATO more deeply in its global competition with the Soviet Union.

Firstly, the NATO military headquarters has a nuclear planning cell that identifies actual targets for all of the nuclear weapons under its control. This cell coordinates closely with the United States Joint Strategic Targeting Planning Staff, and it concentrates its targeting efforts on military targets. Because of West German insistence, NATO has adopted a strategy of forward defence, an attempt to stop the enemy as far forward as possible.\(^5\) In conditions of only partial mobilization or deployment prior to the outbreak of war, this strategy would probably result in a military request to use battlefield nuclear weapons very early in a conflict to prevent an enemy breakthrough. NATO in fact plans to use its nuclear weapons on military targets to achieve essential military objectives and minimize civilian casualties.\(^6\) If the weapons are carefully matched to their targets, as they are planned to be, the extent of collateral damage can often be limited to the physical boundary of the target under attack.\(^6\) NATO strategy depends heavily on the first use of counterforce weapons and this tends to influence to a degree American nuclear strategy in the same direction.\(^6\)

A second aspect of nuclear strategy that affects NATO nuclear planning is the degree to which it is possible to control nuclear weapons

\(^5\) This forward strategy has been applied at sea as well. See John F. Leyman, \textit{Maritime Strategy in Defence of NATO} (Washington, D.C.: Center for Strategic and International Studies, 1986), p. 7.


once their use has been initiated. Europeans tend not to embrace the concept of modern limited nuclear war because it could destroy what it was designed to protect, their countries. The notion of a pause or firebreak before using nuclear weapons was an American concept that in European minds simply delayed the needed escalation and pointed out how difficult it was to construct a strategic and tactical doctrine acceptable to the alliance. In the early 1970's when NATO still had some advantages in battlefield and strategic weapons, NATO strategy specified "selective employment would be used on a controlled or limited scale" either for demonstrative or tactical purposes. As NATO's nuclear advantages dissolved, however, a more stark interpretation appeared:

We will fight with conventional forces until we are losing, then we will fight with tactical nuclear weapons until we are losing, and then we will blow up the world.

Nevertheless, NATO plans appear to be based on selective and limited nuclear first use in an effort to avoid further escalation if at all possible.

The next paradigmatic variable to be addressed is the degree of contingency obtained by the NATO nuclear threats, particularly the

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65 The first public description of NATO's limited options for using nuclear weapons cited by Thomas W. Wolfe, Soviet Military Capabilities and Intentions in Europe (Santa Monica, California: Rand Corporation P-5188, 1974), p. 28.

"extended deterrence" provided by the United States strategic nuclear systems. Extended deterrence implies that "deterrent" forces were designed for United States defence and then were "extended" to Europe, but the reality was that United States nuclear forces were designed to support American foreign policy which at the time definitely included the need to defend Europe. However, to defend Europe NATO can no longer rely, as it did in the past, on escalation dominance; it can only threaten general first use to cultivate doubt in Soviet minds about what the consequences of conflict in Europe might be. This makes NATO strategy of first use somewhat more open ended and consequently harder to defend on ethical grounds. The threat to use nuclear force is however to be triggered only in response to a Soviet conventional or nuclear attack in Europe. Thus NATO nuclear strategy, if examined in isolation at the time a decision were made to use nuclear weapons, would be a very contingent one used to persuade an invading enemy "to cease his aggression and withdraw." Operational NATO nuclear strategy is therefore not


69 The requirements for just war involve three basic principles. The use of force must be discriminate, proportional to the good intended and stand a reasonable chance of success. See Bruce M. Russett, "Ethical Dilemmas of Nuclear Deterrence," International Security 8 (Spring 1984), p. 52.

necessarily the same as NATO political strategy.

The final aspect of NATO nuclear threats relates to the link between the United States global plans involving possible nuclear use and those of NATO. To the Soviet Union the United States has global interests to pursue that require its close connection with extended deterrence and compellence concepts. The European members of NATO are reluctant to support the United States beyond certain limits because of the underlying fear that a United States-USSR conflict will drag Europe into a war. It is precisely that threat that the Reagan administration brought to bear in its brief policy of horizontal escalation. After Carter had threatened to use force to prevent further Soviet encroachment toward the Persian Gulf, the lack of credibility of United States military action became evident. Horizontal escalation was a unilateral American attempt to support its policy by threatening to expand any conflict laterally to a geographic location of the United States’ choosing. A policy such as this probably served to exacerbate the Soviet concern that the United States global ambitions are closely linked to its NATO alliance.

Although NATO declaratory strategy is primarily deterrent, its


72 Lawrence Freedman, The Price of Peace: Living With the Nuclear Dilemma, p. 96.


operational strategy and its nuclear threats have a strong tendency to be
compelling in nature. Should war occur, NATO threatens limited and
controlled nuclear first use against specific counterforce targets which
implies a desire to change Soviet policy as well as a desire to deter any
potential Soviet military action.

3. The Correlation of Nuclear Forces

NATO nuclear and conventional forces are so interdependent that the
correlation of nuclear forces cannot really be analyzed without first
paying attention to conventional forces. In the 1980's the possibility of
a pure conventional defence of NATO became more promising, and in the
words of one observer the impact of conventional defence would be
to free military strategists and policy makers from the
mental straitjackets now imposed by outdated deterrent
theory and turn to the more traditional role of strategy:
success on the battlefield.75

The concept of conventional defence has been criticized either for being
unable to provide the requisite degree of security for Western Europe or
for being a "tool of coercion" based on conventional retaliatory
capability against non-Soviet Warsaw Pact territory.76 Whatever the
prospects for conventional defence, NATO still appears extremely reluctant
to forego the nuclear option.

In spite of the fact that NATO, if it were to defend itself

75 Robert E. Killebrew, Conventional Defence and Total Deterrence:
Assessing NATO's Strategic Options (Washington, D.C.: Scholarly

76 Richard Betts feels West Europe would be less secure. See his
7 (Spring 1983), p. 162. Dimitri Simes feels that an increased NATO
capability for manoeuvre would threaten the Soviet hold on Eastern Europe.
See his "Containment: Choices and Opportunities," in Terry L. Deibel and
John Lewis Gaddis, eds., Containment: Concept and Policy (Washington,
successfully from a conventional attack, would have to resort fairly quickly to nuclear weapons, SACEUR has declared that NATO should not seek such strong conventional forces that it undermines nuclear first use, the pivot of deterrence. A large alliance inevitably has a certain structural rigidity when it comes to changing defence policy. The present reliance on nuclear weapons has contributed to the rigidity of structure and inflexibility of procedure often attributed to NATO. While this structural rigidity has political benefits with respect to alliance cohesion, it can serve to weaken NATO's military posture. The need to consider conventional and nuclear defensive operations could result in "impure tactics" that are not optimized for either type of warfare. The lack of military flexibility could then severely curtail NATO's option of controlled escalation as a means of "coercive bargaining" unless extremely flexible TNF forces were available.

The nuclear forces of NATO, in a paradigmatic context, also require analysis as to their quality, quantity and expected combat utility. As noted in the first section of this chapter some significant changes mark the 1970-1986 period.


The achievement of strategic nuclear parity by the Soviet Union placed much greater reliance on the quality of TNF. NATO nations essentially had two options if they were to avoid having to accommodate the USSR: to decrease their reliance on nuclear weapons or to construct a credible theatre nuclear deterrent. In the early 1970's, however, NATO felt no great desire to either modernize or reduce their dependence on nuclear forces even though studies had shown that existing TNW would have little prospect of turning the tide of a war in Europe. But by 1977, as detente was beginning to unravel, Helmut Schmidt openly declared his concerns that SALT had led to strategic parity that neutralized the United States deterrent nuclear capability and impaired the security of Western Europe in the face of Soviet power. The result of NATO discussions was the twin track decision in 1979 to deploy modern long range nuclear systems while seeking to negotiate reductions in Soviet theatre nuclear power. The intense controversy over the actual deployments of Pershing II and Ground Launched Cruise Missiles (GLCMs) tended to overshadow the increased threat to both the United States and the Soviet Union that these


82 Lawrence Freedman, "The Wilderness Years," pp. 54-56. Also in October, 1977 Secretary of State Vance had testified that no additional long range ground or sea based systems were required. See hearings before the Subcommittee on Europe and the Middle East of the House Foreign Affairs Committee, The Modernization of NATO's Long Range Theatre Nuclear Force (Washington. D.C.: USGPO, 1981), p. 19.

highly mobile and very lethal weapons posed. These effective and flexible systems clearly caused serious concern in Moscow for they appeared to preclude the possibility of a conflict remaining at the conventional level. The United States was totally committed to nuclear war in Europe with high quality nuclear weapons which could strike the Soviet Union with little or no warning.

With respect to the quantity of nuclear weapons in Europe, NATO has actually decreased its number of nuclear warheads by about 2400 following decisions taken in 1979 and 1983. As the reductions were limited to older less useful systems that would have caused a high degree of collateral damage if used, the impact of these reductions pales in significance to that of the INF modernization. The additions of INF were established at a quantitative level politically designed to avoid presenting too vulnerable a target or posing too provocative a threat to the Soviet Union. The Soviet reaction to INF deployments indicated that the latter point may have been misjudged.

The final variable in the correlation of nuclear forces analysis is the expected combat utility of NATO's nuclear weapons. In spite of the increased emphasis on conventional strategies, NATO's reliance on deliberate escalation in any conflict implies a high expectation of their utility. Follow on forces attack for example is a conventional strategy to attack deeply into the enemy rear, but as with much of NATO's conventional strategy it relies for the most part on dual capable systems.


85 Jeffrey D. Boutwell, "NATO Theatre Nuclear Forces: The Third Phase, 1977-1985," p. 80. If General Roger's recommendations are followed, even more reductions of older systems may be made.
which may be attrited substantially prior to nuclear release. Thus any effective use of nuclear weapons will probably require an early decision, but that decision may be more difficult given the parity in strategic systems.\textsuperscript{86} United States nuclear weapons in Europe may therefore still have the primary function of sustaining political will and generating positive psychological perceptions to enhance credibility.\textsuperscript{87} Thus the NATO INF deployments from 1983 to 1986 filled a significant role in enhancing the credibility and utility of nuclear first use.

The correlation of nuclear forces analysis indicates that although deterrence remained the dominant consideration certain compellent tendencies existed in NATO nuclear strategy, especially from 1979 to 1986. The introduction for a time of Pershing II and GLCMs, the high number of warheads remaining in Europe, and the expected utility of nuclear first use imply that NATO strategy has at least some compellence embedded in its policy of deterrence.

4. The Implications of NATO Strategy

Overall, NATO declaratory strategy is essentially defensive in nature as its primary focus is to deter war in Europe. The problem for NATO has been to avoid crossing two key thresholds that could cause the decoupling of U.S. strategic forces from Europe: relying on too few nuclear weapons in Europe may be inadequate both as a symbol of American power and as an


immediately available reservoir of firepower; relying on too many large weapons based outside of Europe (SLBM's and ICBM's) may result in the United States withholding the use of its ultimate weapons.\textsuperscript{88} Because in the 1970-1986 time frame a defence based on improved conventional technologies had not been considered feasible for the alliance,\textsuperscript{89} NATO has endeavoured to find a balance that would make its threat to use nuclear weapons believable.

The NATO quest to enhance the credibility of its resort to nuclear weapons has placed a great deal of pressure on the United States. Timeliness of nuclear authorization remains a critical factor in NATO considerations because it is possible that the Soviet Union could accomplish its objectives against NATO in time to be essentially independent of whatever the result of a US-USSR strategic exchange.\textsuperscript{90} If this were true, American incentives to initiate nuclear action would be very low indeed. The NATO Treaty does not force a United States President to initiate the first use of nuclear weapons, and such a decision may well require, in legal terms, broader congressional support.\textsuperscript{91} NATO nations have long recognized the importance of a timely United States' decision to initiate nuclear war; this is a critical point for Germany and in part


\textsuperscript{90} S.T. Cohen, \textit{U.S. Strategic Nuclear Weapon Policy-Do We Have One? Should There Be One?} (Santa Monica, California: Rand Corporation P-5127, 1973), p. 17.

explains why Britain and France have developed independent nuclear forces. In fact France may have deliberately structured its tactical nuclear posture to compel employment of United States nuclear weapons on terms compatible with the French view of the deterrence requirement.  

With respect to nuclear weapons the NATO strategy of flexible response demands the deliberate and controlled first use of small numbers of warheads in what has been described as an attempt to exploit the Soviet "strategic weakness" of refusing to engage in limited nuclear war. While the overarching strategic objective is to deter the occurrence of war, the actual threat of nuclear first use is really intended to compel a change in Soviet conduct through selective nuclear use. Thus NATO strategy contains an active component that cuts across nuclear and conventional thresholds and goes beyond the conceptual understanding of deterrence. It appears that as long as the NATO strategy of deterrence depends on initiating nuclear war by deliberate escalation, NATO nuclear strategy also contains at least some compellent characteristics.

III. PARADIGMATIC ANALYSIS OF WARSAW PACT STRATEGY

The Warsaw Treaty Organization (known in the West as Warsaw Pact) was formed in 1955 ostensibly in reaction to the rearmament of West Germany in

92 Jeffrey Record, U.S. Nuclear Weapons in Europe: Issues and Alternatives (Washington, D.C.: Brookings Institution, 1974), p. 33. In addition to the French declaratory policy of inflicting maximum pain on any aggressor, however, France has also quietly developed operational plans in which nuclear weapon use is closely coordinated with the counterforce planning of NATO. See Richard Ullman, "The Covert French Connection," Foreign Policy (Summer 1989), pp. 3-33.


NATO, but it did provide a more convenient and more broadly based legitimation for the maintenance of Soviet Forces in East Europe. While the Warsaw Pact may have began as primarily a paper exercise to sanction the hegemonic role of the Soviet Union, it has gradually become an institution with a meaningful role to play in Soviet coalition strategy.\footnote{Thomas W. Wolfe, \textit{Soviet Strategy at the Crossroads} (Cambridge, Massachusetts: Harvard University Press, 1964), pp. 210-211. See also his \textit{Soviet Military Policy Trends Under the Brezhnev-Kosygin Regime} (Santa Monica, California: Rand Corporation P-3556, 1967), p. 18.} The exact nature of that strategy however remains clouded behind a veil of secrecy, and its interpretation often subject to the view of the hermeneutics of Soviet military doctrine.\footnote{See the interesting and worthwhile contribution of Douglas M. Hart, "The Hermeneutics of Soviet Military Doctrine," \textit{The Washington Quarterly} 7 (Spring 1987), pp. 77-88.}

The Soviet Union clearly did not urgently require the Warsaw Pact for essential military purposes. In the early 1950's the Soviet Union had sufficient military control of East Europe by virtue of the fact that Soviet troops were stationed there through various bilateral agreements, and Soviet general officers commanded non-Soviet armed forces at most senior levels.\footnote{Viktor Suvarov, \textit{Inside the Soviet Army} (London: Hamish Hamilton, 1982), pp. 14-16. For example in the early 1950's very few general officers in the Polish Army could speak Polish.} Furthermore, in terms of military utility, Soviet senior officers have never appeared willing to consider the non-Soviet Warsaw Pact troops as being reliable enough to be potential replacements for Soviet troops.\footnote{Thomas W. Wolfe, \textit{Soviet Strategy at the Crossroads}, p. 215.}

If the Warsaw Pact, primarily a military alliance, was not needed for purely military reasons, then it must have been needed for political reasons important to the politico-military strategy of the Soviet Union.
The Soviet view of NATO is instructive:

from a Soviet standpoint, NATO as an organization plays a major role in protecting American power in Western Europe and in limiting West European independence from U.S. security interests. 99

It is entirely plausible that this view parallels the importance of the Warsaw Pact in Soviet grand strategy, at least during the period 1970-1986.

Although the Soviet Union still dominates the Warsaw Pact, as a military alliance it has changed considerably since its inception. Initially the East European forces had no access to nor training for nuclear weapons, making it difficult for them to integrate successfully with Soviet forces who were so trained and equipped. 100 By the 1970's however the non-Soviet Warsaw Pact forces had begun training for nuclear conditions enabling them to integrate more completely with Soviet forces. This section will examine the Soviet strategy for the Warsaw Pact 1970-1986 by looking in turn at its strategic intentions, the implied threats to use force and the correlation of nuclear forces in Europe.

1. The Strategic Intentions of the Warsaw Pact

As the Warsaw Pact alliance is primarily based on the power of Soviet military forces, the strategic intentions of the alliance closely reflect those of Soviet policy. Europe is the dominant concern to the Soviet Union, but East Europe due to ideological and defence


considerations clearly holds the most important priority.\textsuperscript{101} According to one respected expert, Malcolm MacIntosh:

as seen from Moscow, Europe is the most important peninsula in the Eurasian continent; and the Russians have always been drawn to the idea that in any geographical grouping of states, the most powerful nation should naturally assume leadership of the group. Therefore in the most general terms, the Russians feel that Europe is part of "their" continent, and that they have the right to be politically predominant in the European area. The presence of any other superpower, under whatever pretext, is regarded, in this broad sense, as an intrusion...\textsuperscript{102}

According to its Soviet commander, the Warsaw Pact alliance facilitates Soviet strategy by providing a necessary defensive counter to NATO's "aggressive" posture in Europe.\textsuperscript{103} Clearly the Warsaw Pact gives the Soviet Union an important defensive shield, but the large Soviet armies have created suspicions that other objectives exist. The Soviet Union and Warsaw Pact declaration not to be the first to use nuclear weapons has implied a reduction in the reliance on nuclear weapons to support strategic plans.\textsuperscript{104} With its previously described conventional advantage, properly implemented with an offensive military strategy should war occur and backed by at least nuclear parity at all levels, the Warsaw Pact could possibly gain advantage in conventional war. No first use

\textsuperscript{101} Angela Stent, "Western Europe and the USSR," in Gerrit W. Gong, Angela Stent and Rebecca V. Strode, \textit{Areas of Challenge for Soviet Foreign Policy in the 1980's} (Bloomington, Indiana: Indiana University Press, 1984), p. 2.

\textsuperscript{102} Malcom MacIntosh encapsulates the Russian nationalist view that has been more prevalent in the Brezhnev years than in the more recent Gorbachev period, post 1986. He is cited in George Ginsburgs and Alvin Z. Rubenstein, "Finlandization: Soviet Strategy or Geographical Footnote," in George Ginsburgs and Alvin Z. Rubenstein, eds., \textit{Soviet Foreign Policy Towards Western Europe} (New York: Praeger Publishers, 1978), p. 3.

\textsuperscript{103} Victor Kulikov, "There Has Been and Remains a Threat to the Warsaw Treaty Member-Countries from NATO," \textit{APN Military Bulletin} (September 1987), translated in FBIS/JPRS 23 February 1988, p. 5.

\textsuperscript{104} \textit{From Whence the Threat To Peace} (Moscow: Military Publishing House, 1987), p. 12.
affords the Warsaw Pact the maximum utility from its conventional superiority and thus benefits the USSR to the detriment of Western Europe.105

In spite of the Soviet declaration of no first use, however, and in spite of economic difficulties, it continued to deploy more modern theatre nuclear systems.106 These deployments demonstrated a major Soviet objective that related closely with the no first use declaration:

to deter NATO's resort to nuclear weapons in war, to deter escalation if NATO goes nuclear and to have some chance of avoiding destruction on Soviet territory.107

The Soviet military and political leaders in fact appear to have a very good idea how effective nuclear weapons might be, to the point that military officers probably still prefer preemption. In seeking to negate NATO's nuclear options, the Warsaw Pact has integrated its nuclear and conventional forces and is for the most part better prepared than NATO to fight a conventional, chemical or nuclear war in Europe.108 As the Soviet leaders came to realize that theatre war could remain conventional for long periods, they began to reorganize their nuclear assets to better


106 This was not without some controversy in the Soviet Union. See Dan L. Strode and Rebecca V. Strode, "Diplomacy and Defence in Soviet National Security Strategy", International Security 8 (Fall 1983), p. 110. Notwithstanding the economic difficulties and increased incentives to participate in arms control, defence remained top priority, see G.P. Armstrong, Soviet Motivations for Conventional Arms Reductions (Ottawa: Operational Research Analysis Establishment, D Strat A 86/16, 1986).


protect them, but training for war in nuclear and chemical environments remained very high. The general explanation for these military preparations is that Moscow hopes to translate its military assets into political influence by creating a psychological impact causing a tendency toward political accommodation with Soviet interests.

Warsaw Pact strategy, because of its reliance on nuclear coercion to deter NATO first use, creates risks for the Soviet Union, forcing Soviet leaders to distinguish carefully between their vital and lesser goals. The vital Warsaw Pact military objectives appear to involve maintaining the protective security belt of East European buffer states and retaining the freedom to seize the strategic initiative in war. The former implies defensive motivations, but the latter requires an offensive component in Warsaw Pact strategy. The freedom to seize and presumably retain the strategic initiative in war demands a Warsaw Pact offensive strategy that implies a willingness to preempt with nuclear weapons immediately prior to NATO's first use. Soviet military leaders appear seriously determined to gain the traditional military objectives of


112 Even though new political thinking has emphasized the "new" defensive intentions of the Warsaw Pact, the overwhelming majority of military leaders believe that it cannot completely renounce the conduct of offensive operations. See the excellent article by Aleksander Savelev, "Averting War and Deterrence: The Approaches of the Warsaw Pact and NATO," Mirovaya Ekonomika i Mezhdunarodnye Otnosheniya (June 1989), translated by FBIS/JPRS 5 October 1989, p. 15.
victory in all forms of war if at all possible.\textsuperscript{113}

The Warsaw Pact from 1970 to 1986, in part propelled by Marxist-Leninist ideology, challenged the existing status quo by seeking political accommodation from Western Europe. The offensive component of Warsaw Pact strategy threatened to give the Soviet Union unrestricted access to a relatively intact Western Europe, a situation that could reduce the time for Soviet economic reconstitution after a nuclear war by half.\textsuperscript{114} To the degree that Warsaw Pact strategy sought to retain Soviet control in East Europe, this offensive capability in the Soviet view probably provided the best defence by forcing a defensive strategy upon NATO. The result of an offensive strategic orientation however placed pressures on East European countries to conform to Soviet policy, thus creating considerable instability in the alliance.\textsuperscript{115}

This tension faced the Soviet leaders with a fundamental obstacle which was only overcome with an extremely high military, political and economic commitment to the Warsaw Pact. Unfortunately for the Soviet leadership, the Soviet Union's most effective tool, its armed forces, were the least suited to defend its most vital stake in Eastern Europe,


ideological or political loyalty. East European regimes faced a serious lack of legitimacy, and the Soviet Union lacked incentives "for enticing rather than compelling allegiance" from its Warsaw Pact allies. Warnings noted that any Western attempts to take advantage of the ferment in East Europe could have dynamic effect on the Soviet leadership. The Soviet Union has not hesitated to intervene directly with military force if necessary to prevent deviant factions from gaining the capability to mobilize for armed resistance. The cohesiveness of the Warsaw Pact to Soviet policy has perhaps been the most fundamental strategic objective of Moscow, at least from 1970 to 1986.

The primary Soviet military objective in Europe appeared therefore to be the maintenance of its East European security system with the pursuit of Soviet policy goals toward achieving political accommodation from Western Europe, an important but lesser order goal. The conventional and theatre nuclear forces in the Warsaw Pact supported both goals: the former implied a deterrent perspective, but the latter introduced a degree of compellence into Warsaw Pact strategy.


2. **The Warsaw Pact Threat of Force**

Because nuclear forces were so thoroughly integrated into Soviet and, to a lesser degree, Warsaw Pact strategy, the major threat to overpower Western Europe could not readily be separated into conventional and nuclear compartments. The obvious threat was based on powerful conventional forces but these were backed up at every level of combat by very capable nuclear weapon systems. The application of the paradigmatic framework to the Warsaw Pact nuclear threats, so far as they can be separated from military or conventional threats, is the subject of this section.

Although the Warsaw Pact has not used direct threats to NATO, the Soviet Union has employed more subtle threats on a fairly regular basis. Mostly these threats pertained to offers to support nuclear free zones or offers to "spare" regions or countries if they rejected nuclear weapons. Soviet leaders may have also regarded active intimidation by military forces, including manoeuvres, violations of territorial waters and airspace as politically useful if it made Western Europe more receptive to Soviet calls for political and other forms of cooperation. Since all such Warsaw Pact military action is ultimately supported by Soviet nuclear weapons, a form of coercion is implied that is not far removed from nuclear coercion. A more direct nuclear threat was carried by the Soviet acceleration of its SS-20 missile production after the 1979

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121 John Van Oudenaren, *Soviet Policy Toward Western Europe: Objectives, Instruments, Results*, p. vi.
NATO decision to deploy Pershing II and GLCM's to Europe. This threat was amplified by a tremendous propaganda campaign to pressure the Federal Republic of Germany to change its stance on accepting the new INF weapons onto German soil. As to the first variable, the Soviet Union appeared prepared to imply the threat of force frequently for specific policy objectives.

Secondly, nuclear targeting in the Warsaw Pact has remained relatively constant since the Soviet Union first introduced nuclear weapons in Europe. Soviet nuclear targeting strategy has been designed to cover military hard and soft targets but not destroy the human social and economic basis for the socio-economic system that would replace imperialism. Modern Soviet missiles deployed to Europe are extremely precise and are now capable of discriminate attacks even with conventional warheads. After degrading NATO's nuclear capabilities in the conventional phase of war and identifying all remaining nuclear targets, Soviet military strategy, on the verge of a breakthrough, projected using nuclear weapons in a pre-emptive counterforce fashion. The Soviet military preoccupation with pre-emption, in spite of Soviet declarations

of no first use of nuclear weapons, coupled with enhanced military capabilities, have probably increased the risks that conventional war in Europe will escalate. By 1986, the Warsaw Pact had the force structure in place to match its earlier doctrine to destroy most of NATO's nuclear weapons in one pre-emptive attack. Even the 1987 INF treaty and the removal of the SS-20, although outside the time frame of this study, did not appreciably change this fact; it only reduced the Soviet advantage.

The next variable in the paradigmatic analysis is the degree to which the Warsaw Pact expected to control nuclear war once it was initiated. In spite of a strong desire to avoid fighting by Western limited war rules, the Soviets are probably better prepared to fight a limited war on non-Soviet European soil than NATO. As noted earlier in chapter four, V.D. Sokolovsky's third edition of Military Strategy in the mid 1960's did introduce the possibility of controlling nuclear war into Soviet military doctrine. The Soviet Union does not, however, accept that any nuclear attacks on Soviet soil can be "limited". Although Soviet doctrine has never considered Western concepts of limited war to be valid, the United States Secretary for Defence James Schlesinger has observed that in Soviet exercises the Soviet military has indicated great interest in

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notions of controlled nuclear war. The non-Soviet Warsaw Pact countries probably share the concerns of West Europe that any war, let alone nuclear war limited to Europe, would be an unmitigated disaster, and this concern may contribute to the Warsaw Pact's official renunciation of limited war concepts.

The Soviet threats to actually use military force are not open ended, but are technically contingent on NATO beginning a war in Europe. It would be logical, however, that if Soviet leaders were to view war as probable in a crisis, due to the nature of the military balance, the Warsaw Pact would probably attack prior to NATO completing its deployment and mobilization. To do otherwise would forfeit the great advantage of forces the Soviet Union enjoys along most of its periphery. In fact, one isolated analyst believed that the Soviet Union maintained enough strength in Eastern Europe to conduct a conventional attack that could possibly defeat NATO before it could deploy or mobilize its forces. Although this would be most improbable, the amount of Soviet conventional forces in Eastern Europe does cause NATO serious concern. Maintaining the military capability to attack Western Europe at short notice was therefore an essential means by which the Soviet leadership could apply political leverage in West Europe. The Warsaw Pact, then, performed an essential

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131 Peter H. Vigor, Soviet Blitzkrieg Theory (London: MacMillan Press, 1983), pp. 1-10. Such an attack would be without any significant mobilization to achieve political surprise in NATO, a flaky proposition.

role in providing the Soviet Union with an acceptable mechanism for maintaining significant quantities of Soviet forces in East Europe, East Germany in particular, where they could use Warsaw Pact territory as a springboard for launching a rapid offensive if necessary.\footnote{Thomas W. Wolfe, *The Role of the Warsaw Pact in Soviet Policy* (Santa Monica, California: Rand Corporation P-4973, 1973), p. 5.}

Pact need only resort to nuclear weapons if NATO has used or is about to employ them.

The advantages of the Warsaw Pact in being able to initiate rapid offensive action may help convince Soviet leaders that Europeans will be more accommodating to Soviet interests, and this could possibly make Moscow believe it has greater freedom of action in a crisis. The use of threats for political advantage and the focus on counterforce targeting support a compellent view, even though other factors are either ambivalent or tend to support the deterrent paradigm.

3. The Correlation of Nuclear Forces

The Warsaw Pact, like NATO has integrated nuclear and conventional forces to a considerable degree, but since the late 1970's greater emphasis has been placed on the conventional phase of war. Certain operational changes with respect to the control of nuclear weapons have caused some concern among Soviet military officers who see them as another political constraint on its ability to launch pre-emptive strikes at the proper moment. As discussed in chapter four, Soviet military strategy holds that nuclear weapons play a decisive role in changing the correlation of forces, and thus the role of nuclear weapons in Warsaw Pact strategy is extremely important. This section provides a brief look at the quantity and quality of Soviet theatre nuclear forces and then


examines the expected utility of these weapons.

The Soviet Union has always given a high priority to covering regional targets with nuclear weapons, particularly in the early days when it could not threaten the United States. Once the Soviet Union developed the ability to strike the United States, intercontinental systems became top priority for a time. As soon as these were deployed, however, the Soviet Union once again placed increased emphasis on upgrading the earlier systems intended for use along the Soviet periphery. The improvements, such as SS-20, SS-21, SS-22, SS-23 and advanced fighter and bomber aircraft, that were deployed in quantity in the 1980's have been significant qualitative improvements with increased range, accuracy, lethality, payload, survivability and flexibility of employment.141 These improvements along with ICBM and SLBM developments show that the Soviet Union has produced a sustained effort over several decades to negate the reliance of NATO on United States nuclear forces.142 Soviet nuclear forces are flexible instruments for war fighting and are specifically designed to be operationally effective in combat.

Certainly the Soviet Union appears to believe that nuclear forces should be designed for maximum utility, but the remainder of the Warsaw Pact has at least some reservations about nuclear weapons. In 1984 when the Soviet Union deployed additional quantities of SS-21, SS-22, and SS-23 missiles to Eastern Europe in the attempt to intimidate NATO, Eastern


European recipients of these systems expressed their political anger to Moscow. From Moscow's perspective, however, coalition warfare of any sort can only be conducted successfully through the complete subordination of all military components to one supreme command authority, and in the Warsaw Pact that means Soviet authority. As the unity of the Warsaw Pact is of fundamental importance, Soviet war preparations in the Warsaw Pact have gone to the extent of molding the alliance into an army modelled along Soviet lines. Some measures taken include not only the universal use of Russian as the command language, but also of Soviet documentation, communication, automation and decision-making procedures. East European regimes have not had sufficient independence from the Soviet Union to take positions analogous to those taken by West Europe vis-à-vis the United States. Consequently any difference of views over the expected utility of nuclear weapons for intimidation or war fighting purposes have been usually kept behind a veil of secrecy.

Recent Warsaw Pact declarations of no nuclear first use imply a heavy reliance on conventional forces for at least the initial phase of war. Earlier Soviet doctrinal writings referred to only two escalation boundaries, between conventional and nuclear war, or between theatre and general nuclear war. Although it is impossible to determine whether

143 John Van Oudenaren, Soviet Policy Toward Western Europe: Objectives, Instruments, Results, p. 50.


Soviet operational nuclear strategy has in fact changed since the no first use declaration, it does appear that the Soviet Union's military officers have not lost sight of the immense advantages of nuclear pre-emption. Soviet military officers are trained to think differently than their Western counterparts, and they may in fact not believe NATO's defensive declaratory policy.¹⁴⁷

The Soviet Union has deployed the quantity and quality of nuclear forces that gave the Warsaw Pact the ability to anticipate a reasonable chance of success in combat if a pre-emptive strategy was used. The Warsaw Pact from 1970 to 1986 was an extension of Soviet forces and took military direction from Moscow, including its nuclear strategy. While Soviet declaratory nuclear strategy still appears to be primarily a deterrent one, the Soviet theatre nuclear force structure supported a Warsaw Pact offensive/compellent military strategy at every level.

4. The Implications of Warsaw Pact Strategy

Soviet nuclear strategy heavily influenced the Warsaw Pact's predominantly offensive theatre strategy to counter NATO. Should war begin then East Europe would be placed in an awkward position with respect to nuclear weapons for either NATO or the Soviet Union could escalate to nuclear use with little warning to East Europe. In either case it is highly likely that the initial use of nuclear weapons would be confined to non-Soviet Europe, raising at least the possibility of a limited nuclear war. One of the major incentives for the Soviet Union to have adopted a no first use declaratory policy may have been to soothe East European concerns over nuclear use to facilitate the maintenance of Warsaw Pact

The Warsaw Pact nations were absolutely essential to Soviet military strategy for they provided the firm forward base with which to attack or threaten to attack NATO. Alliance cohesion was therefore perhaps even more vital to the Soviet military than the hardware at the disposal of the two alliances.\(^{148}\) The force structure of the Warsaw Pact, however, indicated an improved capability in the 1980's to fight in all significant weapons categories. The Warsaw Pact strategy threatened a massive and rapid conventional attack should war begin, and nuclear weapons supported this strategy. One advantage of strong strategic and theatre nuclear forces for the Soviet Union was that Soviet extended deterrence, in terms of its credibility, may have extended further than that of the United States.\(^{149}\) Consequently the Soviet Union may have had a potential for escalation dominance and more flexible options than NATO's strategy of flexible response.\(^{150}\)

In essence the Soviet Union relied on deterrence to protect its East European security system, and on compellence to persuade West Europe to be more accommodating to Soviet interests or to enforce the former. The Soviet use of threats and its force structure clearly indicated compellent tendencies within its overarching offensive military strategy. Towards the latter part of the 1970's, the Soviet Union adopted a declaratory nuclear strategy to deter NATO first use should war occur, but when the


actual forces in place are considered, this shift appears to have been one of political expediency rather than a fundamental change. Whether the INF Treaty or the recent adoption of a defensive Warsaw Pact strategy portend further substantive shift to deterrent thinking among Soviet leaders post-1986, remains to be seen. In the paradigmatic context, at least in the 1970-1986 period, the compellent model provides a more complete picture of Warsaw Pact strategy.

IV. CONCLUSION

NATO and the Warsaw Pact alliances have designed strategies to optimize their advantages and minimize their disadvantages in the competition for control of Europe. The gravitation of most of Europe into these two alliance systems indicates a greater "tightness" or cohesiveness in the mid-1980's than the 1950's. Alliances and wars may well be linked, especially when accompanied by the tightening of alliance structures, and therefore the superpower nuclear competition in Europe may have enormous implications for the future.

Both the Soviet Union and the United States, to a large degree, control their respective alliance's nuclear strategy. The Soviet Union is the only nuclear power in the Warsaw Pact and clearly the dominant member, but the United States, by virtue of its massive power, also has a predominant influence over NATO, particularly in the area of nuclear planning. The ability of each superpower to impose its strategy on its

151 Bruce Bueno de Mesquita, "Systematic Polarization and the Occurrence and Duration of War," Journal of Conflict Resolution 22 (June 1978), pp. 241-268. The fact that the Warsaw Pact has apparently loosened post 1986, therefore, should be a positive sign.

respective alliance is tempered, especially in NATO but also in the Warsaw Pact, by the political requirement to maintain the cohesion of the alliance. One researcher suggests that superpower concerns over cohesion are not misplaced, because alliances between major and minor powers usually have the lowest reliability in war of all alliance types.

If anything, the smaller alliance members generally exert an influence on the alliance as a whole towards deterrent, not compellent, thought. The embracing of deterrence by smaller alliance partners has functioned to formalize and enforce an underlying political consensus on the inviolability of the present East-West borders. In fact, to the extent that each superpower, but particularly the Soviet Union, appears to be conscious of the stabilizing value of the bipolar alliance structure, this trend to deterrent support for the status quo is reinforced.

The competition in alliance military strategy is consequently somewhat constrained by several important political factors. To avoid the costs of equal conventional forces, NATO relies heavily on the strategy of first use of nuclear weapons to deter the Warsaw Pact from any incursion into Western Europe. Soviet nuclear and conventional military doctrine appears designed to intimidate and to deter NATO's resort to nuclear


weapons should war begin. It is a strategy that takes advantage of NATO's conventional weakness. According to one account:

it is difficult at times to avoid the impression that both nuclear superpowers seek to exploit their nuclear strategic predominance to compensate for diplomatic, political and even economic infirmities, and to exploit their nuclear status for purposes of alliance management.

The 1987 INF treaty does not invalidate this analysis, because the treaty "will not fundamentally alter the overall superpower military balance." The Soviet military chief of staff stated that the key Soviet objective in the INF treaty was to eliminate from Europe the United States ground based ballistic missiles which threatened Soviet territory. This rationale demonstrates the seriousness with which Moscow viewed NATO INF deployments, and the giving up of the SS-20 to obtain the dismantling of NATO INF may not necessarily reflect paradigmatic change. In the correlation of forces analysis at theatre and strategic levels the Soviet Union could be better off after the INF Treaty. The Pershing II, for example, threatened automatic nuclear escalation and at the same time threatened to prevent the Soviet Union from retaining the strategic option of launching its forces upon warning of a United States attack. Even if the Soviet Union is increasingly embracing deterrent thinking, the legacy of compellence in its strategy is


159 Michael R. Gordon, "Dateline Washington: INF: A Hollow Victory?" Foreign Policy 68 (Fall 1987), p. 160. Other Soviet systems can cover European targets. Key hard targets will probably be covered by ICBM warheads that would otherwise be in reserve.

still cause for NATO concern.

NATO grand strategy seeks to deter a Soviet invasion, but NATO declaratory and operational nuclear strategy seeks to compel a change in Soviet behaviour if war should occur. The Soviet Union’s longstanding objectives have been primarily to maintain control in East Europe and to compel greater accommodation to Soviet interests in West Europe, but its nuclear declaratory strategy still clearly seeks to deter any NATO use of nuclear weapons. The operational strategy of the Soviet Union, however, appears designed to ensure deterrence by the threat of conducting conventional offensive operations supported by the implied threat of preemptive nuclear war should NATO attempt nuclear first use. In both alliance strategies, deterrence and compellence appear so deeply intertwined that their separation becomes extremely artificial and awkward.
Chapter Seven

THE NUCLEAR FORCE STRUCTURE OF THE UNITED STATES

So far in this inquiry, the focus on nuclear strategy has been to analyze the objectives and threats that underpin the superpower's declared intentions. This study now begins to narrow this focus to the analysis of the actual strategic nuclear force structures. The United States nuclear forces are dealt with in this chapter, the Soviet nuclear forces follow in chapter eight, and then the trends of the correlation of nuclear forces between the two nuclear powers form the theme of chapter nine.

Only by examining the capabilities of the respective strategic forces can the actual operational strategy be determined with any reliability. As has been elaborated in chapter one, the deterrent and compellent paradigms require different force structures. These next chapters therefore seek to identify, to the extent possible, how closely each superpower's strategic forces conform to the respective paradigms. If deterrent thinking were dominant, one would expect that a given force structure would simply be designed to absorb a first strike and still be capable of inflicting assured destruction on its rival. If compellent thinking were dominant, one would expect that a given force structure would seek an advantage in a potential counterforce exchange such that greater residual nuclear forces could be held for subsequent threats or war fighting purposes.

This chapter begins with the explanation of the correlation of nuclear forces model that applies to the following chapters as a heuristic device in the analysis of nuclear force structure. Following this explanation, the analysis utilizes the now familiar correlation of
nuclear forces framework that examines in turn the quantity, the quality and the expected combat utility of these forces.

I. THE CORRELATION OF NUCLEAR FORCES MODEL

To a Soviet strategic analyst in the Brezhnev era, the concept of the correlation of forces was a fundamental baseline that determined his approach and methodology. The correlation of nuclear forces is simply a subset of this broader concept that was explained in chapter four. This section seeks first to explain the model used in this study and then account for its use in spite of certain criticisms. Inevitably, some caveats are necessary to avoid oversimplifying and distorting what is in reality an extremely complex issue.

Any model that purports to analyze the correlation of forces must therefore be a relatively complex one that accounts for many diverse factors. The degree of complexity can be even further compounded by the fact that many factors have changing significance and are capable of behaving in an unpredictable manner. Nevertheless, the concept of somehow assessing the correlation of forces is one of the few remaining standards that stems from Lenin's concept of revolution, and it has triggered many modelling efforts designed to accomplish this task. In 1967 one of these efforts by Major General Anureyev, a highly respected and influential professor at a senior Soviet military academy, produced a correlation of nuclear forces model that provided an interesting conceptual and analytical foundation for dynamic modelling of central or


This model is as follows:

\[ C = \frac{\sum_i U_i \times P_i \times S_i}{\sum_j U_j \times P_j \times S_j} \]

where \( C \) is the correlation of nuclear forces, \( C_0 \) is the initial correlation of nuclear forces (defined by dividing the total equivalent megatonnage, EMT, of country \( i \) by that for country \( j \)), \( U \) is the fraction of EMT by type of a given weapon system, \( P \) is the probability of penetration of a given weapons system and \( S \) is the probability of survival of a given weapons system. While this model presents an interesting conceptualization of how to assess the correlation of nuclear forces, Stephen Meyer's version contains a serious error of mathematical logic in that he appears to have confused the total megatonnage value with equivalent metagonnange and thus misrepresents the original formulation.\(^3\)

Another way of expressing this equation where \( n \) simply represents the number of a given weapon system is as follows:

\[ C = \frac{\sum_i n_i (EMT_i) \times P_i \times S_i}{\sum_j n_j (EMT_j) \times P_j \times S_j} \]


\(^4\) This methodology has been validated by Dr. Ed Edmond of the Directorate of Mathematics and Statistics and by Dr. J.S. Finan, the Director of Strategic Analysis, at the Operational Research Analysis Establishment in Ottawa, February, 1988. See Annex A for the formula and methodology used to generate data for this study.
For each given weapon system, detailed and separate calculations are required to determine its probability of penetration and its probability of survival in combat. These additional calculations are also very complex and inevitably must rely on certain assumptions as to how these systems will perform when the time comes. What this expression represents is a combination of quantitative and qualitative factors that, to a degree, account for the relative utility of various weapons systems that are or become residuals in combat.

As is the case for any such model, this one can be criticized as an inaccurate or inappropriate expression of complex reality. Strategic analysis faces several major constraints, most of which have to do with the limitations of human intuitive inferential abilities in coping with massive amounts of information or with the limitations of science and formal methods in accounting for complexity without unduly truncating the analytical process. Clearly with any such means of analysis, one runs the risk of providing "a machinery for producing phoney corroborations" that only gives a semblance of scientific validity. Operational research in World War Two, for example, tended in retrospect to be in error by a factor of three. In the Vietnam conflict, systems analysis also failed to reveal that Vietnamese troops who fought well defending their homes in the Mekong Delta would desert rather than fight when sent to the


Models are simply the tools of analysis and therefore still require judicious application by people with a broad knowledge of history and politics who at exactly the same time understand technical detail.

Relation of nuclear analysis, as a result of the total lack of any operational experience, depends very heavily on various models and games. Notwithstanding the criticisms, no effective analysis of strategic nuclear weapons can occur without making extensive use of mathematical models to create an "artificial reality" that is an important first step in developing useful and flexible models. To conduct any meaningful analysis, some simplification is necessary. The Soviet Union made considerable progress along these lines in the 1960's while the Western analysts tended to focus on the games of Chicken and Prisoner's Dilemma, tailored for the rational analysis of deterrence. The selection of a Soviet model for use in this analysis is for the most part because of its greater applicability to the paradigmatic mode of analysis.

The correlation of nuclear forces model is designed to demonstrate the residual ability of nuclear force structures to inflict damage on the other side. That is undoubtedly why EMT was selected as the unit of measure for the power of the weapons. Those weapons with which one attacks must be deliverable and reliable, and those weapons withheld must be survivable. These weapons can be used for counterforce or countervalue

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10 Ibid. The latter games are generally felt to be more appropriate for deterrence analysis and less useful for analysis of compellence.
attacks; however, it has been accepted that counterforce nuclear warfare is the upper limit of rational, politically purposive military action.\textsuperscript{11} Impressive increases in weapon system accuracy now mean that collateral civilian casualties in a counterforce attack could conceivably be reduced by as much as 96%.\textsuperscript{12} Nevertheless, the most accepted measure of one's ability to inflict strategic defeat is EMT, and as long as a given superpower can deliver about 400 EMT, it can reasonably be expected to have a capacity to defeat strategically an opponent.

Technical analysis and mathematical modelling in the Soviet Union complements the ideological commitment to finding a scientific basis to confirm the actual correlation of forces, but the problems of accurately identifying the relative power of adversary countries affects all states. In the past, serious errors in calculating the correlation of forces have led to disastrous political and military consequences. For example, when Germany cautiously sent three battalions to re-occupy the Rhineland in 1936, Britain estimated 30 battalions were involved and the French thought 300 battalions moved in.\textsuperscript{13} It is also possible that a real advantage in forces will not necessarily lead to a favourable result. One Soviet analyst has noted carefully that


\textsuperscript{13} Herbert Goldhammer, Reality and Belief in Military Affairs: A First Draft (Santa Monica, California: Rand Corporation R-2448-NA, 1979), p. 2.
a superiority in forces must not be over simplified. Even a significant superiority is merely a favourable opportunity. Its conversion into actuality is a complex and contradictory process.\textsuperscript{14}

In the United States, a parallel to this notion is found in the realist model of interstate conflict.

In a world where power counts, the supreme virtue is prudence, that is, a rational calculation of the advantages of alternative courses of action. Such a calculation requires a judgement of the relative power of adversary nations and one's ability to influence their actions.\textsuperscript{15}

Detailed calculations of force structure and mathematical models are the key tools for modern military analysis, necessary to avoid perceptions that on occasion can be opposite to reality. The Soviet success of Sputnik and the American Apollo successes are examples that helped convince many people that a given superpower was considerably more powerful relative to the other than it actually was.\textsuperscript{16}

Both the Soviet Union and the United States rely heavily on various forms of modelling to assist in developing nuclear strategy and force structure. In the Soviet Union, the main utility of these models appears to be the provision of a mathematical basis for the most effective methods for conducting combat. It forms a logical strictness of thought that


\textsuperscript{16} Herbert Goldhammer, \textit{Reality and Belief in Military Affairs}, p. 1. Although such examples are most evident in forming mass opinion, they are also important in shaping beliefs of political, economic and military elites.
disciplines the mind and serves as an aid to better strategic decisions. In this process, mathematical forecasting and operational research are linked, and the main purpose of this effort is to provide information and data needed for better Soviet decision-making. In the United States a similar but more diverse strategic community has had an equally significant role in aiding the decision-making process. Not only have defence officials conducted extensive research and analysis, but they have been assisted by many outside agencies. Throughout the 1950's and 1960's, the Rand Corporation in particular had a major impact on United States nuclear analysis. In general, the American analysts have observed the same fundamental variables, but have not put them together in the same comprehensive and numerate fashion. One independent analyst, for example, produced a dynamic model with some similarity to that produced by General Anureyev, but it dealt only with ICBM's.

The correlation of nuclear forces model used by this study is simply a tool that has application to the analysis of the nuclear force structure.


18 Yu. V. Chuyev and Yu. B. Mikhaylov, Forecasting in Military Affairs (Moscow: translated by Secretary of State Department, Canada and reprinted by USGPO, 1975), p. 224.


of each superpower. It provides a relative measure of nuclear forces that allows a comparative analysis of nuclear systems which includes at least some of the dynamic factors critical in the event of war. Although it is a necessary simplification, its application to the existing nuclear force structure over time should clearly show any significant trends. More importantly, this model is probably representative of the type of analysis that routinely takes place in Moscow and even possibly in Washington with the aid of highly classified data and sophisticated computers. Consequently the model's results will yield an insight into nuclear strategic thinking that will greatly assist the paradigmatic analysis.

II. STRATEGIC NUCLEAR FORCES - QUANTITATIVE FACTORS

As a first step in the quantitative analytical process, one must decide on the applicable data base, a task made all the more difficult when dealing with strategic weapons systems between the Soviet Union and the United States who do not acknowledge the same definition of "strategic." To the United States, strategic nuclear systems have intercontinental range, but to the Soviet Union any weapon that can strike at the heart of Soviet power (within the boundaries of the Soviet Union) must be judged strategic regardless of where it is based. In the subsequent analysis, the systems agreed to by the Soviet Union and the United States throughout the SALT negotiations form the analytical baseline. Thus, several potent weapon systems are immediately excluded from analysis, and some inclusions may not necessarily reflect their intended utility in war. For example, all theatre nuclear forces including Backfire bomber and attack aircraft carriers are excluded as are

21 The only exception is the inclusion of the SS-N-5 missile, done only for greater ease of counting SLBM's. This addition has minimal influence on the overall results, and all were taken out of service by 1980.
British, French and Chinese nuclear forces. The exclusions, however, are partially offset by the inclusions of the Polaris/Poseidon SSBN's allocated to NATO and those Soviet ballistic missiles, including the variable range SS-11's and their replacements, that are probably intended to threaten peripheral targets. By limiting this study to the systems covered by the SALT accords, the huge task of analyzing strategic nuclear systems becomes more manageable without seriously affecting the correlation of nuclear forces model results.

Assessing the United States nuclear force structure in a paradigmatic context requires the application once more of the correlation of nuclear forces component of the previously established framework. This framework contains three aspects of analysis: quantitative factors, qualitative factors and dynamic processes. This section will delve into the quantitative aspects of United States force structure, and the two following sections will address the qualitative and dynamic factors. The major focus of this analysis is on the period 1970-1986, the third period of United States nuclear strategy that was analyzed in chapter three.

Because of the fact that most of the decisions that shaped the numbers of United States nuclear strategic systems took place in the McNamara years (1960's), the quantitative section can be fairly brief. Compared to previous periods, from 1970 to 1986 the numbers of major strategic systems of the United States have been relatively stable. For the most part, the major quantitative or static indicators are held to be the number of strategic nuclear delivery vehicles (SNDV's), the number of

22 In 1963, NATO identified a requirement for and was allocated five SSBN's to threaten theatre targets in East Europe, and the USSR has probably allocated over 100 SS-11 replaced by an equal number of SS-17 ICBM's to threaten key targets in Europe and China. See Robert P. Berman and John C. Baker, Soviet Strategic Forces: Requirements and Responses (Washington, DC: The Brookings Institution, 1982), p. 59.
nuclear warheads or re-entry vehicles, and the equivalent megatonnage values of the strategic nuclear force as a whole.\textsuperscript{23}

From the years 1970 to 1986, the United States total of SNDV's decreased from 2175 to 1910, the lowest level being 1849, reached in the year 1983.\textsuperscript{24} It had been long predicted that the United States could reduce its strategic forces without jeopardizing its retaliatory capability and without adverse political consequences for the United States,\textsuperscript{25} but this SNDV reduction may no longer be the most significant factor in assessing strategic power. While the number of ICBM's and SLBM's dipped somewhat in the early 1980's the major change during this period for the United States was the cut in the number of operational bombers. Several bombers remain in long term storage, but their use in modern combat would require a great deal of preparation time. A few additional ICBM's have also been acquired for testing purposes, but without warheads and re-usable silos their use would also require a great deal of preparation time.\textsuperscript{26} As the United States has no known plans to reconstitute its strategic forces in the event of war, for the purposes of analyzing the American nuclear forces ready for combat, only those presently in operational units are counted.


\textsuperscript{26} For example, 108 MX missiles were acquired to field a force of 50 missiles. The additional missiles are for both initial and subsequent testing. See David M. North, "New Soviet Weapons and Strategy Shape U.S. Deterrence Efforts," \textit{Aviation Week and Space Technology} (March 10, 1986), p. 25.
A more significant variable is perhaps the total number of warheads or re-entry vehicles fielded in the strategic nuclear force. In 1970, the United States had 4079 strategic warheads, but by 1986 this number had grown to 11,772, almost a threefold increase. Most of this increase was attributable to the Poseidon and Trident weapon systems, but the Minuteman 3 and the air launched cruise missile (ALCM) have also contributed to this growth. The MIRVing of strategic missiles in the 1970's was the most important factor that increased the number of warheads available, and it was quite clear during this period that more warheads were required to cover additional targets. In terms of striking hard targets, it is considered feasible to send at most two warheads; the first, an airburst to maximize overpressure and immediate radiation and to minimize the debris in the air that could interfere with the passage of subsequent warheads, and the second, a ground burst to create maximum shock and cratering. MIRV's facilitate striking hard targets by allowing RV's from separate missiles to attack a given target, hereby increasing the probability that at least one will arrive. By 1977, according to an assessment by the Congressional Budget Office, the

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strategy of essential equivalence would require about 16,000 warheads.\footnote{United States Congressional Budget Office, U.S. Strategic Nuclear Forces: Deterrence Policies and Procurement Issues (Washington, D.C.: USGPO, 1977), p. 32. This number of warheads is that needed by the proposed or "required" strategic force.}

Over this time period, an evident increase in targets, at least in part due to the requirement to attack hard targets, appears related to this growth in strategic warheads.

The total nuclear force structure is also a function of strategic programme funding, and clearly funding realities constrain the ability of the United States government to fulfill all of its strategic goals. A case in point is the MX, 200 of which were to be acquired in part to improve the United States position in arms control talks, but by 1986 only 50 were funded.\footnote{Leon V. Sigal, "Stable Deterrence or Nuclear War - Fighting: All Unclear on the Nuclear Front," in R. B. Byers ed., Deterrence in the 1980's: Crisis and Dilemma (Beckenham: Croom Helm, 1985), p. 108.} From the early 1950's to the early 1970's the United States has been able to gradually reduce its spending on strategic systems in constant dollars to about half of its previous level.\footnote{Henry S. Rowen, "The Need for a New Analytical Framework," International Security 1 (Fall 1976), p. 130. Rowen's data refutes the notion of an arms race in strategic systems prior to 1976.} This reduction in strategic spending was reversed in the mid 1970's primarily due to concerns over Soviet strategic construction. Between 1981 and 1985 the United States defence spending grew by 32% in real terms, as President Reagan launched the largest United States military build-up since the Korean War.\footnote{Barry R. Posen and Stephan W. Van Evera, "Reagan Administration Defence Policy: Departure from Containment," in Kenneth A. Oye, Robert J. Lieber and Donald Rothschild, eds., Eagle Resurgent? The Reagan Era in American Foreign Policy (Boston, Massachusetts: Little Brown and Company, 1987), p. 75.} This increased defence spending in part accounts for the sharp increases in warheads available in the 1980's.
The final quantitative variable used as a strategic yardstick is the summation of EMT, the measure of destructive power. Although the total EMT available to the United States dropped by 10.8 percent over the period, this ignores the significant increase in the United States totals after 1981. In fact, the total EMT in United States strategic forces dropped until 1976 when it more or less levelled off. The significant increases in the 1980's, however, are directly attributable to ALCM and Trident, but even modest increases in the number of MX missiles or B-1 bombers in subsequent years could return the EMT available to the 1970 level.

EMT is a variable that is often directly related to another common indicator used to measure strategic power, that of throw weight. The two are somewhat linked by Kent's rule which claims that the size of a nuclear warhead is proportional to its yield to the two-thirds power. Therefore, the greater the throw weight, the greater the number of warheads, total yield and total EMT. Since the power of a ballistic missile is proportional to its fuel load and since its fuel load is proportional to its volume, assuming its range to be constant, analysts can make reasonably accurate estimates of missile throw weight. Not all analysts, however, believe that throw weight is a meaningful indicator of strategic power. This study considers EMT a more useful indicator.

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34 See Annex D for details of EMT totals for the United States.


36 For a positive view see Paul H. Nitze's influential article, "Assuring Strategic Stability," Foreign Affairs 54 (January 1976), p. 230. For a dissenting view see Jan Lodal, "Assuring Strategic Stability: An
because it alone measures the actual pattern of destruction on the ground, reducing yields of various sizes to an equivalent standard.  

The measure of the quantitative factors of SNDV's, warheads and EMT tends to show a fairly stable United States nuclear force structure over the period 1970-1986. While two indicators, the SNDV and EMT, show an overall decrease during this period, both have shown increases in the 1980’s. The number of warheads, however, has increased almost threefold with about 2500 being added in the 1980’s. Overall, the quantitative indicators in the 1970’s seems to fall within what might be expected in a deterrent paradigm, but the significant increases in the 1980’s especially in numbers of warheads when coupled with the already high levels of nuclear weapons indicates that deeper analysis is necessary.

III. STRATEGIC NUCLEAR FORCES - QUALITATIVE FACTORS

During this period, 1970-1986, a technological competition to field "better" strategic systems appears to have accelerated in conjunction with the levelling off of the numbers of strategic nuclear systems. Qualitative factors that make a given system more effective include increasing the availability, the reliability, the accuracy, the precision, the yield, the penetration ability, the hardness or the survivability of each individual weapon. For the United States, these variables have steadily improved during this period of analysis as newer systems and


37 A nuclear fireball creates three dimensional damage but most target areas are measured in two dimensions. EMT for yields under one Megaton are proportional to the yield to the two-thirds power and yields over one megaton are proportional to the square root of the yield. See Ian Bellany, "The Essential Arithmetic of Deterrence," RUSI Journal 118 (March 1973), p. 28.

38 Accuracy does not equal precision. The measure of accuracy is Circular Error Probable and the measure of precision is bias.
modifications to existing systems have been fielded.\textsuperscript{39}

1. Overall Availability and Reliability

Weapon availability is a function of routine maintenance and alert posture. The United States in peacetime normally has about 90\% of its ICBM's available for immediate launch, about 25\% of the strategic bomber force on alert, and about 50\% of its SSBN's at sea or on patrol.\textsuperscript{40} This study, however, rejects the concept of an "out of the blue" strategic attack as a practical policy option and accepts the notion that strategic combat is far more likely to occur after a serious political crisis or after a period of conventional war. Thus, what is most important to this analysis is what the United States forces would look like in a fully alerted or generated posture. If such a generated posture were to be maintained for a significant period of time, however, it would degrade as the effect of reduced training and maintenance would be felt. This study assumes that generated posture may have to be held for up to 30 days and that the strategic forces may degrade slightly from a fully generated condition. It is also assumed that ICBM's are close to 100\% available, that 85\% of SSBN's are at sea and that 80\% of bombers are on alert status. Even in a fully generated condition, however, the United States could possibly be able to deliver as few as 38\% of its nuclear strategic weapons

\textsuperscript{39} See Annex E for data on U.S. ballistic missiles. This annex summarizes the key variables that will be addressed in this section.

on their targets.  

The second major qualitative factor is closely related to availability; it is the overall reliability (OAR) of a given weapon system, including the probability that first the missile then the warhead will function properly. The OAR is normally expressed as a figure from zero to one, where one is total reliability. As weapon systems get more complex, the number of parts increases, and for example, a given weapon system with one million parts, each with a reliability of .999999 for performing its mission, could have an overall probability of success that could be less than .4.  

Because reliability errors are multiplicative, the actual reliability of a given system is difficult to determine; however, modern ballistic missile reliabilities are generally assessed at between .7 and .9.  

One way of determining OAR is to monitor actual missile tests; from 1965-1983, however, only three United States ICBM’s have been launched from operational silos, and none worked properly.  

Others have simply assumed that the United States, with its great industrial and technological strength, has ICBM’s and SLEB’s that are


42 The example used was the Nike Hercules Air Defence System cited in Norman R. Augustine, Augustine’s Laws (New York: American Institute of Aeronautics and Astronautics, 1982), p. 59. If any one part fails, the whole mission may fail. The same principle applies to all systems.

43 Kosta Tsipis provides an excellent review of nuclear weapons technologies in his, Arsenal: Understanding Weapons in the Nuclear Age (New York: Simon and Schuster, 1983), p. 114. OAR of .6 means that a given system will operate as planned 60% of the time.

44 Bruce Russett, The Prisoners of Insecurity: Nuclear Deterrence, The Arms Race and Arms Control, p. 29. Even those launched from test facilities have not been much more successful.
At the beginning of the 1970's reliabilities appeared to be lower than in the 1980's. One analysis of a possible Soviet counterforce attack postulated that the OAR including availability would be as low as .57. According to a senior defence official, in 1968 the average OAR of Minuteman 1 and 2, and the three Polaris variants was .66. When the availability factor is withdrawn, assuming it to be .9, then the OAR averages out to be .73.

This study has selected OAR's for the United States systems that are more or less based on these averages in the early years and projected reliability improvements into the 1980's. United States B-52/B-1B bombers are assessed as having an overall system reliabilities of .8/.85 respectively that includes all warheads, missiles and the aircraft itself.

2. **Lethality**

The next major qualitative factor includes the variables of accuracy, precision and yield to measure the lethality of a given weapon system against hard targets. This factor is also known as counter military potential (CMP or K) and is expressed mathematically as:

\[
\text{CMP} = K = \frac{Y^{2/3}}{\text{CEP}^2}
\]

---


where yield (Y) is expressed in megatons of TNT explosive power and circular error probable (CEP) is expressed in nautical miles. CMP is a concept that loses some of its meaning at very high or very low accuracies, but it is nevertheless an accurate measure of technical sophistication. The higher the K value, the higher the probability of destroying a given hard target. The probability of destroying a target of H hardness or the single shot kill probability (SS\(_{KP}\)) is sometimes expressed as follows:

\[
SS_{KP} = 1 - 0.05(H/16)^{2/3}
\]

This equation assumes a simplified lethal radius of a nuclear weapon that, of course, varies with each particular weapon, target, weather and soil condition, but normally can destroy a silo type structure at a distance of 1 1/4 times the crater radius.

When a more precise measure of lethal radius is introduced, such as that computed by a General Electric calculator, the following formula is used:

\[
D = \sqrt{\frac{60 \times \text{yield}}{16}}
\]


49 CMP is useful until CEP is equal to or less than the radius of the crater the explosion excavates. See Kosta Tsipis, Arsenal, p. 307. The highest useful value of CMP is therefore about 100-125. The crater radius can be determined by the following formula: (yield)\(^0.3\) x 60 feet per kiloton. A one Kt groundburst will create a 60 foot radius crater. See Samuel Glasstone and Philip J. Dolan, The Effects of Nuclear Weapons 3rd edition (London: Castle House Publications, 1980), pp. 233-236. This work is the best reference for technical details of nuclear weapons.

50 See Barry Schneider, Colin Gray and Keith Payne, Missiles for the Nineties: ICBM’s and Strategic Policy, p. 52.

This is the formula for $\text{SSKP}$ used in this study.

The final calculation of the ability to destroy a given target is the terminal kill probability ($\text{TKP}$) which is the $\text{SSKP}$ times the OAR. Should more than one RV of different yields be used per silo, then the overall $\text{TKP}$ can be expressed as:

$$\text{overall TKP} = \text{TKP}_1 + (1 - \text{TKP}_1) \text{TKP}_2$$

These formulae, that will be used throughout this study, place a premium on both yield and accuracy, but clearly increased accuracy results in a greater payoff in the ability to destroy hard targets.

The United States from 1970 to 1986 has consistently pursued increased accuracy, but has a mixed record with respect to increasing warhead yields. In the early 1970's the older Minutemen 1 were replaced with lower yield Minutemen 3 missiles. Even though the Minuteman 3 was MIRVed, it was "expressly designed to be effective only against soft targets." When the Minuteman 3 was re-equipped with the Mark 12A

52 See Lynn E. Davis and Warner R. Schilling, "All You Ever Wanted to Know about MIRV and ICBM Calculations But Were Not Cleared to Ask," Journal of Conflict Resolution 17 (June 1973), p. 211. More accurate SSKP formulae exist for specific purposes, but this is considered the best general purpose expression by Dr. J. S. Finan, the Director of Strategic Analysis, of ORAE, Ottawa (Interview: 18 March, 1988).

53 Ibid., p. 127.

warhead system in the early 1980's, however, the yield was doubled and the
certainty improved such that the lethality of the Minuteman 3 in the 1980's
was six times its K value in the early 1970's. Generally speaking, the
yields on SLEEM and bomber carried warheads decreased slightly over the
period, at least until the Trident missile was deployed. Flexibility has
also been enhanced by deploying selectable yield warheads on cruise
missiles, Pershing II and gravity bombs. For the most part the United
States has attempted to increase its strategic force lethality by
increasing the numbers of its warheads and making them more accurate.

Overall accuracy is enhanced by having a lower CEP and a small bias.
Bias is the distance between the centre of the target and the centre of
distribution of RV impact points, and as it is normally less than one
third of the CEP, it is usually ignored. The less the bias, the more
precise a weapon system is said to be, but one of the unknown quantities
in a missile exchange would be that ballistic missiles have never been
tested in a polar trajectory so that real systemic bias is uncertain. The
standard measure of accuracy is CEP, that radius within which there is a
.5 probability that a given RV will impact. Even though these values are
regularly tested, these tests tend to occur over shorter ranges and in
placid conditions such that real CEP's could be overstated by as much as
10%. This study has used the CEP's as published in unclassified sources

55 Thomas J. Downey, "How to Avoid Monad - and Disaster," Foreign
Policy 24 (Fall 1976), p. 177.
56 Michael Pentz, "New Weapons and Strategies for their Use," in
Thomas L. Perry and Dianne DeMille, eds., Nuclear War: The Search for
Solutions, p. 59. See also contrary view, see General Robert T. Marsh,
"Strategic Missiles Debated: Missile Accuracy - We Do Know," Strategic
Review 10 (Spring 1982), pp. 36-37. Marsh stresses that bias is a
relatively minor error, even on polar trajectories. This study assumes
bias can be ignored. See Annex A for further support.

57 Matthew Bunn and Kosta Tsipis, "The Uncertainties of a Pre-
as being the most reasonable data available, but several uncertainties inevitably remain.

The United States has made great efforts to improve the accuracy of its nuclear weapon delivery systems and has made considerable progress during the 1970-1986 period. As early as 1969, the defence department renewed its effort to improve the accuracy of strategic systems, but it was not until fiscal year 1975 that bureaucratic and philosophical resistance eroded to the point that an Improved Accuracy Programme was funded. Every United States strategic nuclear delivery system produced has had better accuracy than its predecessor and, in general, ICBM accuracy has doubled every seven years. The quiet retrofitting of all Minuteman 3 missiles with the NS-20 guidance system has also increased accuracy considerably, enabling it to attack hard targets. Guidance systems for nuclear delivery systems have improved by using better inertial and stellar navigation devices to update the delivery bus on its trajectory. To obtain greater accuracy by taking advantage of more precise navigation aids, manoeuvring re-entry vehicles (MARV's) are under active development. If the RV could take advantage of updated


61 Global Positioning System is replacing Transit satellite navigation system in the mid-1980's. All ballistic missiles will be more accurate with this system. Even without MARV, GPS will allow accuracies to be increased by 1/2. See Robert C. Aldridge, First Strike: The Pentagon's Strategy for Nuclear War, p. 93 and p. 118. See also Jonathan Alford ed., The Impact of New Military Technology (Farnborough: Gower and Allanhead, Osmun, 1981), p. 118.
navigational information for longer along its trajectory, it would be more accurate. MARV's will permit theoretical accuracies as low as 30 feet without the RV having to sense the target.\textsuperscript{62} This accuracy, when coupled with an earth penetrating warhead, will give such increased lethality against hard targets that one such warhead would be the equivalent of two present MX warheads.\textsuperscript{63} Clearly, the United States considers increased accuracy as an important factor in strategic weapon development and, since 1975, has vigorously pursued more accurate delivery systems.

3. Penetration

Another key variable remains the probability that the strategic weapons systems can penetrate to their targets. The United States deploys a number of penetration aids to facilitate the penetration of its SLBM's and ICBM's against the Soviet missile defences. Soviet ballistic missile defences have been strengthened and modernized over the past years, so that missile penetration will probably be less than unity. Even though American bomber tactics have called for low level penetration since the 1960's, the Soviet Union has expanded and improved its high altitude air defence to the degree that many feel it has some ABM capability.\textsuperscript{64} In this study, the United States missile penetration of the USSR is based on the OAR times a defence factor that varies from .9 to unity.\textsuperscript{65} Soviet


\textsuperscript{65} In this study, unity was used for the defence factor from 1970-1972, .98 from 1973-1975, .95 from 1976-1982, and .9 from 1983-1986. Many modern Soviet surface to air missiles are given some capability
ballistic missile defences are judged unable to provide any meaningful area defence, but have some ability to defend point targets.

As the United States maintains a large percentage of its EMT in its strategic bomber forces, the ability of those aircraft to penetrate Soviet defences is a very important variable. The United States strategic bomber force can attack a formidable number of aim points, even without the assistance of missiles, in a target set more closely tailored to an assured retaliation mission where both hard and soft military targets can be destroyed.\(^6\) Average bomb loads of four bombs plus missiles have been assumed in this study.\(^7\) To attack well defended military targets, however, will require that the United States bomber force penetrate what is probably the most in-depth air defence system ever created. Historical loss rates in conventional combat have been in the order of two to three percent, giving very high penetration rates.\(^8\) In 1972 over North Vietnam, the United States directed 700 sorties of B-52 bombers into the heavily defended Hanoi-Haiphong area yet lost only 15 aircraft, a little over 2 percent.\(^9\) Because the ability of the bomber to penetrate against ballistic missiles. The efficacy of these systems remains controversial. See John M. Collins, U.S. - Soviet Military Balance, 1980-1985 (Washington, D.C.: Pergamon-Brassey's, 1985), p. 56. John Collins provides excellent data on Soviet and United States nuclear forces.

\(^6\) Francis P. Hoeber, Slow to Take Offence: Bombers, Cruise Missiles and Prudent Deterrence, pp. 33-36.


\(^8\) Average allied bomber losses in World War Two were 2.8%. See The United States Strategic Bombing Survey Summary Report (European War) (Washington, D.C.: USGPO, 1945), p. 1.

sophisticated air defence systems has become primarily a function of complex electronic "gadgetry", and that gadgetry is susceptible to EMP, trying to penetrate Soviet defences in conditions of nuclear war is an unknown quantity. Generally speaking, the United States bomber force is intended to conduct follow up attacks on Soviet hard and soft targets after ICBM and SLBM attacks have blasted approach corridors and weakened the air defence system. Soviet defences consist of 10,000-12,000 surface to air missiles, 1200-2600 interceptors, up to 10,000 radars, and a sophisticated warning and communication system.

The United States estimates that its attempts to penetrate Soviet defences with nuclear bombers will be .75 effective. In 1979, the Commander Strategic Air Command (SAC), General Ellis, anticipated a .75 penetration ability for 1985. The Joint Chiefs of Staff have apparently assumed that in the present SIOP the probability of arrival to enemy targets for weapons carried on penetrating bombers is about 77 percent for ALCM's, 72 percent for short range attack missiles (SRAM's) and 60 percent for bombs. In 1975, however, a former senior SAC pilot estimated that the B-52's ability to penetrate to Soviet targets at that time at about is the more detailed and the more useful.

60-75 percent, somewhat lower than official estimates. Each year the Soviets have increased the effectiveness of their air defences such that from the early 1960's on the United States was forced to adopt low level penetration tactics. The penetration data of Soviet air defences by SAC in this study is based on interpolation of the above information, including a .8/.85 OAR for B-52/B-1B bombers and their weapons.

The penetration of United States nuclear systems to Soviet targets from 1970-1986 has remained relatively constant. As older B-52 models could no longer effectively penetrate, they were replaced by newer more effective versions, and as they in turn degraded they were augmented with SRAM and ALCM. Most recently the B-1B and ALCM have given the United States bomber force an effective ability to penetrate Soviet defences. The ballistic missile systems do not face effective defences so that their penetration is relatively high.

4. Survivability

Each leg of the United States triad faces a different survivability problem which will be affected in different ways by crisis and war. The land based ICBM's are threatened by Soviet ICBM's that could impact within 20 minutes of the United States receiving reliable strategic warning. The United States bomber force is threatened by SLBM's that could possibly reduce their reaction time to as little as 9 minutes. The SSBN's if in

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74 Dr. Bob Brereton, Director of Air Operational Research in ORAE, Ottawa, (Interview: 12 January, 1988).

75 See Annex F. Bomber Penetration Data. Soviet defence against American penetration is plotted linearly for reasons of simplifying a complex issue. The lines on the chart are meant to be a plausible relative explanation of continual increases in Soviet air defences relative to United States abilities to counter it, over the life of a weapon system. This Annex is considered a plausible explanation of unclassified data by Dr. Bob Brereton, the director of DAOR, ORAE, Ottawa.
port are very vulnerable to any nuclear missile attack and at sea are threatened by Soviet anti-submarine warfare (ASW). The survivability of the United States strategic nuclear forces is important because it is a central qualitative variable contributing to the correlation nuclear forces analysis. Each leg of the triad will be examined in turn.

The standard measure of ICBM resistance to an attack is the hardness of its silo against the shock of a nuclear detonation. A typical nuclear weapon expends its energy as follows: 50% blast, 40-45% thermal and 5-10% in exited nuclei. A standard missile silo can shield a missile from thermal and radiation effects from detonations that are fairly close; thus, the challenge for silo hardness is to protect a delicate missile from damage due to shock and blast. A silo's resistance to such a blast is usually expressed in pounds per square inch overpressure that the structure is predicted to withstand. Because no silo has ever been exposed to a nuclear weapon test, however, uncertainty in silo hardness calculations is in the order of about 20 percent. Most silo attacks involve 2 warheads, one airburst and the other groundburst, but it is the ground burst weapon that will cause the most damage. The expression for silo survivability used in this study, where is the probability of survival, is as follows:

\[ P_S = 1 - T_{kp} \]

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76 Kosta Tsipis, Arsenal: Understanding Weapons in the Nuclear Age, p. 46.

77 Ibid., p. 135.

78 Matthew Bunn and Kosta Tsipis, "The Uncertainties of a Preemptive Nuclear Attack," p. 44.

Unless a nuclear weapon detonates close enough to a silo, so that the silo is visibly destroyed, the attacker will not know if his attack was successful or not. It is plausible that the silo would withstand far more shock than the relatively delicate missile contained within. It is considered possible now to construct underground shelters that can reasonably be expected to withstand overpressures greater than 6000 psi.

The United States ICBM force has had two overt hardening programmes during the 1970-1986 period. The first began in the 1960's and was completed by 1972, thereby placing all American ICBM's in silos protected to a value of about 900 psi. From about 1974 to 1978 a silo hardening programme was implemented at the same time as the Command Data Buffer System was installed on United States Minuteman ICBM’s that would allow rapid retargeting. This study has assumed that the Minuteman hardness achieved during this programme approximates 2000 psi, the hardness value attributed to reinforced concrete.

One problem with United States force structure is its reliance on launch control centres (LCC's) to execute launch orders when received. In


82 The Military Balance, 1974-1975 and subsequent years.

the United States, there appears to be no ground based means of launching an ICBM if its LCC is destroyed, and there are only 100 LCC's controlling the 1000 Minutemen missiles. This situation has led one analyst to conclude that the Soviets must plan on attacking the United States command and control at the first opportunity. In this study, it has been assumed that if the LCC's are destroyed those ICBM's within its direct control are effectively lost.

Bomber survivability is primarily a function of warning time for those aircraft on alert. Those aircraft not on alert are assumed destroyed by attacks on the forty or so bomber bases. With nine minutes of warning, a B-52 can fly out as far as 46 nautical miles from its base, sufficient to render a barrage attack statistically useless. Since the bomber itself cannot withstand much more than 1-2 psi overpressure, speed is its only means of survival. This study assumes that for an extended period such as 30 days, less than 80 percent of the bomber force can be maintained on continuous alert and that 90 percent of that number survive a nuclear attack. Therefore, in a generated posture 70 percent of the United States B-52's can probably survive a nuclear attack. Because B-1B's are somewhat faster and slightly harder, 80 percent are assumed to survive an attack.

The survival of SSBN's represents an important component of the correlation of nuclear forces model as applied to the United States because about half of its strategic warheads are on SLBM's. This study assumes that in a generated condition, about 15% of these assets will be

84 Bruce Blair, Strategic Command and Control: Redefining the Nuclear Threat, p. 284. This study has assumed that LCC's are as hard as ICBM silos, even though they are not as deep. See R.T. Pretty, ed. Jane's Weapon Systems (London: Jane's Yearbooks, 1988-1989).

required to be in port at any given time and that the remaining 85% are at sea. Those in port are quite vulnerable to strategic attack and are assumed destroyed when attacked. Those SSBN's at sea are more survivable, but still are subject to attack by several means, all of which involve a capability by the Soviet Union to locate, identify and destroy them. As the SSN is widely viewed as the best counter to a submarine, the Soviet Union has invested a great deal into producing SSN's capable of countering SSBN's. Nevertheless, any SSBN on patrol is extremely quiet, and superior United States submarine technology allows for American submarine operation to be more silent than their Soviet counterparts. Generally speaking, United States submarines can proceed at higher speeds without being detected, while still detecting and tracking Soviet submarines. In the 1980's, however, this American advantage was decreasing.

The survivability of SSBN's is also a function of the amount of sea room in which they have to operate. As SLBM ranges are extended, the amount of sea that must be searched is expanded geometrically, and this clearly increases SSBN survivability. If an SSBN remains deep, it is hard to detect but cannot readily communicate and, if found, can be destroyed easily due to the propagation of shock in deep water. In this study,

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89 A nuclear submarine at sea can probably withstand pressures in excess of 14,000 psi. See Kosta Tsipis, Arsenal: Understanding Weapons in the Nuclear Age, p. 71. The increased water pressures at greater depths make it feasible to conduct barrage attacks on SSBN's operating below 300 meters.
survivability of SSBN was based on the amount of sea space available and the relative effectiveness of Soviet ASW in those waters. In this analysis, the Ohio class submarine was accepted as the most survivable SSBN at sea during the period. In general, the United States appears to have very survivable SSBN's that have, at a minimum, kept pace with Soviet ASW improvements by virtue of adding longer range missiles.

The United States from 1970 to 1986 has taken serious efforts to improve the survivability of its strategic delivery systems against developing threats. In a sense, the hardening of ICBM silos, the dispersal of bombers, and construction of survivable SSBN's are measures of passive strategic defence. These are measures that serve to enhance both deterrent and war fighting aspects of the United States strategic force structure.

5. The Implications of the Qualitative Analysis

From 1970 to 1986 the United States appears to have sought overall improvements in the qualitative aspect of its strategic nuclear forces, but the major effort has been to improve accuracies of all strategic systems. Qualitative improvements have contributed to an ongoing competition with the Soviet Union in all strategic areas, and Annexes F and G display that competition graphically. The application of the

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90 Annex G, SSBN Survivability Data, portrays the survivability factors used in subsequent calculations. This data has been reviewed by Fraser Bolton, the Director of Maritime Operational Research, ORAE (Ottawa) and is considered a plausible explanation of SSBN survivability based on unclassified data.


correlation of nuclear forces model requires that plausible assessments of all these variables be made to calculate a given correlation. The qualitative analysis highlights strenuous United States efforts to improve the lethality of its strategic systems that implies a bias to achieving a hard target kill capability that the compellent paradigm explains quite well.

IV. STRATEGIC NUCLEAR FORCES - COMBAT UTILITY

The dynamic factors of nuclear force structure are perhaps the most difficult to assess because the interaction of weapon systems in combat depends on what decisions are taken and when. Many of these decisions are simply not taken in advance, and there is no way of knowing for certain what choices a United States president will make. This section will analyze the general capability of the United States intercontinental nuclear forces to influence the outcome of strategic combat from 1970 to 1986. Certain elements or choices available in the United States force structure should reflect any tendency toward a given strategy. Since force structure is purportedly a reflection of strategy, one would expect that the United States force structure should parallel the declared strategy discussed in chapter three.

The quantitative and qualitative analyses are useful and necessary but not themselves sufficient indicators of paradigmatic thinking. These numbers and qualities must be related to actual results or outcomes before they can be said to have any meaning. This section will first examine the methodology necessary to generate the correlation of nuclear forces data, then note some command control factors that may serve to constrain

some options, follow with a review of some key combat variables, and finally describe some results from the correlation of nuclear forces model.

As has been alluded to earlier, the correlation of nuclear forces model requires several calculations, all of which to one degree or another must rely on certain assumptions as to the operation and effectiveness of nuclear weapons. The quantitative and qualitative analyses have for the most part completed the data base, but now further conceptual assumptions are required prior to actually "running" the formula. These assumptions are necessary to decide which systems to withhold and which to use against what Soviet targets. In this process, the lethality value $K$ provides a useful indicator to calculate the effectiveness of one force against another, but to do this correctly one must

match up specific missile types and target types, carry out a detailed calculation of the kill probabilities of each combination, and then calculate the overall results.$^{94}$

Thus to determine the survivability of a given ICBM type, an exchange model must be created for each situation and year that must, by necessity, be independently calculated.

Since nuclear weapons appear to exist primarily for coercing one's opponent,$^{95}$ the relative ability to conduct a counterforce exchange reflects one means of measuring one's potential advantage. This is certainly the view of Paul Nitze who claims that the post nuclear exchange relationship most clearly brings out the stability or potential

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$^{95}$ Herman Kahn, On Thermonuclear War, p. 302.
instability of the strategic relationship.\textsuperscript{96} Obtaining a favourable post exchange correlation of nuclear forces may have more to do with who strikes first than how the balance may have looked beforehand, but it is obvious that survivability of strategic forces is central to the post exchange outcome. During the beginning of this period, the United States began to express concern about the pre-launch survivability of its ICBM's.\textsuperscript{97} Within a few years a senior defence official was advocating high survivability to support national decision making "during and after nuclear attacks."\textsuperscript{98}

The initial correlation of nuclear forces exchange model involved matching the more lethal American and Soviet strategic missiles against the most lucrative targets in the opponent's inventory, to facilitate creating specific survivability values.\textsuperscript{99} Subsequently, the remaining United States and Soviet missiles were targeted in a similar manner until all of the opponent's targets were covered, including bomber capable airfields, SSBN bases and critical nuclear command and control targets. Soft targets were covered with less lethal SLM's wherever possible. All targets were covered at least once every model, but the optimum number of

\textsuperscript{96} Paul Nitze, Hearings before the Subcommittee on International Political and Military Affairs of the Committee on International Relations, House of Representatives, \textit{U.S.-USSR Relations and the Strategic Balance} (August 31 and September 2, 1976), p. 29.


RV's per target was two. Once targeting was complete, $SS_{KP}$ and $T_{KP}$ were calculated for each type of weapon targeted against each type of target. Then, the potential survivability of ICBM type was calculated and adjusted by a factor to account for incapacitated weapons due to destruction of command and control links.  

The resultant survivability, expressed a figure from 0 to 1, became $S_i$, the final figure required to calculate the correlation of nuclear forces formula. This procedure was repeated for each year under study, with all forces regarded as residuals, to establish a correlation of nuclear forces baseline (C-1) from which to compare subsequent models.

For the United States force structure, the impact of nuclear command and control bears further analysis. Not only would the loss of the LCC's affect the survivability of ICBM's, but the entire United States strategic command control system appears to be unable to survive for more than a few hours and thus may be "unable to control the nuclear forces."  

The United States nuclear forces may be more robust than the command and control structure that supports it, creating a potentially severe penalty for delay in releasing nuclear weapons.  

According to an unpublished Pentagon analysis, the present strategic system could be effectively disabled by as few as fifty Soviet weapons.  

In terms of actual overall

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100 The command control centers were allowed the same hardness as the ICBM's under its control, and they were attacked in the same manner as ICBM's.

101 Paul Bracken, Command and Control of Nuclear Forces, p. 212. The only survivable component is that small portion which can remain airborne and even that may be vulnerable to Electromagnetic Pulse effects (EMP).

102 Bruce G. Blair, Strategic Command and Control: Redefining the Nuclear Threat, p. 209.

strategic force structure, it appears that the United States is simply not prepared to ride out a Soviet first strike. The common operating premise among United States war planners appears to be that "the United States would never permit itself to be hit first" and that Strategic Air Command "does not intend to be in a retaliatory mode." These deep command and control problems are only reflected in the correlation of nuclear forces analysis with respect to significantly increased ICBM vulnerability, but they raise serious questions as to why the official policy of being able to absorb a Soviet first strike and still retaliate effectively has not been translated into a more survivable command and control structure. At a minimum this anomaly indicates a dichotomy between the declaratory policy and what may be operational policy as well as providing incentives to adopt a launch on warning strategy in war.

Launch on warning is a situation in which strategic nuclear forces are launched on corroborated strategic warning that the other side has launched a nuclear attack and, if planned from the outset, can be a strategy. A variant of this strategy occurs when one does not receive adequate warning or when one plans to wait a little longer for reasons of stability, to ensure that in fact an actual attack is in progress, and then launch under attack. It is highly probable that the United States would, in a generated posture, during a major crisis, launch under attack if not on warning. Notwithstanding the emphasis on survivability, the risks of absorbing a nuclear attack are simply too great.

The execution of a SIOP war plan is also a complex phenomenon that is plagued with multiple uncertainties. Although increased options have been

104 Ibid., p. 234.

introduced into operation planning, the real variable in determining which options are open may depend on the time required either to decide or to reprogramme the missile inventory. From 1970 to 1986, great efforts have undoubtedly been made to provide real-time information to assist decision-making and to speed up missile reprogramming in the event the option selected is not one already programmed. Prior to the Command Data Buffer System, it appeared to take 36 minutes to re-target a Minuteman 3, more than the time of flight of an ICBM. By 1978, each ICBM and SLBM in the United States had 100-200 target plans available in computer memories and presumably could be re-programmed to at least some options much more quickly. Not only do these improvements provide greater operational flexibility in crisis situations, but they also permit the possibility of launching a reprogrammed counterforce attack. The advantage of this option is that any missile that is discovered unreliable during the initial part of its launch can be immediately replaced, thereby increasing the overall $T_{KP}$. Although the increased reprogramming capabilities have not been factored into the correlation of nuclear forces model, the 1980's offer United States leaders far more flexible options for nuclear use than existed in the 1970's.

A successful reprogramming attack in a counter silo role, however, requires overcoming the debris from previous nuclear detonations. To avoid this interference, the timing of each RV's arrival is very important. Unless CEP's were better than .018 nautical miles, those RV's


107 John M. Collins and Anthony Cordesman, *Balance of Power: Shifting U.S.-Soviet Military Strengths*, p. 71. There are also two modes of launch, one of which takes less time but may not have its INS fully realigned; therefore, it would be less accurate. See Desmond Ball, *Targeting for Strategic Deterrence*, p. 27.
arriving a few minutes after the initial explosions would encounter sufficient debris to cause significant errors in accuracy or even destruction of the incoming warhead. One way to gain more time to conduct a more precise counter silo attack is to decapitate the Soviet command and control system. This study excludes, for example, the lethal Pershing II that in Soviet eyes could strike Moscow in only a few minutes, rendering the Soviet system incapacitated for about the length of time it would take an ICBM to reach the Soviet Union. To a Soviet planner, the fast and accurate Pershing II would therefore probably be considered a strategic system that had a direct impact on the strategic correlation of nuclear forces. In general, the faster and more accurate weapon systems of the 1980's give American decision makers more flexibility to strike the Soviet Union's nuclear power.

To augment even more an attacker's flexibility and to further complicate the defender's problem, SSBN's can approach the Soviet Union from any direction in order to maximize accuracy and reduce the warning time of an attack. The closer to the Soviet Union that an SSBN operates, however, the greater the risk that Soviet ASW forces will detect it. To account for this increased risk, this study subtracted .05 from the survivability of those SSBN's operating relatively close to Soviet territory. What makes this increased risk worthwhile is the ability to

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fire certain SLBM's against targets at distances significantly less than
the maximum range. Since the CEP is measured at maximum range from a
fixed point, the accuracy will be better when the missile strikes targets
at shortened ranges. SLBM accuracy is a product of missile accuracy (CEP)
and SSBN navigation error (E), as follows:¹¹¹

\[
SLBM\ CEP = \frac{r(CEP)}{R} + E^2
\]

where \( r \) is the distance from the SSBN to the centre of the target and \( R \) is
the total range of the missile. In this study some United States SLBM's
have been targeted at reduced ranges to increase their hard target kill
potential.¹¹² American SLBM's have also been targeted in their usual role
which is to destroy bomber and SSBN bases quickly and to create corridors
for subsequent bomber penetration.

Another potential requirement calling for rapid delivery of warheads
is the notion of "pin down." By using a series of high altitude
detonations over ICBM fields at 10-15 minute intervals the EMP generated
can possibly prevent ICBM's from being successfully launched.¹¹³ Because
it takes about five minutes for a Soviet ICBM to leave the atmosphere and
because the missile and its guidance system are highly susceptible to
electro-magnetic induction damage, it is possible to prevent successful

¹¹¹ Desmond Ball, "The Counterforce Potential of American SLBM

¹¹² This use was limited to Poseidon and Trident systems. See
Annex E for adjusted CEP's.

¹¹³ Kosta Tsipis, Arsenal: Understanding Weapons in the Nuclear
Age, p. 61.
launch with EMP. It may, therefore, be possible to use SSBN's close to Soviet coasts to deliver "pin down" attacks on Soviet missile fields which could significantly reduce the time available for the Soviet leaders to launch their ICBM's and avoid a launch under attack situation. This "pin down" need last only until the incoming ICBM RV's strike their targets; non-manoeuvering warheads are not susceptible to EMP related damage and nuclear detonations at altitude raise no debris. It is possible that such an attack strategy could significantly degrade the Soviet response. This option would not have made practical sense in the 1970's because most SLBM's carried one warhead, and a "pin down" strategy would disarm the United States faster than the Soviet Union. But in the 1980's, more survivable SSBN's with multiple warheads, when coupled with hard target kill capable ICBM's, does give the United States a far more effective damage limiting capability.

The counter silo potential of United States strategic missiles is true damage limitation; it is "the ability to destroy enemy offensive weapons before they can be fired and thus diminish retaliatory damage." The United States clearly prefers prompt counterforce capability as the best option for the United States strategic nuclear force structure. In the correlation of nuclear forces model, the one obvious deficiency that appeared in the United States force structure is that after a counterforce exchange, the only nuclear forces remaining are not capable of prompt hard target kill. Nuclear reserves or withholds from an initial

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114 Francis P. Hoeber, Slow to Take Offence: Bombers, Cruise Missiles and Prudent Deterrence, p. 22.


nuclear exchange can play a significant role in the subsequent war or bargaining process. This need was recognized in the Nixon administration; however, the force structure to fully implement it is not yet in place. Nation Security Decision Memorandum 242 stated a need for strategic reserves that would be important for "protection and coercion" during and after major nuclear conflict.

The impact of the modernization of the United States strategic nuclear forces has been to increase greatly the flexibility and range of American strategic options in 1986 over those available in 1970. Although this is reflected to a degree in the correlation of nuclear forces model, the Soviet Union has expanded its flexibility as well. From 1970 to 1975 the United States held a clear advantage in nuclear forces, and the Soviet Union's position would actually deteriorate markedly if it launched a counterforce strike on the United States. In fact, until 1978, the United States' correlation would improve after a Soviet first strike, but from 1975 on the trend has been in the Soviet favour. This is primarily due to Soviet survivability measures and the relative lack of United States hard target kill capability, especially in the residuals from the first strike. From 1980 onwards, the improvements to the United States force structure have resulted in the C-1 curve peaking and then moving slowly in favour of the United States.

The dynamic elements of United States force structure include many variables that together have assisted the American leadership of 1980 in reversing the increasing Soviet advantage in the correlation of nuclear


Desmond Ball, Targeting For Strategic Deterrence, p. 35.

See Chart 1. Line C-2 shows the correlation of nuclear forces results after a Soviet first strike. (Below unity is U.S. Advantage).
COMPARISON OF CORRELATION OF NUCLEAR FORCES BASELINE WITH THE CORRELATION OF NUCLEAR FORCES AFTER A SOVIET FIRST STRIKE

\[ C-1 \text{ THE CORRELATION OF NUCLEAR FORCES BASELINE} \]
\[ C-2 \text{ THE CORRELATION OF NUCLEAR FORCES REMAINING AFTER A SOVIET FIRST STRIKE} \]

SOURCES AND METHODOLOGY: SEE ANNEX A

CHART 1
forces. The key elements, however, have been prompt hard target kill capability and targeting flexibility that will significantly enhance war fighting capabilities and "constitute a highly visible symbol of power and intent."\textsuperscript{120} This focus on counterforce is not new and has been a central part of each war plan or SIOP since the 1950's.\textsuperscript{121} In spite of considerable rhetoric that all of this capability is necessary to deter the Soviet Union, the fact remains that if one is going to shoot at missiles, one is talking about first strike capability.\textsuperscript{122} The capability to destroy hard targets on a time sensitive basis and increased real nuclear options appears to better fit the intent of the compellent paradigm.

Future developments planned by the United States include more MX, Midgetman, Trident II, SDI, "stealth" bombers and sea launched cruise missiles (SLCM's) all of which will enhance the United States nuclear force structure in the correlation of nuclear forces model. Trident II will especially provide a secure and flexible hard target kill vehicle that will be capable of destroying Soviet ICBM's within 15 minutes of launch from virtually any direction.\textsuperscript{123} Land attack SLCM's will also have a hard target kill capability and will be almost totally unverifiable from an arms control perspective.\textsuperscript{124} Midgetman will also be capable of hard

\textsuperscript{120} Congressional Budget Office, \textit{U.S. Strategic Nuclear Forces: Deterrence Policies and Procurement Issues}, p. xii. The citation referred to nuclear weapons required to support a strategy of "essential equivalence."

\textsuperscript{121} Desmond Ball, \textit{Targeting for Strategic Deterrence}, p. 4.


\textsuperscript{123} See Robert S. Norris, "Counterforce at Sea: The Trident 2 Missile," \textit{Arms Control Today} (September 1985).

target kill, and the MX warhead, already very lethal, is upgradable from 300 to 475 Kt giving it even greater lethality.\textsuperscript{125} If SDI research results in the United States deploying even a partially effective shield against RV's aimed at counterforce targets, it could significantly contribute to the survivability of American ICBM's and may even provide some protection for bomber bases. Force structure improvements to United States strategic nuclear weapons appear clearly intended to enhance its war fighting posture, and the proclivity in the late 1960's to avoid producing weapons systems designed to achieve strategic advantage has been reversed.\textsuperscript{126} Although increased deterrence will be one result of these proposed changes, enhanced compellent capabilities may well be the prime result.

V. \textbf{FORCE STRUCTURE IMPLICATIONS}

The correlation of nuclear forces model provides a useful adjunct to the paradigmatic framework and allows deeper analysis of force postures. Not only can it provide a more meaningful comparison of nuclear forces, but it allows for greater analysis of arms control implications for various arms control proposals. The United States force structure has undergone significant improvement from 1970 to 1986, but the C-1 line on Chart 1 indicates that it lagged improvements in the Soviet Union.

In the early 1970's, however, the development of new United States strategic systems was relatively slow, possibly because the United States held a significant correlation of nuclear forces advantage. The


quantitative analysis in particular brings out a gradual decline in most static indicators that display a certain American satisfaction or complacency with the status of their intercontinental nuclear arsenal. This does not mean, however, that qualitative or dynamic improvements did not happen, only that their implementation did not appear to keep pace with those occurring on the Soviet side.

The mid to late 1970's saw the correlation of nuclear forces baseline move steadily from a position of relative American advantage to a position showing a clear Soviet advantage. Although little immediate change took place among the quantitative indicators, significant improvements began among the qualitative and dynamic measures. The most significant improvements were in ICBM hardening, improved accuracy in missile guidance systems and improved ability to rapidly re-target or re-select options. The dip in the C-1 trend line in 1981 and 1982 reflects the introduction of the Mark 12A warhead and the NS-20 guidance system on the Minuteman 3. By 1983 the Soviets had achieved an almost 3 to 1 advantage in the correlation of nuclear forces baseline, a reversal from the 2 to 1 advantage that the United States held in 1970.127

In the 1980's the United States was clearly moving to rectify their deteriorating strategic position. During this period, virtually every indicator of potential strategic power climbed as did the United States defence budget. Numbers of nuclear warheads increased almost threefold after 1970, accuracy was increased about fourfold after 1970, and increased flexibility, reliability, lethability and survivability combined

127 Military officers in the United States were alarmed at these shifts and noted the 4 to 1 Soviet advantage in throw weight. See testimony of Lieutenant General Thomas Stafford before the Committee on Armed Services, United States Senate, Department of Defence Authorization for Appropriations for Fiscal Year 1980, Part 5 (Washington: USGPO, 1979), p. 2471.
to give the United States a significantly greater war fighting posture. From 1983 to 1988 the trend of the C-1 baseline was toward a decreasing Soviet advantage, and future American strategic programmes make it likely that this trend will continue at least into the near future.

These recent trends appear to reflect the choice of the United States to increase its available options to a number significantly greater than those implied by the deterrent paradigm. They more closely reflect a desire to take more initiative to ensure the long term well being of the United States rather than rely on retaliation to protect its national survival. Clearly, these notions extend beyond the concept of deterrence toward what one author has described as "dynamic containment" where strategic nuclear weapons are targeted on Soviet military forces "wherever the dynamic exchange ratio is substantially positive." The trend in the United States in the 1980's has been toward measuring the security of the West by its freedom to conduct more vigorous policies without fear. The recent improvements to the United States force structure appear to be increasingly optimised to the compellent model rather than the deterrent.

Since the declaratory policy of the United States remains essentially one of deterrence, a force structure designed to optimize compellence begs an explanation. The obvious conclusion reached by John Collins is that


declaratory policy is different from operational nuclear policy. De.smond Ball also reaches this conclusion, noting that debates on nuclear strategy are often hampered by the failure to differentiate between

the substance of action policy...from the rhetoric of declaratory policy which is generally designed for a variety of strategic and bureaucratic-political purposes sometimes quite unrelated to the demands of extant action policy.

Desmond Ball traces the separation of United States action and declaratory policies to 1963 when Defence Secretary McNamara began to use strategic doctrine as a weapon in "intramural bureaucratic battles over military programmes, defence and service budgets." Since that time, various SIOP's and Nuclear Weapons Employment Policies (NUWEP's) have constantly maintained a counter military targeting philosophy while "public officials have learned to talk in public only about deterrence and city attacks." Assured destruction had no real impact on SIOP design. For thirty years, "American operational strategy has been heavily dedicated to counterforce," at least as much as the capability of United States strategic nuclear assets would permit. It may also be true that for major powers, a degree of strategic uncertainty is an advantage, and therefore operational and declaratory nuclear policies may "seldom

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133 Desmond Ball, "The Development of the SIOP, 1960-1983," in Desmond Ball and Jeffrey Richelson, eds., Strategic Nuclear Targeting, p. 68. This is a well researched article.

134 Ibid., p. 70.

135 Colin Gray, Strategic Studies and Public Policy: The American Experience, p. 133.
This analysis of United States force structure reinforces the view that operational nuclear strategic forces have been based on military realities of war fighting rather than political requirements for assured destruction.

Force structures should reflect military realities, and it is thus unwise to encourage the view that much can be read into them by way of underlying political objectives. United States intercontinental nuclear forces have been improved significantly to increase the United States flexibility to respond forcefully in many diverse situations.

The additions to the American strategic inventory from 1970 to 1986 have provided a force structure that appears to be in a qualitative competition with the Soviet Union. The United States forces, both in existence and planned, have an operational capability well in excess of that required for deterrence. If these strategic forces have been designed to support a strategy, that strategy would more closely resemble the theoretical requirements called for by the compellent paradigm.

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137 Lawrence Freedman, Strategic Defence in the Nuclear Age, p. 6. The author intended to indicate that military force structures do not necessarily determine policy, but if the military "reality" does require nuclear warfighting capability, then the deterrent policy it is designed to support more closely resembles the compellent paradigm than the deterrent, at least in its logic.
Chapter Eight

THE NUCLEAR FORCE STRUCTURE OF THE SOVIET UNION

The previous chapter introduced the correlation of nuclear forces model and then applied it to the United States nuclear force structure for central war. Since this model is essentially a Soviet concept, its utility in demonstrating how Soviet nuclear analysts might approach the nuclear question is also extremely important. Not only can this model help indicate the paradigmatic logic behind the Soviet long range nuclear force structure, but it can also provide additional insight into how Soviet decision-makers might understand nuclear strategy and its utility to support Soviet foreign policy.

This chapter begins with an explanation of the significance of this Soviet perspective to Western analysts. Following this explanation, the chapter continues the paradigmatic force structure analysis by focusing on the quantitative, qualitative and dynamic variables incorporated into the correlation of nuclear forces model.

I. THE IMPORTANCE OF THE CORRELATION OF NUCLEAR FORCES MODEL

Since most nuclear analysts in the West have had limited experience with the Soviet Union and were not able to translate those few Soviet sources that became available in the West, Western views of Soviet nuclear strategy tended to be somewhat diverse and even controversial. Thus, the correlation of nuclear forces model, since it is a Soviet model, offers a unique insight into Soviet nuclear thinking. As the modern Soviet nuclear force structure was for the most part built in the late 1970's, given the time required to implement major construction projects, this strategic development probably had its roots in decisions taken in
the late 1960's. With the complexity of modern weapons it is common to
take about ten years from a decision to proceed until force structure
implementation. Thus, the fact that this model was published in 1967
makes it a very appropriate indicator of strategic thought in the Soviet
Union when at least some key decisions were made. The correlation of
nuclear forces model as presented in this study appears to be a
particularly useful tool for analyzing the construction of Soviet nuclear
forces in the 1970-1986 time period.

According to a respected expert, Marxist-Leninist ideology holds that
historical progress is governed by discoverable and permanent laws, the
pursuit of which equates to knowledge. Thus, it follows that certain
laws must exist that determine the outcome of war. In fact, Soviet
formulations of the laws of war are a major endeavour on the part of
several Soviet scholars, but in spite of their efforts over the years they
have yet to complete a coherent system to explain and account for war.
Nevertheless, several iterations of the laws of war have been produced,
the latest of which makes very specific reference to the correlation of
military forces as follows:

1 Michael MccGwire, Military Objectives in Soviet Foreign Policy
theory of tracing Soviet decisions, MccGwire convincingly identifies some
key Soviet strategic decisions which took place about December 1966.

2 Leonid Brezhnev and Mikhail Suslov were key individuals who
believed in the military component of the correlation of forces as a major
factor in Soviet foreign policy. See Charles Gati, "Eastern Europe on its
own," Foreign Affairs 68 (No 1, 1989), p. 103, and David Holloway,

3 Julian Lider, The Political and Military Laws of War: An Analysis
of Marxist-Leninist Concepts (London: Saxon House, 1979), p. v. See also

4 Julian Lider, The Political and Military Laws of War: An Analysis
Victory and defeat in war and its length and final results are defined by the relative power of the armed forces and the mobilization potential of the warring sides.\(^5\)

The correlation of forces appears to be a fundamental concept that underpinned the creation of Soviet military force structure. Although the military was technically only one facet of the total correlation of world forces, during the Brezhnev era it was probably the most important variable.\(^6\) Any change in Soviet military power was held to create a change in the correlation of world forces that, in the Soviet view, must have an effect on or even alter world events. As a consequence of this belief, Soviet leaders probably felt that gains could be won without the use of force and that the availability of military power would be crucial to those "victories."\(^7\) This line of argument implied a strong Soviet conviction that a positive shift in the correlation of military forces would be of fundamental importance because "military power confers political advantage."\(^8\)

It logically follows that the concept of the correlation of military

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forces gave the Soviet military an important ideological tool with which to justify fairly open ended force structure requests to Soviet leaders. Given the Soviet strategic inferiority with respect to the United States prior to the Soviet achievement of parity, Soviet military analysis appeared extremely concerned with the detailed planning of a nuclear war.9

If the correlation of forces concept had any specific part to play in the postwar development of strategic thought, it was in assessing the overall strategic relationship in favour of the United States and providing the Soviets with an overriding goal: the immediate rectification of their strategic weakness.10

The key problem for Soviet leaders in defining the necessary force structure is the fact that the correlation of forces can change extremely fast, depending on who strikes first.11 Notwithstanding the limitations and difficulties in such analysis, there appears little doubt that in the Soviet Union, the correlation of forces concept has at least influenced, if not determined, the present nuclear force structure.12

As noted in the preceding chapter, the correlation of nuclear forces modelling allows a scientific basis for strategic decision making that


12 Post 1986, however, it has become evident that Gorbachev believes that increased Soviet military power has also increased American fears as to their security. Vyacheslav Dashichev, a Soviet historian, notes that the Soviet Union erred by relying so heavily on correlation of forces analysis. See David Halloway, "Gorbachev's New Thinking," p. 68.
provides a means of objective analysis that has assisted the Soviet Union to manage its strategic affairs with appropriate prudence.\textsuperscript{13} Even Khrushchev insisted, one must "always calculate, calculate, calculate" to ensure success.\textsuperscript{14} In conducting these force calculations in the modern Soviet military, a great deal of emphasis is placed on operational research. Not only does every significant Soviet institution that studies military practice, including the Institute of World Economy and International Relations, conduct its own computer analysis, but all major Soviet military academies and colleges have their own operational research sections.\textsuperscript{15}

Increasingly, Western observers have come to attribute greater import to the Soviet views with respect to nuclear use. The correlation of nuclear forces model is a fundamentally important means to help ascertain true Soviet objectives. Soviet literature has repeatedly acknowledged that if central nuclear war occurs, it will not be caused by mechanistic instabilities in force structure, but "rather from real and enduring differences between competing political systems and national interests."\textsuperscript{16}

Soviet nuclear force structure has been developed for reasons only clear


to the Soviet leadership, but to a degree these decisions have probably been based on detailed correlation of forces analysis. The use of a Soviet correlation of nuclear forces model thus allows this study to present a unique Soviet view of what the West calls the nuclear balance.

II. STRATEGIC NUCLEAR FORCES - QUANTITATIVE FACTORS

The paradigmatic analysis of the Soviet nuclear force structure from 1970-1986 reflects the same methodology and mathematical models used in chapter seven. This section will address the quantitative factors while subsequent sections will deal with the qualitative and dynamic attributes of the Soviet nuclear forces.

The first level of the paradigmatic framework, the quantitative analysis, not only includes the same static indicators as those used to assess the United States nuclear force structure, but some mention must also be made of the Soviet efforts to create strategic defences. This section therefore will analyze the number of strategic nuclear delivery vehicles (SNDV's), the number of nuclear warheads or reentry vehicles, the equivalent megatonnage values for Soviet intercontinental forces and a static measurement of Soviet strategic defence efforts.

In the Soviet Union, it is likely that quantitative analysis may have more impact due to the fact that the ground forces, with their emphasis on mass, are so predominant. This influence is evident in the key Soviet military academies to the degree that John Erickson, a highly respected analyst of the Soviet military, concludes that the ground forces have had "a persistent influence on Soviet military policy and organization." To

17 See Annex A for a review of the methodology used throughout this study.

the ground forces, numbers matter perhaps more so than in the other services, and thus it is reasonable to expect that the numbers of intercontinental nuclear systems may tend to be higher than in the United States.

From the years 1970 to 1986 the Soviet total of SNDV's increased from 1686 to 2541 although most of this growth occurred by 1976 when the Soviet force structure appeared to level off. Of this SNDV total, the Soviet bomber force contribution has increased only slightly over the period while the SLBM force increased markedly from 1970 to 1978 and since that time has more or less levelled off. The main component of the Soviet strategic nuclear forces remains its ICBM's; these forces increased from only 400 ICBM's in 1964 to over 1600 ICBM's in 1976, but have since stabilized at about 1400 ICBM's in 1978. Although at one time as many as 240 ICBM's may have had targets in China or in Europe, many of these could have been available for intercontinental use, especially in the 1980's when the SS-20 could have covered these targets. Some ICBM's not intended for intercontinental use may, however, partially be offset by Soviet efforts at nuclear force reconstruction in the event of war.

Some Soviet ICBM's use cold launch procedures which create less damage to the launching silo, thereby allowing the silo to be re-used in about two days. Extra ICBM's have been stocked in the USSR, and the United States Defence Intelligence Agency (DIA) considers that these

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19 See Annex H for details on SNDV deployments for the Soviet Union.


"hidden reserves" are at a significant level. Senior American officials are convinced that the Soviet Union has a reload capability which allows a degree of nuclear force reconstitution. There is some concern in the West that Soviet strategic reserves (at sea and on land) could be crucial to the determination of a victor in war. Most Soviet analysts indeed recognize the operational requirement for strategic reserves, but realize that the outcome of nuclear war will depend primarily on the available forces at the beginning of the war. Since no quantitative data is available, this study deals only with those forces available for combat in operational units.

If the number of Soviet SNDV's has leveled off somewhat after 1976, the total number of intercontinental capable warheads has not. From 1970 to 1986 the total number of warheads the Soviet Union could use against the United States has increased by a factor of six, from 1686 to 10,139. From the years 1976 to 1986 they have increased by a factor of three. To some degree the Soviet force planners must have realized that to stay in strategic competition with the United States, at least in terms of SNDV's, the minimum size of the Soviet response was "pretty well dictated by the

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26 See Annex J. Soviet Warhead Totals.
U.S. programmes which levelled out at fixed ceilings by the mid-1960's."27 Thus it may be that Soviet leaders viewed the American decision to deploy MIRV, before the Soviet Union could establish numerical equivalence in ICBM's, as a deliberate escalation of the strategic arms race.28 In any event, the first Soviet MIRV tests took place in 1973, and the first Soviet MIRV operational deployments began in 1975 and continued until 1986.29 This massive MIRV programme more than any other factor accounts for the sharp rise in warheads throughout this period, as first ICBM's and then SLBM's were converted to MIRV systems. The number of warheads available to the strategic bomber force also appears to have increased over this period as additional bombs, air to surface missiles, and cruise missiles were quietly introduced.30

This substantial increase in nuclear strategic warheads appears for the most part the result of Soviet funding decisions taken either prior to or during this period. From 1968 to 1978 Soviet funding to strategic programmes increased about threefold.31 Since that time, however, Soviet military spending has levelled off and major programmes appear to have


been "stretched out" over longer time periods. The fact that the numbers of strategic warheads steadily increased reflected the continuing and cost effective MIRV installation that demonstrated a continuing Soviet priority on central nuclear systems. Another important and often overlooked facet of Soviet strategic resource allocation is that which is spent on strategic defence. At least one informed analyst has determined that from 1970 to 1985, the Soviet Union has spent about as much on defence as on offence.

The next major quantitative variable used to measure strategic nuclear forces is the summation of Equivalent Megatonnage (EMT). From 1970 to 1986 the Soviet Union increased its EMT total by about 250 percent, adding more firepower in every year but one. The ability to put several MIRV's on the larger Soviet ICBM's allowed Soviet totals to grow throughout this period and helps explain the Soviet military's unwillingness to negotiate large Soviet ICBM's in SALT. As the scope of the Soviet ability to translate its significant throw weight advantage into greater numbers of warheads and higher EMT totals became apparent in the late 1970's, those that criticized throw weight as a meaningless value seemed to lose some influence. During the period 1970 to 1986 it

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34 See Annex K. The exception was 1980-1981 when EMT totals declined slightly, primarily due to the MIRVing of ICBM's with lower yield warheads.

35 Paul Nitze cited in Michael Charlton, From Deterrence to Defence: The Inside Story of Strategic Policy, p. 67.

36 The Committee on the Present Danger made much use of these facts to discredit the idea that throw weights did not matter. For one critic of throw weight see Les Aspin, "How to Look at the Soviet American Balance," Foreign Policy 22 (Spring 1976), p. 103.
appeared as if steady Soviet efforts were dedicated to increasing the Soviet EMT totals.

The last quantitative variable relates to strategic defence of the Soviet Union from American nuclear attack. Although ballistic missile defence deployment is regulated by treaty, within the Soviet military and political community there has not been any significant questioning of the theoretical desirability of missile defence.37 If the Soviets did accept assured destruction logic, one would have expected the Soviet Union to have quickly built to an assured destruction level and then stopped building warheads, let alone defences.38 Since the Soviet Union had an assured ability to destroy the United States in 1970 and still continued massive force structure improvements into the 1980's, it appears that assured destruction in itself did not motivate this build up. This fact, along with the considerable ambiguity over the degree of Soviet commitment to strategic defences, raised serious concerns in the West over Soviet long term intentions. The continued Soviet emphasis on strategic defences, active and passive, throughout this period seems to indicate that mutual assured destruction was not necessarily the most valued product of Soviet strategy.39

Although strategic defence against nuclear attack is an extremely


38 Michael Mandelbaum, The Nuclear Revolution (Cambridge, Massachusetts: Cambridge University Press, 1981), p. 120.

difficult objective to achieve, the USSR has seemingly devoted considerable efforts to that end.\textsuperscript{40} Soviet programmes to protect the essential elements for the preservation of their system and major industrial dispersion to reduce strategic vulnerability attest to Soviet seriousness.\textsuperscript{41} While Soviet active missile defences may not have overtly exceeded treaty limits, the United States fears that the Soviet Union has given about 2000 SA-5 surface to air missiles a limited ABM capability in the 1980's.\textsuperscript{42} When all these efforts are combined with improvements in radars and more capable ABM missiles, a picture appears of a general improvement in Soviet strategic defence from 1970 to 1986. Soviet journals display three levels of strategic defence: exoatmospheric, endoatmospheric and point defence.\textsuperscript{43} Slowly but surely, a comprehensive Soviet strategic defence system has been improved to achieve this end. Operational research data shows the impracticality of defending the whole country but does demonstrate the feasibility of successful point defence.\textsuperscript{44} From data of this ilk, it appears that Soviet defences are

\textsuperscript{40} Fred Iklé suggests that the uncertainties of nuclear attack and defence are so great that it is not really possible to predict under what circumstances a nation might survive. See his "Nether World of Nuclear Megatonnage," \textit{Bulletin of the Atomic Scientists} (January 1975), pp. 20-25.


being gradually optimized to provide at least some protection for point targets from strategic attack.

The measure of Soviet quantitative factors tends to show a stable number of SNDV's by the mid 1970's, but significant improvements to those systems have steadily increased the numbers of warheads and EMT totals throughout this period. The steady growth in the number of warheads and total EMT have occurred in spite of reduced growth in military funding. When taken in conjunction with a possible bias toward strategic defence, this growth appears to exhibit the quantitative characteristics of compellence.

III. STRATEGIC NUCLEAR FORCES - QUALITATIVE FACTORS

From 1970 to 1986, not only did the Soviet leaders increase their quantitative measures of strategic power, but they also pursued qualitative improvements. Increasingly over the period, Moscow perceived that upgrading the quality of Soviet weapon systems was a critical factor in determining the correlation of forces.45

Now that the quality of weapons is assuming increasing significance, it is becoming more difficult to determine the correlation of forces on the basis of traditional quantitative calculations alone. The role of technology is growing steadily and the interdependence of the qualitative and quantitative factors is becoming more complex. Therefore, it is the analysis of the qualitative aspect which is increasingly coming to the fore in calculating the correlation of forces.46

The qualitative factors that make a long range nuclear delivery system more effective include improving the availability, the reliability, the


accuracy, the precision, the yield, the penetration ability, the hardness and the survivability of each individual weapon. During the period 1970 to 1986, the Soviet leaders appeared to have taken a rather systemic approach to the introduction of new technology that included coping with its impact on force development where a continual dialectic process takes place between science and the political-military leadership.\(^{47}\) This longer term view helps to explain the steady improvements to the qualitative variables in Soviet nuclear force posture during this period of analysis.\(^{48}\)

1. **Overall Availability and Reliability**

   The availability of Soviet nuclear forces in peacetime is generally felt to be lower than that of the United States. Early Soviet liquid fuel ICBM’s were so unstable that they were not routinely held on alert and took a great deal of time to generate due to the fueling process. Early Soviet missiles also lacked strong enough ball bearings to allow the guidance system to be run continuously and maintain its alignments, a requirement for ICBM’s on alert status.\(^{49}\) Very few bombers, if any, appear to be held on peacetime alert status and only about 15% of Soviet

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\(^{48}\) See Annex M for data on Soviet ballistic missiles. This annex summarizes the key variables that will be addressed in this section.

\(^{49}\) Robert P. Berman and John C. Baker, *Soviet Strategic Forces: Requirements and Responses*, p. 88. This issue became a significant factor in the United States decision to reduce trade with the Soviet Union. It was claimed that the Soviet Union had imported this technology from the West.
SSBN's are at sea at any given time. The low levels of peacetime alert nuclear forces, however, probably reflect the Soviet view of how such a war might start rather than any serious shortcomings in wartime availability. The Soviet Union appears to consider that nuclear war, if it occurs at all, will be the result of a serious political crisis or a conventional war. In a generated condition, this study assumes that about 100% of Soviet ICBM's are available, 80% of SSBN's are at sea and that 80% of strategic bombers are on alert status.

The second major qualitative aspect is the overall reliability (OAR), the probability that a given weapon system and its nuclear warhead will perform as designed. Due to the difficulty of obtaining accurate data on Soviet intercontinental nuclear systems, Western assessments of Soviet reliabilities are quite variable. Earlier Soviet missiles such as the SS-7 and SS-8 were assessed as having reliabilities that averaged about .6 by the early 1970's. The SS-9 and subsequent ICBM's appeared to have increasingly better OAR's as Soviet engineers improved their products. By the 1980's, Soviet ballistic missile reliabilities appeared to have reached a level comparable to the United States, and this improvement was reflected in actual missile tests in the USSR. The SS-18 had only seven

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53 For example the SS-9 was given an OAR of .76 by Lynn E. Davis and Warner R. Schilling, "All you ever wanted to know about MIRV and ICBM Calculations But were not Cleared to Ask," p. 233.
failures in its first 29 test flights, and the SS-19 had only two failures out of 27 tests. The relatively modern family of SS-17, SS-18 and SS-19 ICBM's are thought to be highly reliable and not suffer from serious availability problems associated with earlier systems. The United States Department of Defence reportedly considers these ICBM's to be .8 to .85 reliable.

This study has selected OAR's for Soviet intercontinental nuclear delivery systems based on average projected improvements over time. The OAR's for ICBM's range from .6 for the SS-7 to .85 for the more recent modifications on the SS-17, SS-18 and SS-19. The OAR for SLBM's is slightly lower than those for ICBM's due to the added variable of SSBN reliability. The Soviet long range aviation forces are assessed as having an overall system reliability of .7/.8 for the Bear/Bison bombers including all warheads, missiles and the aircraft.

2. Lethality

The variables of accuracy, precision and yield combine to make up the lethality or counter military potential (K) of a given system against hard targets. Annex M indicates that the K value for certain Soviet ICBM's has been consistently high throughout this period of analysis, but the total number of hard target capable systems has significantly increased.

As early as 1962, the USSR appeared to begin a project aimed at acquiring a highly accurate missile force to destroy United States ICBM's

54 Barry R. Schneider, Colin Gray and Keith Payne, Missiles for the Nineties: ICBM's and Strategic Policy, p. 122.

Because missile accuracies were poor, the SS-9 was probably built large enough to carry a sufficiently large warhead so that its yield/accuracy combination would guarantee a hard target kill capability. By the time the United States began to harden its ICBM silos beyond 300 PSI such that the SS-9 kill probability became significantly reduced, the Soviet Union began testing more accurate missiles. It appeared that the Soviet Union was making a determined effort to construct and maintain a hard target kill strategic capability. From 1975 to 1984 a series of improved ICBM's entered the Soviet nuclear force structure, each with an improved CEP over its immediate predecessor. Although United States intelligence may have overestimated the Soviet accuracy in some years, the overall accuracy improvements to Soviet ICBM's indicates a conscious drive on the part of Soviet military leaders to increase the lethality of their intercontinental weapons.

As Soviet ICBM's began to carry MIRV's, the average yield per warhead became smaller. Although the total megatonnage was reduced with smaller warheads, this was more than offset by the accuracy improvements such that

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58 Some solid research by Donald MacKenzie concludes that greater accuracy has been a deliberate Soviet goal, "Soviet Union and Strategic Missile Guidance," International Security (Fall 1989), p. 45.

overall lethality increased. By 1983, about 80% of warheads on ICBM's appeared designed for counterforce applications, and the remainder appeared tailored for attacking soft targets. The Soviet ICBM force clearly reflected the tendency of Soviet nuclear strategy toward war fighting that fueled hawkish fears over Soviet intentions.

Soviet nuclear targeting strategy is consistent with the Soviet objective to fight and win a nuclear war. This strategy rejects all premises of U.S. assured destruction targeting and most of the premises of U.S. countervalue targeting strategies.

Overall, the Soviet Union has increased its nuclear force lethality by striving for accuracy improvements, even if at the expense of yield. Early during this period, the intensity and scope of the SS-18 and SS-19 testing raised the possibility that the Soviet Union might have in mind the use of its strategic arsenal for purposes other than for deterrence. Towards the close of this period, the Soviet Union began MIRVing SLBM's, and although accuracy and lethality have increased, Soviet SLBM's are not yet hard target capable. Beginning in 1984, the Soviet Union has also deployed air launched cruise missiles on its new Bear H bombers, giving its bomber force a renewed flexibility in its ability to strike accurately the United States.

The Soviet Union appears to have pursued a minimum level of lethality as a principle objective in its nuclear force development. As targets increased in hardness, the lethality of Soviet ICBM's increased to compensate, and the Soviet Union appears to have dedicated most of its

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60 The SS-18 Mod 4 and SS-19 Mod 3 warheads are hard target capable. They total 5240 warheads out of 6420. See Annex J.


ICBM warheads to this combat task. These improvements reflect a nuclear force structure designed to fight in a flexible and traditional manner.

3. Penetration

To be effective, a given weapon system must be able to penetrate to its target. Since the United States has not deployed any significant defences, the Soviet ability to penetrate is relatively high. Since the withdrawal of Safeguard in the mid-1970's, the United States has had no ballistic missile defence beyond strategic warning. Given that Safeguard covered so few strategic targets in the United States for such a short time, it has been ignored; therefore this study has used a Soviet missile penetration factor equal to the missile OAR for the whole period.

To defend against bomber penetration, the United States and Canada have formed a combined North American Air Defence system. From 1970 to 1986, however, this system remained relatively thin and vulnerable to nuclear attack, an essential component of modern penetration. According to Dr. Bob Brereton, the Director of Air Operational Research, in the Operational Research and Analysis Establishment in Ottawa, Soviet bombers in such a situation would likely experience a penetration probability of .95. This study has therefore used a flat .95 penetration rate from 1970 to 1980 when new fighters with pulse dopier radars and airborne command and control aircraft began to introduce more defensive capability. The Soviet bombers are relatively old and are only

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64 Interview: 12 Jan. 88.

65 See Annex F.
beginning to be replaced in the mid 1980's. Eventually, the Bear H and the Blackjack, a new high speed long range strategic bomber, will replace the current bombers, and ALCM will be their major weapon.

The United States has fielded no effective defence against strategic attack, but in the 1980's it began devoting significant research and development efforts toward strategic defence. It appears that the United States, at least since 1983 when the Strategic Defence Initiative was launched, does not regard its defencelessness as a strategic asset. But from 1970 to 1986, to all intents and purposes, the Soviet offensive nuclear forces enjoyed extremely high penetration rates.

4. Survivability

Because most of the Soviet nuclear force is based on ICBM's, the Soviet Union faces the prospect that a greater percentage of its nuclear strike force could eventually become vulnerable to attack. In 1970, 80% of Soviet EMT was carried by ICBM, and although over this period many more SLBM's were added, by 1986, 60% of the Soviet EMT was still mounted on ICBM's. The reasons for this strategic reliance on ICBM's mostly stem from the historical development of the Strategic Rocket Forces. It was formed from, and still wears the uniform of, elite artillery troops and has always enjoyed a special position in the Soviet military with its

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66 Soviet sources acknowledge shortcomings in the Bear and Bison fleets. See B. A. Vasil'yev, Long Range Missile Equipped (Moscow, 1972) translated by DGIS Multilingual Section, Secretary of State Department, Ottawa, under the auspices of the U.S.A.F. P. 70 notes the heavy fuel consumption, and p. 77 refers to how even tested and reliable equipment does not always stand up.


68 See Annex K. As a percentage of total force in 1970 SLBM's comprised less than 10% of the Soviet long range nuclear force, and by 1986, it made up 25%.
heavy emphasis on ground forces. As discussed in chapter seven, each component of the strategic nuclear forces faces a different survivability problem, and each Soviet nuclear "leg" will be addressed in turn.

The standard measure of Soviet ICBM ability to survive an attack is silo hardness, but determining the hardness of Soviet ICBM silos is difficult. Estimates in open sources vary considerably, from the SS-7 "coffins" which were considered soft targets to super hard silos that theoretically could survive up to 50,000 lbs. of overpressure. No specific silo hardening programmes in the Soviet Union have appeared in open sources, but over the years each Soviet modification to its ICBM fleet often included new silos or other efforts to improve silo hardness.

In the 1960's, for example, most Soviet ICBM's were considered soft targets, but gradually those missiles were separated and placed in hardened silos. By 1970 most Soviet ICBM's were hardened to a level estimated to be able to withstand about 300 psi. In this study, all of the SS-7 and SS-8 ICBM's are considered soft targets even though a small number were reportedly placed in silos. The large SS-9 which was being upgraded in the early 1970's is assessed at 400 psi. As the Soviet Union modernized its ICBM force, new silos were being increasingly hardened, and improved SS-11 silos in this study are assessed at about

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1000 psi. In 1975, the fourth generation Soviet ICBM's (SS-17, SS-18, SS-19) were being introduced into service, and concurrent with their introduction, existing silos were totally replaced by massive improvements. By 1976, there were reports that these large Soviet silos were being upgraded to withstand 3000 psi, and by 1985 John Collins reported that new Soviet silos could withstand 4000 psi. By 1986, one study reasoned that the USSR was attempting to harden its silos to 5000-7000 psi. The United States has openly acknowledged that the Soviet silos housing the SS-17, SS-18 and SS-19 missiles are the world's hardest operational silos. This study has selected hardness values for these silos that vary from 2000 psi for the first silos deployed in 1975 to 3000 psi for the latest modifications in 1983.

These values remain conservative due to the tremendous uncertainty of attempting to measure the resistance to a nuclear blast. Not only is it extremely difficult to provide a comparable degree of shock protection for the ICBM within its hard silo, but the traditional method of SS calculation does not account for nuclear pulse duration, the time that a

given overpressure lasts on a target. Both these variables suggest that a conservative hardness level is warranted. Although calculations based on open source data have tended to produce smaller estimates of surviving silos than classified official estimates, this variance is mostly attributable to reliability, yield, accuracy and fratricide uncertainties. The key point in this analysis is the inherent physical limitation of the capacity to harden a target, which ultimately means that a fixed silo will always be vulnerable once the attacking ICBM force can achieve the requisite combination of numbers, accuracy and yield.

The Soviet Union has striven to improve its ICBM hardness and survivability continuously over the time frame of this study. Not only have the silos been progressively hardened, but Soviet leaders have invested heavily in providing for the survivability of strategic command, control, and communication systems. Launch control centres in the Soviet Union are to a significant degree interconnected so that there is high confidence that most of the Soviet ICBM force could be responsive in the event of a nuclear attack. This study assumes that decapitation

78 Bruce Bennett, How to Assess the Survivability of ICBM’s (Santa Monica, California: Rand Corporation R-2577-FF, 1980), p. 10. To obtain more accurate results, a lognormal damage density function can be used, but to be meaningful it required very accurate data not generally available, even in classified sources. The traditional or "cookie cutter" method was described in chapter seven.


strategy on the part of the United States would render 50% of those ICBM's inoperable should its LCC be destroyed. As some LCC's are sited in hardened silos, the LCC's are assessed as having the same hardness as the ICBM it controls.

Although the Soviet Union does not have a significant amount of its nuclear weapons on its bomber force, it appears prepared to increase its reliance on bombers in the future. Long range bombers are flexible tools of war fighting, but they are expensive to acquire and operate. From 1970 to 1986 the amount of Soviet EMT carried by bombers has climbed slightly from about 11% to 14%. Soviet bombers can only survive if they are on alert status and receive adequate warning of attack. Soviet bombers not on alert are assumed destroyed on the ground at the few Soviet bomber bases. This study has assumed that Soviet bombers have a survivability factor of .7 in a generated alert condition.

The survival of Soviet SSBN's represents a far more critical component in the correlation of forces model. This study assumes that in a fully generated condition, about 80% of Soviet SSBN's can be kept at sea. Those in port are vulnerable to strategic attack and are assumed destroyed, even though some may be somewhat protected in bases where tunnels have been constructed for their concealment and protection. The survivability of Soviet SSBN's is a function of several factors, but the most important appears to be Soviet naval deployments that appear designed to protect their SSBN's against the United States ASW threat.

The Soviet navy regards its SSBN's as its most important strategic assets, and since the 1960's the Soviet Navy has contemplated using the

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fleet to protect its SSBN force.84 These SSBN's form an important strategic reserve in war, one of the navy's most important national defence tasks.85 Soviet naval policy therefore appears directed at establishing "bastions" within which these submarines can operate in wartime, and the bulk of the Soviet surface fleet has been tasked to defend them.86 Major Soviet efforts are required primarily because the United States has significant naval advantages, specifically, its free access to open oceans and its lead in ASW and submarine technology. According to ASW experts, the survivability of Soviet SSBN's is at best one-half that of those of the United States.87

In the early 1970's all Soviet SSBN's were compelled to transit constricted waters controlled by the United States or its allies in order to threaten the United States. Not only were these submarines relatively noisy, but they were vulnerable to attack for a considerable period of time prior to reaching a strategic launch position.88 In 1973, however, 


87 Edward Luttwak, The U.S.-USSR Nuclear Weapons Balance, p. 11. This is a conservative assessment. See Vice Admiral DeMars testimony in hearings before the House Committee on Armed Services, Defence Department Authorization and Oversight (Washington, D.C.: USGPO, 1986), pp. 79-82. Vice Admiral DeMars expects a 5 or 6 to 1 kill ratio in favour of the United States in war (reflects SSN versus SSN combat).

88 See Annex G, SSBN Survivability. The very low survivability of SS-N-4, SS-N-5 and SS-N-6 is attributable to the long SSBN transit period through NATO-controlled waters.
the first long range SS-N-8 equipped SSBN of the DELTA class came into Soviet service. From this point on, as more longer range SLBM's joined the fleet, Soviet SSBN's could be made more survivable by holding them in defended seas close to Soviet coasts.

Anti-submarine warfare capability in the West has advanced steadily from 1970 to 1986 and threatens Soviet SSBN's significantly. Soviet efforts to increase the survivability of their new SSBN's include building faster and quieter designs, degaussing prior to each patrol, coating submarine hulls with anechoic tiles to minimize sonar reflections, and building double hull SSBN's to reduce damage due to attack. Each generation of Soviet SSBN's has been getting more survivable and in some respects been catching up to the United States.

To counter Soviet efforts at enhancing SSBN survivability, American SSN's routinely attempt to locate and trail Soviet SSBN's within their defended "bastions." Since the Soviets must send their best SSN's to attempt to locate and trail United States SSBN's, only their older models are available to protect their SSBN's. Recently, the United States has adopted a "forward strategy" where it would seek to penetrate Soviet bastions with surface units including carriers and destroy Soviet nuclear

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submarines even in a conventional conflict. To increase SSBN survivability against these threats, the Soviet Navy has begun deploying SSBN's under the Arctic ice for greater protection of their strategic reserves. The latest Soviet SSBN has apparently been designed with a top structure engineered to facilitate breaking ice to allow it to launch its SLBM's from under parts of the ice pack.

The Soviet Union has pursued every reasonable means of making their strategic forces more survivable, but the hardening of ICBM silos and the defending of their SSBN's in particular demonstrate a Soviet dedication to the enhancement of its nuclear combat effectiveness. These survivability measures enhance both deterrent and war fighting aspects of the Soviet nuclear force posture.

5. Strategic Defence

Closely linked to the concept of making one's force structure survivable is the notion of defending it against direct attack. In Anureyev's correlation of nuclear forces model, defences are vital. The correlation of nuclear forces can be drastically changed to one's advantage "by means of the mass application of nuclear weapons with the simultaneous repulsing of a sudden attack by the air-space means of the

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92 This strategy was announced in December, 1985. See Michio Kaku and Daniel Axelrod, To Win A Nuclear War: The Pentagon's Secret War Plans (London: Zed Books, 1987), p. 311. Even before this announcement, United States policy was to attack SSBN's; see James Schlesinger's testimony before the Committee on Foreign Relations, United States Senate, Nuclear Arms Reduction Proposals (Washington: USGPO, 1982), p. 82.


enemy." Thus offensive and defensive forces together are essential to the achievement of an advantageous correlation of nuclear forces.

From 1970 to 1986 the Soviet Union has slowly but deliberately improved its strategic defences. As early as 1955, air defence was elevated to a separate branch equal to the three traditional services in order to counter the massive United States bomber threat. By 1970, the USSR had already deployed an anti-ballistic missile (ABM) system and made improvements to it, indicating an unwillingness to allow its security to depend solely on the combat value of its offensive forces. These defensive forces were part of PVO Strany, the Soviet air defence branch, whose mission was "to repel enemy attack from the air and from outer space." In the early 1970's the Soviet Union constructed the Tallinn line across the ballistic missile approaches to Moscow. It was equipped with long range high altitude surface to air missiles that were then tested 50-60 times in an ABM role. By the 1980's the number of SA-5 high altitude air defence missiles deployed in the Soviet Union doubled, even though the bomber threat at high altitude was significantly reduced.

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The defences around Moscow appear designed to protect a significant part of European USSR from any form of aerospace attack. This area encompasses the strategic leadership of the USSR as well as about 300 ICBM's. The Soviet development of large phased array and other modern radars, including the one at Krasnoyarsk that allegedly violates the ABM Treaty, has given the Soviet leadership some ability in the 1980's to protect this core area from ballistic missile attack from any direction. Modern surface to air missiles also appear to have some capability against ballistic reentry vehicles, and it appears evident that the USSR is maintaining some form of near term ballistic missile defence capability.

This study has already introduced a penetration factor that slightly degrades United States ballistic missile attack against point targets. This Soviet ABM capability, however, would likely be far more effective against SLBM RV's than against ICBM RV's. The latter, because of their speed and reentry angle, tend to be faster, smaller and are often accompanied by several penetration aids. SLBM RV's, on the other hand, tend to be slower, larger, more rounded and unable to carry as many penetration aids, making it easier for ABM systems to track and engage them. Thus the Soviet defensive force structure, whatever its real


capability, will probably be more effective against a ragged retaliation, primarily from SSBN's than be able to defend against a massive and coordinated first strike.

6. The Implications of the Qualitative Analysis

From 1970 to 1986 the Soviet Union has continuously improved the quality of its long range nuclear forces. During the early 1970's the Soviet Union was still in the process of building its nuclear force structure, but significant quantitative improvements in reliability, lethality, hardening and strategic defence occurred regularly. Throughout the late 1970's and early 1980's, the Soviet leaders improved their strategic nuclear force structure each year, making it more accurate, flexible and combat capable. The Soviet Union has methodically developed and deployed a comprehensive hard target kill capability and an impressive damage limiting ability. There can be little doubt that this Soviet force structure is primarily designed to fight wars in the traditional sense and not simply to retaliate against American urban industrial strength. The Soviet Union's strategic force posture appears to reflect a compellent approach to qualitative improvements that was designed primarily to optimize a Soviet correlation of nuclear forces advantage.

IV. STRATEGIC NUCLEAR FORCE - COMBAT UTILITY

While the quantitative and qualitative aspects of Soviet strategic nuclear weapons have a bearing on how these various forces will interact in actual combat, perhaps the most important variable and the most difficult to determine is the operational policy. The dynamic analysis helps reveal any differences between operational and declaratory strategy. This section will briefly review the methodology used to create the
requisite data, some important command and control considerations, some plausible Soviet combat options and finally describe the major outcomes of the correlation of forces model.

This study used the same method of analysis for the Soviet force structure as it did for the analysis of the American force structure. The more lethal Soviet systems were targeted on the American targets that provided the greatest payoff in terms of the correlation of forces baseline.  

The Soviet force structure in 1970, as demonstrated by the C-l correlation of forces baseline, suffered from an obviously inferior position. The threat of United States nuclear attack forced the Soviet military leadership to place a significant emphasis on their very survival in a possible war. During this period of analysis, at least 75 hardened shelters for senior Soviet leaders were constructed around Moscow alone. Major Soviet efforts were also made to provide a high confidence level that the strategic force structure could be controlled in war, and to that end nine major headquarters and about 300 launch control centers are now highly interconnected. The Soviet Union has also provided excellent early warning facilities that enable a launch on warning option. One other aspect which the USSR has developed is an anti-satellite capability that threatens American "low" reconnaissance

104 See Chart 2. The C-l line is the same on each chart.

105 Desmond Ball, "Soviet Strategic Planning and the Control of Nuclear War," in Roman Kolkowitz and Ellen Propper Mickiewicz, eds., The Soviet Calculus of Nuclear War, p. 64.

COMPARISON OF CORRELATION OF NUCLEAR FORCES BASELINE WITH THE CORRELATION OF NUCLEAR FORCES AFTER A US FIRST STRIKE

SOURCES AND METHODOLOGY: SEE ANNEX A
satellites. This could seriously degrade American attempts to assess the damage created by nuclear attack in war.

Given the rapid buildup of Soviet warheads in the 1970's, one assumes that in the early 1970's the Soviet force structure was simply not able to cover its full array of major potential targets. The primary target, according to the commander of the SRF, Marshal Krylov, was the American nuclear delivery systems in a prioritized target set as follows:

1. Nuclear delivery systems (weapons storage/fabrication sites)
2. Armed forces (Military Installations)
3. Military Industries
4. Centres of Politico-Military Administration

To handle this target set, Soviet ICBM's appeared designed for specific missions; heavy, medium and light ICBM's were developed. The SS-9, the first heavy ICBM, and the SS-18, its replacement, were most surely intended for counterforce and command structure attacks. In particular, the very high yield modifications were probably targeted against the command structure. To cover all of the critical strategic weapons targets in the United States, about 3000 warheads would probably have been required.

110 Paul Bracken, Command and Control of Nuclear Forces, p. 235. The SS-9 in the early 1970's had to be used to target command and control (LCC's) to degrade American strategic response.
111 Kosta Tsipis, Arsenal, pp. 78-79. His list of targets excludes command and control, military and military industrial targets, but he does include specific counter recovery industries.
The Soviet Union has placed considerable importance on the withholding of combat reserves, even in terms of nuclear strategic warheads. Since this role falls primarily to the SSBN force, one must address how it will be used in combat. The Soviet Union does not maintain two crews per submarine as does the United States, but some SSBN's may be on alert in port, probably to enhance their survivability. As the Soviets intend to attack American SSBN's in the conventional phase of combat, they have undoubtedly attributed a similar strategy to the United States.

One unique aspect of the Soviet SSBN fleet is the possibility that the Yankee, with its shorter range SS-N-6 missile, may also have had a counter SSBN or counter aircraft carrier role. It is in keeping with Soviet conceptualization of war fighting to use nuclear missiles in flexible and imaginative ways to accomplish combat related tasks.

In terms of actually conducting a nuclear war plan, very little is known about Soviet specific intentions. What is clear is that the Soviet experience in 1941 has fostered the determination never to be caught unprepared and to seize the initiative as soon as possible. As a consequence of this sentiment, the Soviet Union has absolutely no


113 Donald C. Daniel, Anti-Submarine Warfare and Superpower Strategic Stability, p. 154.


intention of absorbing a first strike. Thus Soviet efforts to improve their early warning systems and missile alert rates probably reflect a willingness to launch under attack if not on warning. What interests the Soviet military most is being allowed to deliver the first "mass" or major nuclear strike, although close reading of the literature reveals that "mass" nuclear strikes could describe a number as low as 50 weapons.

The Soviet declaratory strategy has consistently denied the feasibility of conducting a limited nuclear war, yet the Soviet force structure may be increasingly designed to fight one. According to one hard line analyst, this denial is merely a psychological device to manipulate Western behaviour, since the Soviet nuclear deployments provide Moscow with a variety of its own "flexible responses." Secretary of Defence James Schlesinger noted that the Soviet military, in their exercises, have indicated far greater interest in the notions of controlled nuclear war than has ever been reflected in Soviet doctrine. Others have also concluded that Soviet leaders "almost certainly envision

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the conduct of limited nuclear operations. Operational strategy appears to contradict declaratory strategy in this case.

The rationale for this dichotomy probably relates to the overall Soviet objective of deterring Western first use of nuclear weapons in Europe. If this were the case, Soviet declaratory policy and Soviet action policy would seek the same objective: military and political advantage in Europe. A solid analysis indicates that the Soviet leaders realized that stalemate at the global nuclear level means that war can be realistically confined to "lower levels of intensity." It is in the Soviet interest to maximize the value of its conventional advantage by accepting no first use and by confining any war to a level below the nuclear threshold. In short, the Soviet planners do not intend to engage the United States where the United States is stronger, in the more flexible realm of nuclear war fighting, but they must plan to be able to fight such a war and survive should it be forced upon them.

The Soviet nuclear strategic force structure thus contradicts the Soviet declaratory strategy of not seeking military advantage or superiority in strategic nuclear weapons. Rather, it implies that the USSR is deliberately seeking the ability to disarm the United States, or at least it gives the Soviet Union the ability to have the last move in


any limited nuclear exchange since only they can retain effective strategic reserves.\textsuperscript{125} The Soviet emphasis on military offensive and defensive hardware is complemented by its emphasis on civil defence that exposes school children to its principles as early as the second grade.\textsuperscript{126}

The Soviet Union, through the quantitative and qualitative improvement of its nuclear force posture, has achieved a very balanced and robust war fighting capability. Such information as is freely available on the Soviet forces indicates that the USSR is able to field modern equipment as fast as the United States. It is thus plausible to expect that the USSR in the 1980's has built a reprogramming and retargeting capability into its missile force. In the early 1970's, the Soviet Union had a poor correlation of nuclear forces and could not even improve it with a nuclear first strike; the American forces were too strong.\textsuperscript{127} By 1979, however, the new ICBM's gave the Soviet Union an advantage after such a strike. From 1979 to 1986 the Soviet Union managed to increase its C-2 advantage, primarily due to qualitative improvements in Soviet offensive and defensive forces. As the Soviet Union deployed greater numbers of land mobile ICBM's, it remained competitive with improvements in United States strategic systems. The effort to maintain the combat capability of the Soviet nuclear forces implied a determination on the part of the Soviet military leadership to maintain at least the objective possibility of achieving some success in war.\textsuperscript{128}


\textsuperscript{126} Herbert Goldhammer, \textit{The Soviet Soldier: Soviet Military Management at the Troop Level} (London: Leo Cooper, 1975), p. 75.

\textsuperscript{127} See Chart 1.

V. FORCE STRUCTURE IMPLICATIONS

The Soviet correlation of nuclear forces model is particularly illuminating when viewed from the Soviet perspective. The graphic portrayal in Charts 1 and 2 of the relative nuclear force posture development provides a clear rationale for the massive Soviet force construction that took place in the 1970's and early 1980's.

In the early 1970's, the Soviet disadvantage was far greater than reflected by static indicators, and this fact helps account for the magnitude of new Soviet nuclear construction. The Soviet Union was undoubtedly trying to improve an evidently unsatisfactory correlation of nuclear forces. The mid 1970's saw the Soviet Union catch up in quantitative terms. However, the post Soviet first strike correlation of nuclear forces was still not to the Soviet advantage.

By the late 1970's the qualitative improvements to the Soviet nuclear force posture were sufficient to finally give the Soviet Union a correlation of nuclear forces advantage both before and after a Soviet first strike. Additional warheads and improvements in ICBM lethality and hardening were the key factors that provided the Soviet leaders with an almost 3 to 1 correlation of nuclear forces advantage by 1983, a significant improvement from the 1 to 2 disadvantage in 1970. There appears no doubt that the Soviet leaders aspired to achieve this improvement in the nuclear correlation of forces.¹²⁹ To them the earlier American nuclear construction probably indicated a desire on the part of the United States to develop capabilities well beyond those needed for

deterrence by punishment. The Soviet strategic elite had never thought that a situation of mutual deterrence through the threat of assured destruction was "the highest theoretical achievement."131

That is not to say that the Soviet leadership intend war, far from it. The Soviet leaders have no desire for war unless it can permanently advance their interests without significant risk, and in the nuclear age the risk is simply unacceptable. Yet, the Soviet ideological framework admits that an antagonistic class relationship could spark war due to fundamental political conflict. Should war ever occur, the Soviet Union requires an ability to protect its revolutionary gains in all possible conditions. Consequently, for most of this period, the Soviet system has sought powerful military forces that reduced the risk of attack and, perhaps more importantly, provided coercive leverage by shifting the correlation of forces toward the USSR. The Soviet Union therefore constructed an impressive nuclear force structure that gave it a substantial ability to fight and a possible chance, however remote, to survive and recover from nuclear war. There is ample evidence that the Soviet political leadership authorized the military to pursue a damage


133 By 1986, however, the correlation of forces appears to have been implicitly downgraded by Gorbachev's emphasis on interdependence. For a good analysis, see Stephen Shenfield, *The Nuclear Predicament: Explorations in Soviet Ideology* (London: Routledge and Kegan Paul, 1987), pp. 70-71.

limiting strategy, combining strategic offence with passive and active
defence.\footnote{Stephen M. Meyer, "Soviet Strategic Programmes and the U.S.

Since Brezhnev altered Soviet declaratory policy in 1977,\footnote{Leonid
Brezhnev, \textit{Peace, Detente and Soviet American Relations}
(London: Harcourt Brace Jovanovich, 1979), p. 190.} Soviet action policy, at least until 1986, appeared to have remained the same. Although force structure changes take several years to implement when additions are needed, deletions from force structure can happen more quickly. Between 1977 and 1986, however, Soviet force structure continued to grow, if at a decreasing rate. There was no hard evidence among visible Soviet force structure decisions that indicated any significant change in operational policy. The Soviet long term objectives appeared to be the same as those stipulated in the 1928 Five Year Plan, to achieve "quantitative and qualitative technological superiority."\footnote{John J. Dziak, \textit{Soviet Perceptions of Military Power: The Interaction of Theory and Practice}, p. 28.} The key barriers to achieving these goals included financial constraints and the determination of the United States to compete.

From 1970 to 1986 Soviet nuclear force planners have manifested a consistency that can be readily explained by the correlation of nuclear forces model. The quantitative competition has been limited by agreement with the United States, but qualitative competition has not. The Soviet Union has developed forces well in excess of those required for deterrence; the Soviet nuclear force structure is fully capable of supporting compellent as well as deterrent threats.
Chapter Nine

THE CORRELATION OF SUPERPOWER NUCLEAR FORCES

In the previous two chapters the actual nuclear force structure of each superpower has been analyzed in isolation to determine to what degree nuclear procurement and force structure reflect paradigmatic models or match declaratory policy. What complicates the analysis of military policy, however, is the degree to which the opponent's strategic actions create perceptions and reactions that highlight the dynamic nature of strength comparisons. How this dynamic reaction would result in an actual outcome in war is a tremendous intellectual challenge which the correlation of nuclear forces model approximates in a very rudimentary fashion. Even though the military aspect is the most quantifiable factor of the correlation of forces, its calculations are only meaningful as a rough order of magnitude indication of potential advantage.\(^1\) This chapter compares the Soviet and American trends in nuclear force structure during the 1970-1986 period, and then analyzes them from the paradigmatic perspectives of deterrence and compellence.

I. COMPARISON OF UNITED STATES - SOVIET TRENDS

To a perceptible degree the nuclear strategy of each superpower appears to have been at least influenced by that of its major rival. Certainly both the United States and the Soviet Union very carefully monitor the trends evidenced by each other's nuclear construction programmes, and advocates of specific policies seem prepared to use these trends to aid in achieving their objectives in internal political

struggles. This section will examine those trends highlighted by the correlation of nuclear forces model.

1. Strategic Intentions

While each superpower appears to have changed its declaratory strategic intentions over time, the results of the correlation of forces model do not fully reflect these changes. Rather, in both the Soviet Union and the United States the results of nuclear force structure analysis demonstrate strong continuity in force development. As a consequence, each superpower has sufficient evidence to support the belief in at least some quarters that the other's "real" strategic intentions are not reflected by its declaratory policy. Confidence in using declaratory policy as a guide to interpreting nuclear strategy is thereby reduced.

The United States political elite has always had serious reservations about Soviet intentions. President Kennedy expressed concern that "Soviet missile power" would provide the Soviet Union with a shield behind which it could intensify pressure on the free world through "Sputnik" diplomacy.\(^2\) Such rhetoric inherently assumes that the Soviet Union continually seeks, through a variety of means, to expand its circle of 'friendly' regimes. Given this underlying political objective often ascribed to the Soviet Union, it is not unreasonable that at least some American leaders tend to link this political goal to the expanding capability displayed in Soviet military force structure.\(^3\) To explain Soviet military doctrine, which is primarily a political doctrine, the


more 'hawkish' United States leaders, in particular, have pointed to the growing Soviet nuclear force structure.\(^4\) Although this link is considered tenuous by some, it is nevertheless apparent that a strong segment of the United States leadership is suspicious of actual Soviet intentions.

The Soviet Union appears equally suspicious that 'real' American objectives include something beyond deterrence. That suspicion can hardly be alleviated by important official documents such as the 1957 Gaither Committee report (declassified in 1973), which recommended negotiating from strength with the Soviet Union.\(^5\) A significant segment of the Soviet hierarchy still appears convinced that the United States has not abandoned its goal of world leadership.\(^6\) For Soviet analysts, the American political elite has aggressive global political and economic interests that influence United States foreign policy and require substantial military backing.\(^7\) These interests play an important part in determining perceptions of resolve, but they are perceived to have a distinct anti-Soviet bias.\(^8\) In this context, United States force structure improvements


\(^8\) Sh. Sanakoyev, "The Revolutionary Renewal of the World and the Militaristic Policy of Imperialism," International Affairs (No. 5, 1985), p. 120.
and especially the Reagan administration's efforts to strengthen strategic forces take on more sinister overtones, at least from the Soviet perspective.

Mutual suspiciousness thus marks the superpower attitudes toward their opponent's declaratory nuclear strategy, fueled to a large degree by each other's intelligence assessments of the other's nuclear force construction. Determining real superpower strategic intentions then may hinge on the degree to which the nuclear force postures are really responsive to political direction or to what degree military bureaucracy can actually influence that direction.

2. The Use of Threats

The dynamic of explicit or implicit nuclear threats provides the link between a declared strategy and the actual force structure. A state's use of nuclear threats signifies a certain belief in the utility of nuclear strategic military forces to support foreign policy. One very good review of past nuclear threats indicates a trend toward more general rather than specific threats, but those that were considered most seriously were specifically designed to coerce another state. That same study, however, also concluded that the impact of nuclear threats has been consistently misinterpreted by bureaucratic elites who have consequently tended to overvalue their effects.

From the military perspective, for a threat to have any credibility it must be capable of implementation with a reasonable chance of success. Once engaged in combat, however, the military has its own special needs

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10 Ibid.
affecting implementation options and cannot be simply the "neutral executor of diplomatic policy" that some theory prescribes. 11 Military forces therefore place considerable emphasis on obtaining the requisite resources from their political systems often to the point of overstating their requirements. 12 Since the dominant weapons of the age are offensive missiles, a dangerous situation may well be exacerbated by military efforts to enhance offensive nuclear force structures. 13 Military forces in each superpower place a high value on flexible systems which contribute to the war fighting potential of their country.

While most nuclear threats were made at a time of nuclear or conventional advantage in a specific area, Carter's threat to use force in the Persian Gulf area in 1980 was an exception. The Soviet leaders reacted harshly to the "brainless" threats to use any means to control the Persian Gulf. 14 The American fundamental policy objective in the region was to bring about the withdrawal of Soviet forces from Afghanistan and to make the Soviet Union "pay" for this "brutal" invasion. 15 The Soviet reaction to this threat may have been as strong as it was in part because they perceived the military correlation of forces in the region to have


been much to their advantage. The Soviet military have been able to construct an impressive force structure that could support a flexible range of threats. Kissinger noted that this flexibility gave the Soviet Union an advantage in that it had more military options and could force the United States into the position of initiating the destruction of civilian targets. This flexibility gave the Soviet leaders the option to respond to limited American attacks in a parallel fashion or to threaten intercontinental exchanges in the hope of deterring the United States or NATO from resorting to nuclear weapons during a conventional war.

To support foreign policy with credible forces that could back potential threats, both superpowers have steadily improved the accuracy and survivability of their nuclear weapons as well as their ability to penetrate to proposed targets. Military forces can probably be expected to demand a force structure consonant with the compellent paradigm as long as their leaders task them to support their state's global policy.

3. The Correlation of Nuclear Forces

The efforts of each superpower to improve the combat effectiveness of its strategic nuclear systems provide an indication of a competition to achieve a more favourable correlation of nuclear forces. These trends imply a belief by superpower elites that "military force can be used for

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16 The events in this era may have also prompted the Soviet Union to reconsider its military strategy of launching a major offensive into Europe at the onset of war. See Michael McGwire, "Rethinking War: The Soviet and European Security," The Brookings Review (Spring 1989), p. 7.

17 See Michael Charlton, From Deterrence to Defence: The Inside Story of Strategic Policy, p. 54.

coercive purposes in ways that the countervailing threat of massive city attack is totally incapable of counteracting. This section will examine those trends in nuclear force structure development that indicate that each superpower has a growing propensity to measure the value of its nuclear forces by its ability to engage successfully in combat.

Major indications of this competition surfaced very early in the 1970-1986 period. Melvin Laird, the United States Secretary of Defence, declared that if the new SS-9 follow-on had accurate MIRV's, the utility of the United States Minuteman force would be virtually nil by the late 1970s. Not only did the Soviet Union deploy accurate MIRV's on the SS-18, but Soviet leaders also upgraded other ICBM's and SLBM's in significant ways that indicated a conscious determination to maximize a strategic advantage. This competition also extends to the attempts of each side to trail SSBN's with SSN's, a competition in which the United States appears to hold a significant edge. Although the Soviets invariably attempt to trail each American SSBN as it leaves its home port to conduct a patrol, the Soviet Navy apparently "has never successfully tracked a United States submarine"; the United States however is approaching the capability to track Soviet submarines and even bottle them up at crucial choke points.

22 This point may have been somewhat overstated by the physicists, Michio Kaku and Daniel Axlerod, in their biased but interesting book, To Win a Nuclear War: The Pentagon's Secret War Plans (London: Zed Books, 1987), p. 311.
and SSBN's appear to have become acceptable targets early in any conflict.

Another important aspect of the strategic competition is that of strategic defences. Both the Soviet Union and the United States have conducted extensive research in strategic defence technologies notwithstanding the agreement to limit the deployment of strategic defences. While most deployed defences in the 1970-1986 time frame in the Soviet Union were directed primarily toward the United States bombers, the United States has continually sought some form of effective defence against Soviet ICBM's. It is worth noting that each superpower has emphasized defences to counter the opponent's strategic system that threatens to deliver the greatest amount of megatonage and thus can be explained as a means to enhance its correlation of forces ratio.23

The Soviet Union continues to view strategic defence as a means of seizing the strategic initiative, not unlike what occurred during the 1941 Battle for Moscow.24 This same concept applies to modern strategic defence which would initially not be capable of assuring survival under all conditions, but could provide one power the ability to survive a ragged retaliation after its own first strike.25 Such an intermediate level of ballistic missile defence would probably favour the Soviet Union because of its advantage in hard target capable RV's.26 If United States defences, however, could be made more effective than Soviet defences, then


the Soviet strategic problem could be significantly worsened. For example, a 50% effective American defence against ballistic missiles in the 1990s could possibly degrade the correlation of nuclear forces to less than unity.27 Such a result would seriously undermine Soviet objectives and probably render Soviet war plans operationally ineffective.28 Consequently, even though the Soviet Union is actively engaged in defence research and may even have a lead in deployed systems, the United States' SDI programme in the 1980s has become symbolic of a fundamental challenge that involves the political, economic, industrial, scientific, technological, and military potentials of the superpowers.29

Perhaps the most frequently used method of comparing the strategic balance is to determine the probable results after an international strategic exchange. In chapters seven and eight the correlation of nuclear forces baseline was compared to what would occur if either superpower launched an unanswered first strike, acknowledging that initiators of wars tend to emerge victorious more often than not.30 In today's reality, however, neither side can risk being caught by surprise and a true reflection of relative combat utility may be the changed correlation of nuclear forces after a nuclear exchange.31 Chart three


COMPARISON OF CORRELATION OF NUCLEAR FORCES BASELINE WITH THE CORRELATION OF NUCLEAR FORCES AFTER A NUCLEAR EXCHANGE

C - 1 THE CORRELATION OF NUCLEAR FORCES BASELINE
C - 4 THE CORRELATION OF NUCLEAR FORCES REMAINING AFTER A MUTUAL STRATEGIC NUCLEAR EXCHANGE

SOURCES AND METHODOLOGY: SEE ANNEX A

CHART 3
demonstrates the trend in the residual correlation of nuclear forces in the event of a mutual exchange using the previously described exchange model. It is apparent that the Soviet Union was at a serious disadvantage prior to 1978 when the correlation sharply changed to its advantage, an edge lasting until 1981 when the effects of the Mark 12A warhead and Ohio SSBN's are noted. This chart clearly supports the contention that the Soviet Union methodically constructed a combat effective ICBM force during the period of détente in the 1970's probably with the express purpose of enhancing their prospective outcomes in a nuclear exchange.

Even though the overall correlation of nuclear forces ratio still remains in favour of the Soviet Union, the impact of the United States strategic modernization programme in the 1980s can also be clearly seen on chart three. In spite of any possible advantage, however, neither the Soviet Union nor the United States military are keen to be in a retaliatory mode, and a major feature of modern strategic systems is that they are continuously programmed for first strikes. Thus the pressure to launch on warning or launch under attack to minimize one's disadvantage would be extremely high; otherwise the correlation of nuclear forces could be adversely affected. The trends in each superpower to improve the quality of their strategic forces implies that

each is striving with incredible resources to cut holes in the security blanket of the other, to produce more bombs of greater accuracy which would permit a preemptive first

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strike, despite pious foreswearing of such an objective by each.\textsuperscript{34}

Another interesting aspect of the mutual exchange analysis is the fact that even after a counterforce exchange, each side from 1970-1986 retained at least 400 EMT, the approximate EMT required to cause assured destruction of the other side. Thus any initiator cannot expect to completely disarm his opponent, and the impact of uncertainty in any proposed attack against the diverse and robust strategic forces that now exist means that one's confidence in achieving victory without sustaining major and probably unacceptable damage would remain fairly low.\textsuperscript{35} Nevertheless, each superpower has demonstrated a propensity to seek relative advantage from its nuclear force structure.

While the dominant trend of the correlation of nuclear forces from 1970 to 1986 has been in favour of the Soviet Union, the C-4 slope from 1974-1980 dramatically demonstrates the potentially decisive impact of the Soviet deployment of the third generation ICBM's. As the Soviet construction programme was completed and new American strategic construction began, the correlation of nuclear forces has more or less stabilized and even moved to reflect a decrease in the Soviet advantage in 1984-1986. The key findings in the 1970-1986 period, however, supported by another detailed study, is that the Soviet Union has neutralized the previous United States advantage in the development and deployment of


sophisticated nuclear weapons. This fact appears to have been recognized by the Reagan administration which deliberately sought to improve the United States' strategic forces so the United States could "stand tall." If these strategic programmes continue, and if there is no comparable Soviet response, the projected correlation of nuclear forces will probably continue to move toward unity.

4. Implications of the Force Structure Analysis

As long as both sides, regardless of what the other does, are capable or appear to be capable of destroying their opponent, a situation of mutual deterrence probably exists. Until it can be proven, however, that the achievement of victory is futile, there appears little likelihood of abolishing the possibility of war, even nuclear war. As long as the possibility of nuclear war, however remote, appears to exist, then the possibility of using the threat of such a war, even though it includes a strong possibility of mutual destruction, has enough credibility for it to be taken seriously. Given that some form of victory cannot be discounted as a theoretical possibility and that the threat of war exists, there is strong logical or deductive support for attempting to use the threat of nuclear war to political advantage.

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Both the deterrent and the compellent paradigms are based on such logic; the compellent simply seeks to obtain advantage while the deterrent seeks to avoid disadvantage. The key factor central to the success of either a deterrent or compellent nuclear strategy is having the will or appearing to have the will to follow through with nuclear threats if necessary. Perceptions are thus extremely important and may in part account for the difference between the amount of strategic force necessary to assure the opponent's destruction and the tremendous scale of nuclear forces presently deployed by the superpowers.\(^\text{40}\) To the extent that nuclear weapons are specifically designed to complement one another in a given combat situation and are clearly tailored to fight if required, the notion of nuclear symbolism by itself may not be a sufficient explanation. Each level of combat (strategic, theatre, tactical) is closely interrelated, but for the superpowers it is the intercontinental nuclear forces that provides the "fulcrum upon which all other means of influence, coercion or deterrence depend."\(^\text{41}\)

The comparison of the strategic nuclear force structure of the superpowers reveals a competitive process. The massive change in the correlation of nuclear forces 1974-1980 thus has probably been quite deliberate and may have even contributed to increased Soviet confidence in the use of force in the third world.\(^\text{42}\) To the Soviet Union, powerful nuclear forces guarantee that the United States will never again compel


the USSR to retreat under a nuclear threat as it had to do in Cuba.\textsuperscript{43} Because of a natural inclination or dynamic in military planning to conservatively resolve uncertainty, there is a tendency to be suspicious of the other side's force structure improvements and to search for absolute security.\textsuperscript{44} This military imperative creates a powerful rationale for a war fighting orientation and may well contribute to both the United States' and Soviet Union's propensity to engage in a nuclear force structure competition.

The degree of superpower competition in nuclear force construction from 1970-1986 strongly implies, but does not prove, that compellent thinking has influenced this process. Deterrent requirements could also be made subject to a competitive process, either to maintain an assured ability to destroy the other or to ensure that the threat is credible. A paradigmatic assessment of the force structure dynamic is now in order.

\section*{II. THE DETERRENT PARADIGM AS AN EXPLANATION}

Both superpowers officially insist that their respective strategic nuclear forces are necessary simply to deter the other side from starting a war, and describe improvements in their force structures in terms of the requirement to maintain the efficiency or credibility of deterrence. According to this logic, more capable weapons systems and increased numbers of nuclear weapons on the other side justify one's own weapon programmes. Yet the analysis in chapters seven and eight indicates that in both the Soviet Union and the United States, this explanation is


insufficient to account for all major weapons equipment decisions.

What may be happening is that the definition of deterrence has become so elastic that all potentially coercive uses of nuclear weapons are described as instances of deterrence.\(^45\) If this is so, perhaps the analysis of the nuclear force structure competition can provide the "detailed factual observations" necessary to conduct a more rigorous analysis of deterrence.\(^46\) In the deterrent paradigm, strategic competition should follow directions that would enhance deterrence without at the same time increasing the prospects for compellence.

A reasonable first step in this analysis is to examine the very nature of the strategic competition that many have called an arms race. Although arms races themselves are not necessarily causal to war, they are symptomatic of conditions that could lead to war.\(^47\) While several analysts have described the growth of strategic nuclear weapons as an arms race, some important research has included that no "arms race" per se exists and that in terms of strategic spending neither country has been reacting to the other.\(^48\) Each superpower could spend far more on its strategic forces as a percentage of its defence spending if it so wished. The strategic competition evidenced by the trends in Soviet and American nuclear force construction appears to be different than in previous arms


races which could easily be quantified on the basis of spending.

Another frequently proposed theory posits that the construction of massive military force is based primarily on the internal dynamics of the arms procurement process in each superpower. This could well be the case, but even if it were, the linking of this internal process to deterrent or compellent thinking would probably greatly facilitate the transcending of military, political, industrial and academic boundaries by providing an overarching direction to force development. The notion that a strategic weapons competition is necessary for purely internal reasons to sustain deterrence remains unconvincing, especially when each strategic force already retains an assured retaliatory capability.

Deterrence rests ultimately on the ability to destroy countervalue targets, hence a counterforce nuclear force posture which threatens to destroy the other side’s retaliatory capability appears at first glance to be inimical to deterrence. Yet, even as early as 1970 an informed strategic assessment declared that both superpowers have capabilities which, at least in theory, went beyond reciprocal deterrence. Since that time the efforts of the superpowers to enhance their hard target kill capability has led a 1986 study to conclude that the strategic nuclear doctrines of the United States and the Soviet Union have "converged at a

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startling rate. To a large degree these trends toward counterforce targeting are fully supported by the correlation of nuclear forces model and the analysis in chapters seven and eight.

The competitive nature of counterforce targeting has propelled the superpowers to seek counter-military advantages that seem to have played a significant role in force acquisition. According to the United States Chairman of the Joint Chiefs of Staff:

As we look at the Soviet Union, we see a target structure that is about twice as large as the one the Soviet Union looks at when they look at us. We also see one that is roughly _____ times as hard when it comes to attacking the target with nuclear weapons.

This testimony was intended to gain committee support for hard target capable United States programmes, ostensibly to enhance deterrence. If the deterrent paradigm is operating, the distinction between counterforce, damage limitation, and war fighting on the one hand and deterrence on the other, may be clearer in theory than in practice. The recent emphasis on strategic defence in the United States, however, implies "an impending American cultural rejection of a strategy of deterrence."


53 General Vessey, Hearings Before the Committee on Appropriations, United States House of Representatives, Department of Defence Appropriations for 1984 Part 8 (Washington, D.C.: USGPO, 1983), p. 257. Although the figure amplifying hardness has been deleted, other open sources indicate that Soviet silos are at least two and quite possibly three times as hard as American silos.


55 Michael Vlahos, Strategic Defence and the American Ethos (London: Westview Press, 1986), p. 4. For the United States to defend ICBM's does not significantly enhance stability when over 50% of its nuclear power is
nuclear threats generated by strategic defence postures of the superpowers makes it difficult to support a deterrent explanation. To the extent that deterrence does provide a reasonable explanation, it is in the realm of perception, demonstration of will, and determination to deter.

A more convincing argument to account for massive nuclear forces within the deterrent paradigm explicitly links combat utility to deterrence. In this explanation, strategic nuclear forces can deter only to the extent that they provide an adequate war fighting capability.\(^5\) What is an "adequate" war fighting capability, however, remains undefined, and what one superpower may regard as a prudent hedge against the failure of deterrence, the other interprets as evidence of at least a lingering or implicit interest in strategic superiority.\(^5\) This view of a war fighting requirement for deterrence is not shared universally, and some maintain that much of the present nuclear arsenals could be scrapped without any loss of national security.\(^5\) Nevertheless a frequently heard argument insists that powerful nuclear arsenals are necessary to sustain deterrence "at all levels."

From 1970 to 1986, each superpower clearly manifested a distinct strategic doctrine. Throughout this period the United States held a fairly consistent attitude with respect to the overriding relevance of


deterrence.\textsuperscript{59} Thus the United States initially constructed nuclear forces up to a certain level and then stopped. As long as the United States military policy was based on deterrence and its foreign policy based on the status quo, then having nuclear weapons beyond parity did not seem to matter.\textsuperscript{60} This same logic, however, no longer seemed sufficient when the USSR not only reached strategic parity, but continued building strategic weapons and improving them.\textsuperscript{61} The Soviet military doctrine in the 1970's contrasted with that of the United States in that it called for forces capable of fighting a nuclear war. Although the Soviet and American military establishments appear to share a war fighting approach, American strategy has been dominated by a cost avoiding civilian deterrent approach and Soviet strategy by more open ended military requirements for war fighting.\textsuperscript{62} The qualitative competition in force structure improvements in the 1980's implied that the United States military has had a greater impact on the Reagan administration's strategic policies than it has had on any other American administration.

In contrast, the Soviet political elite's adherence to war fighting, possibly due to funding difficulties, has begun to slip somewhat in the 1980's. While some observers feel that the Soviet Union may not have changed its long term objectives and will continue to push for military


\textsuperscript{60} Bruce D. Hamlett, "SALT: The Illusion or the Reality," \textit{Strategic Review} 3 (Summer 1975), p. 76.


\textsuperscript{62} Stanley Sienkiewicz, "SALT and Soviet Nuclear Doctrine," \textit{International Security} 2 (Spring 1978), pp. 92-97. To a degree, however, these stereotypic roles may have reversed by the late 1980's.
improvements "to the limit drawn by Soviet resources and United States forbearance," others note that the key element in this dynamic is Soviet "adherence to deterrence as a primary value." The correlation of nuclear forces analysis indicates that the Soviet leaders built an approximate 3:1 nuclear strategic advantage and then stopped. While it is possible that the Soviet military did not feel they had an adequate deterrent posture against the United States unless they had such an advantage, this explanation is weak.

Deterrence appears to rely on creating the perception of strength; the greater the strength of one's nuclear forces, the less likely they are to be challenged. Deterrence also has a punitive tone and an active nature in that it threatens wholesale destruction should an undesired act take place. Because it would be psychologically easier to use nuclear weapons in response to a nuclear attack on one's own territory, extended deterrence requires more effort. To deter other lesser acts or to protect allies, appears to demand far more "deterrent" forces and raises the requirement to at least match the opponent's nuclear forces at each level of potential conflict. If one side had a dominant or superior strategic nuclear force, it could in theory enjoy sufficient escalation dominance to render its deterrence more credible than the other's. To make extended deterrence more believable, the most logical step is to then consider what

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forces would be required to fight and hopefully win should deterrence fail. Thus, war fighting and damage limitation are defined as enhancing deterrence.

Clearly these expressions of extended deterrence have called up force requirements far in excess of those required to deter a direct nuclear attack. Yet the conceptual basis of deterrence remains essentially dyadic, and its abstract deductions apply to a very narrow range of specific circumstances, more appropriate in many ways to that of deterring a direct nuclear attack than to any version of extended deterrence. Deterrence has thus been theoretically expanded and applied to grand strategy and military strategy. Notwithstanding the deterrent assertions of the superpowers, they have constructed massive and competitive nuclear arsenals more appropriate to fighting wars than simply deterring a direct nuclear attack. The real operational basis of nuclear strategy appears well out of line with the generally accepted concepts of deterrence.

By enhancing deterrence at all levels and in all situations, the superpowers have so stretched the conceptual definition of deterrence that it bears little resemblance to the original deterrent paradigm. While increased numbers of more capable systems have undoubtedly enhanced their ability to deter, they have also perhaps enhanced their ability to compel. The reality that each superpower can guarantee the destruction of the other at least in the 1980's may have more to do with the limitations of

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III. THE COMPELLENT PARADIGM AS AN EXPLANATION

The correlation of strategic nuclear forces method of analysis reveals a competitive aspect to force structure that may be more appropriate to the compellent paradigm. The problem of isolating compellence from deterrence however is not as easily done in practice as it is in theory because each side may have deterrent and compellent motives at the same time. Thus one side can claim to be making a deterrent threat while the other side may see it as a compellent threat. Some observers genuinely believe that nuclear weapons have major "deterrent-compellent duties that extend far beyond the elementary function of deterring." This section will examine the suitability of the compellent paradigm as an explanation for the superpower nuclear force structures.

Both superpowers are pursuing competitive foreign policy objectives that could plausibly at some point require military support. Although many American observers have not fully agreed on what means the Soviet leaders would employ to pursue their aims, there was general agreement that the "leitmotif" of Soviet attitudes toward international relations hinged on its belief that the Soviet Union's ability to achieve an objective was determined by its power relative to that of other


countries.\textsuperscript{71} Although power is a multi-faceted concept, a major determinant is military power, and clearly strategic nuclear weapons provide its fundamental backbone.

The Soviet assessment of American strategy of nuclear deterrence indeed places it in the context of its links with foreign policy objectives such as containment and thus portrays it as having a substantial offensive component that makes it synonymous with compellence.\textsuperscript{72} Even those Soviet analysts that assess the United States nuclear strategy in terms of deterrence use a description that more closely resembles compellence.\textsuperscript{73} On one hand the Soviet leaders express great pride in the achievement of at least parity in strategic systems, but on the other hand they express serious reservations about future developments in terms of technological competition. In this context many Russians believe, and were repeatedly told,

\begin{quote}
that the Americans do not accept the position of the USSR as a co-equal superpower and that they are trying to destroy the source of its power.\textsuperscript{74}
\end{quote}

Even in the United States arms control community the notion surfaced that the United States must have a comprehensive strategy "to achieve" peace,\textsuperscript{75} the implication being that peace did not obtain. The concept of

\begin{footnotesize}
\begin{enumerate}
\item\textsuperscript{72} Henry Trofimenko, \textit{Changing Attitudes Toward Deterrence}, ACIS Working Paper 25 (Los Angeles, California: Center for International and Strategic Affairs, 1980), p. 5.
\item\textsuperscript{73} See Vitaly V. Zhurkin, comments on USSR in Barry Buzan, ed., \textit{The International Politics of Deterrence} (London: Francis Pinter, 1987), p. 114.
\end{enumerate}
\end{footnotesize}
strategic competition pervades relations between the superpowers and implies powerful compellent tendencies.

Massive nuclear force structure construction also creates potential threats that may imply a degree of political posturing in an attempt to achieve some advantage. When the concepts of nuclear deterrence and compellence were originally defined, decision making was assumed to be rational such that a coercive response strategy could be closely controlled.\textsuperscript{76} This conceptualization implied that the threat projected would be understood by the opposite side in exactly the manner intended, and a precise response would be carefully formulated. This notion of rationality is increasingly considered implausible, but other theoretical approaches to decision making produce significantly different outcomes that raise questions about the advisability of coercive bargaining at that level.\textsuperscript{77} Some observers have attempted to account for the accumulation of nuclear weapons as an example of "posturing" or "swaggering," a phenomenon readily observable in the animal world.\textsuperscript{78} In this sense nuclear weapons imply potential threats that create an image of strength, thus enhancing a given state's impression of power. An example of this concern is American fears that the Soviet strategic build up creates an image of ascendancy that may undermine United States political influence in crisis.


situations. This notion of posturing in theoretical terms lies between simple deterrence and outright compellence; unhedged compellent threats are simply too dangerous, due to the fact that one side must openly back down to avoid war.

Another observation that impacts greatly on the nature of the strategic competition is the geographical and cultural asymmetry of the two superpowers. Each is faced with a significantly different strategic problem and, over the years, has developed significantly different means to ensure its security. While the United States has tended to rely on its geographic isolation and its maritime power, the Soviet Union and Russia have a long history of close involvement along the periphery and have traditionally relied on large armies. Consequently the Soviet Union is extremely sensitive to American nuclear involvement in Europe and practically paranoid in its concern over the American rapprochement with China in the 1970s with its immediate impact on the correlation of forces.

Strategic asymmetry in effect means that nuclear weapons may serve slightly different functions in the arsenals of the superpowers, particularly with respect to their potential in Europe. As early as 1946 William Borden noted that the USSR may be tempted to do away with nuclear weapons once it has its own nuclear arsenal because the "Red Army would

81 See comments by Valentin Falin, a Soviet Central Committee official, on Moscow Domestic Television, March 1, in FBIS Soviet Union, 14 March 1980.
count for a great deal more if atomic weapons could be eliminated.\textsuperscript{82}
This option remains plausible because the Soviet Union need only have
sufficient nuclear forces to make American nuclear threats unbelievable to
recover the invasion potential of its armies, thus restoring Soviet power
to intimidate Western Europe.\textsuperscript{83} In this sense the superpower strategic
forces do not have the same task. This notion becomes more significant if
one doubts, as many do, that nuclear advantages which do not reach the
level of first strike superiority
affect significantly the practical ability of one nation
to threaten to impose its will on another or to shape the
outcome of political crises, other than those in which the
continued existence of the nation is at stake.\textsuperscript{84}
Thus if the credibility of using nuclear weapons may be reduced, a
primary obstacle to the Soviet military's preferred form of war, the
conventional offensive, would be removed.\textsuperscript{85}
At the strategic level, neither superpower appears content with
nuclear parity, and both have made efforts to achieve an advantage in
actual forces. Those of the American right wing that focus on the Soviet
nuclear construction of the late 1970's, calling it a build up "without
precedent in history," have overlooked the American strategic arms build
up in the 1960's.\textsuperscript{86} The American strategic nuclear construction programme

\textsuperscript{82} William L. Borden, \textit{There Will Be No Time: The Revolution in

\textsuperscript{83} Edward N. Luttwak, "Delusions of Soviet Weakness," \textit{Commentary}

\textsuperscript{84} Walter Slocombe, \textit{The Political Implications of Strategic Parity.}
Adelphi Paper 77 (London: International Institute for Strategic Studies,

\textsuperscript{85} Yossef Bodansky, "Nuclear Strike: A Soviet View," \textit{Jane's Defence

\textsuperscript{86} Bernard Brodie, "The Development of Nuclear Strategy,"
resulted in the United States fielding an advantage of about 8:1 by 1970, the first year portrayed by the C-4 line on chart three. The Soviet Union could not equalize this ratio until 1978. The implication of these massive construction programmes is that perhaps domination is, in theory, a more promising route to the disappearance of nuclear weapons. The extremely large numbers of nuclear weapons that make up the American and Soviet strategic forces probably result from the requirement to increase war termination options and maintain freedom to conduct limited coercive action, in spite of combat losses.

The strategic competition is also clearly evidenced by the marked increases in warheads and their increasing counterforce capability from 1970 to 1986. The Soviet advantage after 1978 may have given the Soviet Union a political edge in compellent scenarios in the sense that they would have greater wartime reserves and have the "last strategic move." Because the Soviet Union has shown in the past a propensity to value force, many American observers have expressed concerns that the Soviet Union would at some point expect to be able to achieve political objectives without overt military activities. Implicit in these concerns is the belief that decision makers in Moscow and Washington are

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convinced that political gains can be achieved through the manipulation of nuclear risks and that the nuclear "balance" can affect outcomes.\footnote{Richard K. Betts, \textit{Nuclear Blackmail and Nuclear Balance}, p. 132 and p. 214.}

Many analysts however also feel that to achieve political objectives requires an inherent superiority in either the will to fight or the capability to win. In the realm of strategic nuclear weapons, each superpower has in practice adopted a war fighting strategy through counterforce or first strike capability that considerably exceeds the requirements for deterrence.\footnote{Albert Langer, "Accurate Submarine Launched Ballistic Missiles and Nuclear Strategy," \textit{Journal of Peace Research} 14 (November 1977), pp. 41-58.} Although the United States strategic arsenal did reflect some deterrent restrictions in the early 1970s, by the 1980s the United States nuclear weapons as well as those of the Soviet Union were being increasingly improved to enhance counterforce and war fighting.\footnote{P. Edward Haley, David M. Keithly and Jack Merritt, \textit{Nuclear Strategy, Arms Control and the Future} (Boulder, Colorado: Westview Press, 1985), p. 31. Annexes E and M also show increasing CMP capability of modern weapons.} Both superpowers were engaged in a qualitative competition to field precise and flexible nuclear weapons that could provide selective nuclear options in war fighting scenarios. To support such options each superpower also sought an expanded mobilization potential, a feature of central importance in conventional or limited nuclear war.\footnote{Paul Bracken, "Mobilization in the Nuclear Age," \textit{International Security} 3 (Winter 1978/1979), pp. 91-92.}
the United States Secretary for Defence claims that its objective is to align Western strengths against persistent Soviet weakness in order to influence Moscow to allocate defence resources to purposes that are less threatening toward the United States. 95 The United States has long taken advantage of its maritime strength by placing a high percentage of its strategic firepower at sea and, through arms control proposals, by attempting to encourage the Soviet Union to do likewise. The Soviet Union has attempted to maximize its potential leverage over Western Europe by building a nuclear force completely capable of exercising limited options, yet it denies its willingness to engage in limited nuclear war. The Soviet adoption of the pledge to not be the first to use nuclear weapons also serves to maximize the utility of its conventional army without really diminishing the impact of its nuclear weapons. Recent Soviet defence policy, which appears increasingly defensive in orientation, may in reality be an attack on NATO strategy. 96

The implications of strategic competition seem to support the compellent paradigm as an appropriate explanation. Both superpowers have strategic belief systems that hold apparently different orthodoxies, but when analyzed from a force structure perspective, they may not be as mutually exclusive as many have assumed. 97 As long as the Soviet Union


and the United States have deployed a variety of comparable nuclear weapons systems, it may be that the asymmetry in conventional forces in Europe may be the most important military factor. Each nation appears to have methodically and deliberately constructed a nuclear force posture that optimizes counterforce targeting for war fighting objectives. Although the Soviet Union and the United States define the requirement for nuclear forces in terms of deterrence, the actual nuclear forces lend themselves well to compellent objectives should deterrence fail. In fact these massive forces would make little sense in retaliation, but they could further national objectives prior to, during and subsequent to war in significant ways. In terms of competitive strategies, the major consequence of a strategic advantage and the natural home of compellence is not so much war as the domain of crisis-management.

Compellence is not new to the history of international diplomacy. A widely respected study of force as an instrument of foreign policy determined that since World War Two, armed force, including strategic weapons, has been used more frequently to compel than to deter. This same study further noted that when the use of force was backed with strong strategic forces, whether or not nuclear force was threatened, the outcomes tended to be more favourable. Clearly such evidence supports

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100 Barry M. Blechman and Stephen S. Kaplan, Force Without War (Washington, D.C.: Brookings Institution, 1978), p. 85. From a sample of 79 cases, force was used to compel 31 times, about 27%.

101 Ibid., p. 531.
not only the notion that strategic forces can support foreign policy, but also that nuclear threats undoubtedly can at times support specific political interests quite successfully. This belief possibly underlay Kissinger's deliberate attempts to magnify the symbolic importance of, and to use threats to moderate Soviet policy in, what many considered to be non vital "outposts."\textsuperscript{102}

The belief that the correlation of nuclear forces matters is fundamental to the compellent process. The competition in nuclear force construction demonstrates that the two strategic rivals from 1970 to 1986 seemed genuinely interested in achieving any possible advantages that could be achieved without triggering an unwanted reaction on the other side. Although nuclear parity may have encouraged increased correlation of force competition in the political, economic and ideological "fronts," the military competition for strategic advantage was quite strong notwithstanding occasional thaws in political relations.\textsuperscript{103}

IV. CONCLUSIONS

Each superpower from 1970-1986 has built a massive nuclear force structure on what appears to be a competitive basis, ostensibly to deter the other from initiating a war which neither power wants. This strategic competition has focused on qualitative improvements primarily designed to enhance hard target kill, damage limitation and nuclear war fighting capabilities.


\textsuperscript{103} Michael Deane, "The Soviet Assessment of the Correlation of World Forces: Implications for American Foreign Policy," \textit{Orbis} 20 (Fall 1976), p. 630.
At the start of the period, the United States enjoyed approximately an 8:1 correlation of nuclear forces advantage in the event of nuclear counterforce exchange. Ten years later however, the Soviet Union had constructed a force that completely reversed this correlation and provided the USSR with a 3:1 ratio over the United States. Since that time the United States has struggled with limited success to reduce the Soviet’s correlation of nuclear force lead. This enduring and long term competitive process to achieve military advantages in strategic force structure seems to contradict the declaratory strategic policies of both superpowers which imply less not greater reliance on nuclear power.

The deterrent explanation for such massive nuclear forces and intense strategic competition relate directly to the concepts of demonstrating superior will, extending deterrence, war fighting as deterrence and being in a position to win should deterrence fail. These concepts have drastically stretched if not departed from the theoretical basis of deterrence established in the deterrent paradigm. While it is likely true that these massive nuclear arsenals have enhanced the superpowers’ ability to deter, they have also given them a concurrent capability to compel.

The compellent explanation provides a coherent rationale for these massive nuclear arsenals which are increasingly characterized by hard target kill capability, strategic defences and flexible counterforce targeting. Compared to nuclear forces that existed in 1970, those forces accumulated as of 1986 more closely represent those required to support the compellent paradigm. It also seems highly possible that the military leadership of each superpower has contributed to the continuity of force structure development in order to achieve war fighting objectives. That these tendencies have been allowed to succeed in bureaucratic battles in Washington or Moscow may well be in large part due to the wider belief
that a favourable correlation of nuclear force is better than an unfavourable one; in other words, it matters.

For the compellent paradigm to obtain, however, the possibility of some form of advantage through nuclear war must clearly exist. Even in 1946, Bernard Brodie placed a caveat on his belief that the chief purpose of military forces in the nuclear age must now "almost" be to avert or deter wars. When Albert Wohlstetter published his famous 1959 article noting the vulnerability of United States bombers to a surprise attack, he also demonstrated that victory in a nuclear war was still a significant possibility. Because the Soviet Union has consistently demonstrated an unsentimental rigour in matching means to ends, it is highly probable that a compellent view has influenced Soviet force structure decisions. If the Soviet and the American nuclear strategic force structures are increasingly similar in their war fighting orientation and the Soviet force structure rigorously matches their operational doctrine, then the concept of deterrence appears to have had far less impact on United States nuclear strategic force structure than has been commonly understood.

The correlation of nuclear forces model is particularly useful in

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104 Bernard Brodie, *The Absolute Weapon: Atomic Power and World Order* (New York: Yale Institute of International Studies, 1946), p. 76. See chapter one, footnote 32 where Brodie says "It can have almost no other purpose."


highlighting the competition in superpower strategic force construction programmes during 1970-1986. The competition to obtain military advantages beyond parity implies that compellence has been a significant factor in justifying strategic programmes, more so than deterrence. In spite of the ultimate requirement to deter, it appears that operational nuclear strategies are, at least in part, based on compellent thinking.
Chapter 10

CONCLUSIONS: STRATEGY OF AMBIGUITY

This dissertation has postulated that superpower nuclear strategy from 1970 to 1986 can no longer be adequately described by deterrence, that a significant degree of compellence exists in what are nominally deterrent strategies, and that a compellent paradigm may therefore also be necessary for the analysis of intercontinental nuclear strategy. Chapters one and two established deterrent and compellent paradigms based on the theoretical literature of the nuclear dilemma. To distinguish between the two paradigms, a framework for analysis was created which provided the tool used in chapters three to six for analyzing the declaratory strategy of the superpowers. To analyze the operational nuclear strategies more deeply, a Soviet designed correlation of nuclear forces model provided the necessary data for chapters seven to nine. This chapter will attempt to place this research into some historical perspective and present its major findings.

Warfare is not new to mankind, nor has it been made obsolete by the invention of nuclear weapons. Thus the possibility of nuclear war makes the degree to which nuclear weapons can be used to support foreign policy initiatives highly contentious and problematic. Michael Howard notes that most of mankind, throughout most of its history, "has lived in a condition of approximating more closely to war than to peace."¹ This view is supported by Lynn Montross who goes so far as to say that

if the experience of the centuries teaches any enduring lesson about war, it is that the heart of man has never been changed by any weapon his mind has conceived.²

Because the superpowers see each other as primary rivals, political, economic and military competition punctuates their mutual relationship, and therefore the risk of conflict escalating to war is very real. As no country (or alliance) facing the possibility of war can consider itself adequately defended against any other country (or alliance) "unless it has a range of capabilities matching those available to its opponents," both the Soviet Union and the United States have developed a nuclear weapons capability that can fight at various levels of intensity. When the degree of superpower political competition degenerates, however, to the point of questioning the legitimacy or sovereignty of a given regime (and each superpower has questioned the other's legitimacy), one is in fact challenging the basic organizing principle of international society. The fundamental question underlying superpower nuclear strategy is to what extent can nuclear weapons be used to support political strategy, even in the state-centric or realist school of international relations.

I. TWO COMPETING PARADIGMS

The deterrent and compellent paradigms differ significantly as to the degree that nuclear weapons can be used to support policy in the same way that other weapons do. Essentially, the deterrent paradigm accepts the premise that deterrence has replaced the traditional theory of war because nuclear weapons have created a revolution in security policy. Nuclear war is simply not a realistic policy option because it is


uncontrollable and results in mutual devastation. The compellent paradigm, on the other hand, reflects more traditional strategy in that war, even nuclear war, is still a policy option that could occur and must therefore be prepared for in strategic planning. A compellent strategy therefore would seek any nuclear advantage possible to ensure deterrence or to engage in compellence through the medium of threats, the aim of which is to encourage political accommodation to one's interests without fighting.

The deterrent paradigm gained a very influential position in the West during the 1960's due to the confluence of a number of factors, but one important factor was the intellectual power and eloquence of its proponents. Primarily civilian, these proponents of deterrence at the time received widespread acceptance as providing "solid intellectual fare that has served us well", but during the period 1970 to 1986 their view of international politics "has come increasingly to be challenged." Some have supported deterrence by maintaining that "strategy must be reconceptualized in the era of nuclear weapons", but others have insisted that deterrence is flawed and pre-nuclear strategy continues to have great relevance. Thus the Western consensus favouring deterrence as the


dominant paradigm has begun to unravel, helped by a growing belief in the 
1970's that the Soviet Union did not necessarily share the assumptions of 
dererence.

The modern proponents of deterrence, however, still rely heavily on 
previous works. Donald Snow, for example, believes that there is a 
growing consensus that Bernard Brodie was correct in 1946 in saying that 
the role of armed force in the nuclear age must be to avoid wars.\(^9\) To 
Snow, nuclear weapons are only useful for deterring nuclear first use. 
Others feel that the traditional confluence of "realism" and 
"prudentialism" have been undermined by the awesome destructive power of 
nuclear weapons.\(^10\) Deterrence is becoming increasingly understood to imply 
no first use such that the utility of nuclear weapons according to the 
deterrent paradigm appears to be decreasing in international politics.

Although deterrence has a powerful appeal as a coherent rationale 
for nuclear weapons, it falls short in heuristic terms in that it cannot 
explain the resort to force in many cases.\(^11\) Thus a big problem for 
deterrence is its inability to delineate the conditions under which it 
will succeed unless one's opponent is extremely "risk adverse".\(^12\) For the 
United States, the fact that the Soviet Union had adopted a "risk 
minimizing" attitude for much of the period under discussion meant that

\(^9\) Donald M. Snow, National Security: Enduring Problems of United 

\(^10\) Avner Cohen and Steven Lee, "The Nuclear Predicament," in their 
Nuclear Weapons and the Future of Humanity: The Fundamental Questions 

\(^11\) Robert Jervis, Richard Ned Lebow and Janice Gross Stein, 
also Michael E. Brown, Deterrence Failures and Deterrence Strategies 

\(^12\) Frank C. Zagare offers a very good analysis in The Dynamics of 
deterrence advocates continued to believe that deterrence "worked." For the Soviet Union, however, the "risk maximizing" attitude of the United States probably minimized the influence of deterrent advocates in the Soviet Union or at least made them define deterrence in significantly different ways. The confusion and ambiguity surrounding the appropriate uses of nuclear weapons in each superpower have served to mask the compellent aspects of what were nominally deterrent strategies.

The compellent paradigm accounts for offensive strategy in the nuclear era; it is to conventional offence as deterrence is to conventional defence. As soon as deterrence strategy inherits the requirement to fight should deterrence ever fail, then from a theoretical viewpoint, it confuses the conceptual paradigm of deterrence with the necessities of fighting a war. The compellent paradigm accounts for these war fighting necessities. It removes much of the distinction between aggressor and defender as it is available to either side. It involves accepting risks to force the opponent to act in a certain manner. Even though the probability of compellent success when the stakes are extremely high may actually be relatively low, the compellent paradigm


provides for optimizing the chances of success through the medium of perceived advantage wherever possible.

Compellent thought thus encompasses the traditional meaning of strategy. It implies a continuity in the operating principles of international politics in that the traditional meaning of power still has some relevance.\(^{18}\) During the period 1970 to 1986 at least one observer, in his criticism of minimum deterrence, noted that it is through the medium of perceptions that strategic arsenals generate political power; thus nuclear suasion exists, whether we recognize it or not.\(^{19}\)

Although the deterrent and compellent paradigms stem from the same original theory, "the diplomacy of violence",\(^{20}\) they separate quickly into distinct patterns of thinking. The fundamental problem with the rather loose label of deterrence theory is that neither its proponents nor its assailants have fully recognized these distinct thought patterns. This may have a great deal to do with the fact that declaratory strategy has been overly focused on deterrence, not compellence. These two ways of thinking are sufficiently different to warrant being placed into paradigmatic constructs, but only the compellent paradigm provides an explanation to account for the co-existence of deterrent and compellent motivations in nuclear strategy.

II. THE PARADIGMATIC FRAMEWORK

The framework used in this thesis seeks to differentiate deterrent

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from compellent thought, based on discussions found in contemporary theoretical literature. It is simply a heuristic tool to assist in organizing the large quantity of material available and to guide the analysis in such a way as to distinguish those elements of compellence that may be found in modern nuclear strategies. Table One presents this framework in summary form.

**TABLE 1**

FRAMEWORK FOR PARADIGMATIC ANALYSIS

<table>
<thead>
<tr>
<th>STRATEGIC INTENTIONS</th>
<th>Deterrence</th>
<th>Compellence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utility of Nuclear Weapons</td>
<td>Limited</td>
<td>Expanded</td>
</tr>
<tr>
<td>Status Quo</td>
<td>Supports</td>
<td>Attacks</td>
</tr>
<tr>
<td>Political Values at Stake</td>
<td>Core</td>
<td>Peripheral</td>
</tr>
<tr>
<td>THE THREAT TO USE FORCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of Threats</td>
<td>Lower</td>
<td>Higher</td>
</tr>
<tr>
<td>Nuclear Targeting</td>
<td>Countervalue</td>
<td>Counterforce</td>
</tr>
<tr>
<td>Limited Nuclear War?</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Contingency</td>
<td>General</td>
<td>Specific</td>
</tr>
<tr>
<td>Perceptions of Other’s Threat</td>
<td>To Deter</td>
<td>To Compel</td>
</tr>
<tr>
<td>CORRELATION OF NUCLEAR FORCES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of Nuclear Systems</td>
<td>Lower</td>
<td>Higher</td>
</tr>
<tr>
<td>Quantity of Nuclear Systems</td>
<td>Lower</td>
<td>Higher</td>
</tr>
<tr>
<td>Expected combat ability (in relation to opponent)</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

This section will review some key elements that surfaced from the paradigmatic analysis of superpower nuclear strategy. It will conclude with a net assessment of that framework for future applications.

1. **The Strategic Intentions**

   Both the United States and the Soviet Union have demonstrated deterrence and compellence in their nuclear strategies during the period
in question. In terms of superpower strategic intentions from 1970 to 1986, declaratory policy tended to stress deterrence, but acquisition and operational policies tended to indicate the presence of significant compellent thinking.

With respect to the utility of nuclear weapons in supporting foreign policy, both superpowers have shown tendencies that engender the belief that nuclear weapons do have an impact. The relevance of force in the world is not necessarily diminishing,\(^{21}\) and the United States and the Soviet Union have created tens of thousands of nuclear warheads in the belief that their existence matters.

In general the United States supported the status quo on a broad basis, but the Soviet Union limited its support for the status quo for the most part to Eastern Europe. The Soviet Union sought greater political accommodation from Western Europe while the United States pursued a policy that sought to modify Soviet behaviour. To the extent that nuclear weapons support any threat of military action and to the extent that each superpower's foreign policy is at times clearly backed by its military power, those aims that seek a change in the opponent's foreign, military or domestic policies imply a degree of compellence. One observer even felt that the intensity of the superpower competition was comparable to a war.\(^{22}\) In this competition, reliance on deterrence alone to achieve one's aims, according to recent research, "can be difficult if not impossible".\(^{23}\)

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be the fact that the Soviet Union as a newly powerful state has felt that its growing military strength was not matched by the appropriate degree of recognition.24

Even though political relations between the superpowers are at times good, the contest between them is clearly based on a difference of fundamental values. Not only did Marxism-Leninism question the legitimacy of the American regime, but Western morality also questioned the legitimacy of the Soviet regime.25 The prospect that these fundamental beliefs will moderate sufficiently to end political conflict appear illusory. In spite of the improvement in Soviet-American relations, the United States recognized the fundamental fact that the American-Soviet relationship is essentially adversarial and will likely remain so for the foreseeable future.26 Gorbachev reflected the same tone when he noted that there is an intense class struggle with sharp clashes between two dramatically opposed approaches to international relations.27

A key finding from the analysis of strategic intentions is the degree of ambiguity in superpower objectives. The ambiguity appears deliberate, and it allows compellence to exist in what are nominally deterrent policies. All three variables assessed in this section proved useful in this paradigmatic analysis but the degree to which policy


supports or rejects the status quo is perhaps the clearest indicator.

2. The Threat to Use Force

During 1970 to 1986 the threat to use force, especially nuclear weapons, remained primarily covert and indirect. In fact no nuclear power has ever openly used a direct nuclear threat against another nuclear power to force it to retreat from a given position. Due to the hedged or uncertain nature of most superpower threats to use force, the same ambiguity as noted in the previous section surrounds nuclear strategy.

Although there is increasing support that a revolution in strategic warfare may be beginning and that nuclear weapons may eventually be replaced by conventional weapons, from 1970 to 1986 no decrease in superpower reliance on nuclear force was evident. If anything, increased counterforce targeting strategies and the enhanced flexibility of modern nuclear weapon systems appeared to increase reliance on credible nuclear threats to support conventional forces. In the 1960's deterrence and defence were defined as being substantially antithetical, but by the 1980's it appeared that the defence and deterrent functions were being viewed as complementary. Throughout this period, war fighting at levels far short of striking countervalue targets seemed to be the driving force behind nuclear strategy.


Even though each superpower professes deterrent motivations, it tends to perceive the other's nuclear strategy as being particularly dangerous. When the United States and NATO emphasize their deterrent aspirations, the Soviet Union and the Warsaw Pact likewise emphasize the priority need to use "political measures as the means of first resort" in pursuit of foreign policy objectives. In spite of this, American politicians perceive the Soviet doctrine of preemption as clear evidence of malign intent, while Soviet leaders feel threatened by American tactical nuclear deployments close to Soviet borders. As long as each perceives the other as a dangerous rival seeking some form of strategic advantage to support its quest for increased global influence, the prospects for strategic arms control are poor. Furthermore, these perceptions demonstrate the possibility that certain people tend to ascribe compellent tendencies to the rival superpower because they themselves tend to view the world from such a paradigm.

Whenever political relations deteriorate between the superpowers, as inevitably they will from time to time, the spectre of nuclear war looms larger, and this fuels public fear that in some ways parallel the British fears of German bombing in the 1930's. The Soviet Union has been particularly adept at using these fears to political advantage by offering to "spare" certain NATO countries if they renounce nuclear weapons. The Soviet suggestion that they would respect a Nordic nuclear weapons free zone in Norway which lies adjacent to the Kola Peninsula


(perhaps the most heavily armed area in the world) is a case in point.

Among the variables used to analyze the threat to use force, the nature of nuclear targeting, the flexibility of nuclear forces to engage in limited war and the perceptions of the other superpower's threats appear the most promising as paradigmatic indicators. On balance the years 1970 to 1986 show a significant presence of compellence in these key areas.

3. Correlation of Nuclear Forces

The analysis of the correlation of nuclear forces reflects a belief in each superpower that the balance of forces does in fact matter, perhaps to a significant degree. If the nuclear future continues to offer neither use of nuclear weapons nor disarmament as has been the case during this period, then both deterrence and compellence will probably continue as determinants of nuclear strategy. Through the medium of the correlation of nuclear forces model in chapters seven to nine, the compellent paradigm clearly explained more fully the development of superpower nuclear force structure from 1970 to 1986. The quantity, quality and the expected combat ability of nuclear strategic systems all proved useful aids to the identification of compellence.

Deterrence does not require a power advantage as a necessary nor sufficient condition to work, but to be successful compellence usually does. Should a clear nuclear disparity arise, it became increasingly accepted that the stronger would be able to act strongly and the weaker

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35 Frank C. Zagare, The Dynamics of Deterrence, p. 176.
must act with great circumspection. The correlation of nuclear forces model, therefore, not only represents a significant Soviet view at an important time, but it also graphically illustrates, albeit in a rough order-of-magnitude fashion, the tendency of each superpower to enhance its strategic position vis-à-vis the other.

What this model in fact demonstrates is a tendency for each superpower to accept the combat utility of a given weapon system as apparent justification for its construction. This process has also been labelled "nuclearism" by one author who further describes it as a commitment to possess large numbers of increasingly refined nuclear weapons that is "rooted in the statist politics of the survival of the fittest." Although this whole evolution has been for the most part justified under the rubric of deterrence, according to Colin Gray, the concept of mutual deterrence has not been the primary determinant of nuclear strategy in either superpower. The evidence from the correlation of nuclear forces model tends to support the contention that a situation of mutual deterrence through assured destruction exists in spite of the superpower competition to find strategic advantage.

4. Implications of The Paradigmatic Analysis

Although significant ambiguity exists in declaratory nuclear

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37 Philip K. Lawrence, Preparing For Armageddon: A Critique of Western Strategy (Sussex: Wheatsheaf Books, 1988), p. 12. This author is in the deterrent paradigm and is highly critical of Reagan's strategy.

strategy, the operational nuclear strategies, as evidenced by superpower nuclear force structures, appear specifically designed to support compellent as well as deterrent policies. Notwithstanding the strong compellent tendencies from 1970 to 1986, however, there remains some evidence that the strategic competition was being conducted within certain limits to avoid provoking a rival superpower reaction.

The notion of restraint is evidenced by the relatively small percentage of funds, in relation to overall defence budgets, spent on strategic forces. Each could devote much more funding to its strategic forces if it wished to do so. There are also clear limits to the feasible degree of flexibility in strategic war planning, which may have already been reached.39 There are still serious arms control negotiations on strategic weapons that to some degree imply a desire to stabilize this nuclear competition. These negotiations and restraints do modify the strategic competition somewhat such that neither pure deterrence nor pure compellence determines the strategic interaction.

One key finding that helps account for the discrepancy between declaratory and operational nuclear strategy is the fact that military officers tend to reflect the compellent thought process in each superpower. Military officers appear to consistently value war fighting systems in order to obtain the advantages necessary to enforce one's will in combat. It may be that political leaders tend to deterrent explanations and rationalizations, but the military officers who eventually may be required to use these weapons have been consistently trained to seek victory in war. During the SALT process Kissinger commented that

both sides have to convince their military establishments of the benefits of [arms control] restraint, and that is not a thought that comes naturally to military people on either side.\textsuperscript{40}

It may be that some individuals see nuclear strategy from a perspective more accurately described by the deterrent paradigm, but others view it from a compellent perspective. Thus it is possible that some military, industrial and other elites with a primarily compellent perspective could exert significant influence on military requirements, the resultant procurement decisions, and ultimately the implementation of nuclear strategy. This hypothesis warrants future research, but there are significant indications that to some degree, this may be the case.

Another explanation for the ambiguity in nuclear strategy is that it is designed to conceal something. In the United States various administrations have established the present nuclear forces to ensure deterrence of a Soviet threat, thereby perhaps deliberately downplaying their offensive or compellent functions.\textsuperscript{41} The Soviet Union appears to have made a significant shift in declaratory strategy towards deterrence, but it has not yet let up in any strategic nuclear construction programmes that tend to give it a compellent advantage.

The ambiguity in strategy fuels the suspicions of the other side, and arms control becomes a political forum wherein it becomes exceedingly difficult to establish accepted rules of behaviour. The paradigmatic framework provides sufficient tools of analysis to identify the extent of compellence in nuclear strategy, and it can be applied to statements, acts, policies or even arms control proposals. The clear evidence of

\textsuperscript{40} Henry Kissinger, "News Conference at Moscow, July 3," Department of State Bulletin vol. 71 (July 29, 1974), p. 216.

compellent thinking indicates that compellent and deterrent motivations exist in each superpower's nuclear strategy, making the compellent paradigm the more appropriate explanation.

III. SUPERPOWER NUCLEAR STRATEGY - AN ASSESSMENT

Each superpower has displayed tendencies to compellence that are difficult to explain by the accepted or dominant deterrent paradigm. This section will review the key findings and conclusions of this dissertation with respect to the United States and the Soviet Union 1970 to 1986.

1. The United States

In the early 1970's the United States had a significant correlation of nuclear forces advantage, but the deterrent paradigm seemed to dominate nuclear strategy. Arms control talks and détente appeared to many to be leading to a better world where mutual vulnerability would provide a stable strategic relationship. At that time the American operational nuclear planning envisaged the use of tactical nuclear weapons and the consequent threat of uncontrolled escalation as the primary means of deterring the Soviet Union, but at the strategic level no significant flexibility existed. Any American resort to strategic nuclear weapons, its ultimate deterrent, would be massive in scale to guarantee assured destruction of the Soviet Union.

As soon as Nixon came into office as president, he realized the appalling nature of the American choice and began work on more selective options. By 1974, National Security Decision Memorandum 242 provided for a greater variety of options for retaliation using the existing nuclear forces. The trend toward greater flexibility of strategic targeting continued under Carter, and his Presidential Directive 59 sanctioned the
growing desire to build counterforce capable weapons to defeat hardened Soviet ICBM silos and underground command bunkers. Reagan's National Security Decision Document 13 went even further by seeking to prevail in a protracted nuclear war, and by 1986 arms control had almost degenerated into a propaganda exercise for political purposes. Throughout this evolution from deterrence toward compellence, American nuclear targeting strategy focused primarily on military targets, but it was not until the late 1970's that the American technical efforts permitted immediate counterforce applications.

American strategic culture not only permitted but may in fact have encouraged the embracing of technology as the most appropriate means of solving strategic problems. According to one Soviet analyst, the United States' acceptance of nuclear weapons was equivalent to a theology, and this belief drove the United States to seek a more active nuclear strategy in the attempt to solve political problems. Moreover, although the United States was clearly disturbed by Soviet strategic construction programmes, a certain degree of technological momentum marked American acceptance of increasingly sophisticated nuclear systems. To support this greater degree of sophistication, defence spending on strategic systems increased steadily and significantly from 1976 to 1986.

Increasing the sophistication of weapon systems created greater obstacles for arms control negotiators, and from SALT I through SALT II

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43 Technological progress on both sides has been steady, incremental and symmetrical. Although it is an important factor, it does not appear sufficient in itself to account for the degree of compellence in superpower strategy. See Eugene B. Skolnikoff, "The Technological Factors Shaping East-West Relations," in Stephen F. Larrabee, ed., Technology and Change in East-West relations (Boulder, Colorado: Westview Press, 1988), p. 36.
to START, the United States placed great faith in its technology, refused to negotiate away its advantages and pressed for Soviet concessions in areas that would improve the correlation of nuclear forces from an American perspective. The deterioration of political relations helped fuel the American drive to regain its previous nuclear advantage, and it contributed toward significantly increased compellent tendencies. The steady shift in the correlation of nuclear forces to a significant Soviet advantage occurred from the mid 1970's until the early 1980's, and it probably contributed to the United States' decision to undertake new strategic programmes. In 1970, when the United States had an eight to one correlation advantage (C-4), its forces appeared designed to attack only soft targets. By 1986, however, the United States had fielded a larger and more flexible nuclear force structure that was increasingly hard target capable and appeared designed to support compellence, not deterrence. Harold Brown offers an explanation:

> behaviour in periods of tension can be (and in my judgement is) influenced by the nature of the strategic capabilities and the relative balance of strategic forces, even if the use of those strategic forces is very unlikely.\(^4^4\)

The NATO alliance appears to have had a marginal impact on American strategic weapons procurement, but the influence it does exert appears mixed. NATO strategy 1970-1986 was to deter any Soviet attack by threatening first use of nuclear weapons to compel a change in Soviet behaviour. In Europe, the major concern is to maintain a credible link to American strategic weapons so that deterrence is maintained and the threat of limited war in Europe is minimized. Nuclear weapons in the Alliance are mostly American and are targeted on military forces such that they

also have a war fighting function. In operational strategy the NATO situation thus creates a requirement for compellent war fighting systems even though the primary objective of the Alliance is deterrence.

Overall, United States nuclear strategy from 1970 to 1986 displays many characteristics of both deterrence and compellence, but in particular the analysis of arms control negotiations and actual nuclear force structure improvements display a significant and steadily increasing propensity to compellent thinking throughout this period. United States leaders, according to George Kennan, have established a self fulfilling prophecy by talking and acting for years "as though the balance of military power was the only significant factor determining the future of Soviet-American relations."45 Although American declaratory strategy continues to emphasize its deterrent aspects, the compellent paradigm appears to offer an increasingly appropriate account of American operational nuclear policy and deployment. In 1986 the United States appears to have a significantly greater number of leaders who may find themselves intellectually more comfortable with the compellent paradigm than it had in 1970.

2. The Soviet Union

Soviet nuclear strategy in 1970 appeared to be based on achieving deterrence through defence, and senior military leaders appeared to entertain the notion that nuclear war, as any war, could be won or lost. The primary Soviet strategic requirement was to deter the United States from resorting to nuclear weapons in spite of a significant American correlation of nuclear forces advantage and at the same time to support an

ideologically motivated and assertive Soviet foreign policy.

The analysis of Soviet strategic culture shows strong support for the war fighting function in nuclear strategy not because it is felt that nuclear war can easily be won, but because the possibility of fighting with nuclear weapons does exist and therefore must be accounted for in strategic planning. Soviet strategy included maintaining an offensive capability supported by a favourable conventional correlation of forces in Europe in order to maintain political control of East Europe, to apply some pressure to encourage greater West European accommodation to Soviet interests, and to ensure that should war occur that it would not be fought again on Soviet soil. Nuclear weapons supported this strategy and the regarding of nuclear war as another form of traditional war implied significant elements of compellent thinking in Soviet strategy in spite of its poor correlation of nuclear forces at the time.

Soviet operational and declaratory nuclear strategy evolved from 1970 to 1986, but, contrary to the American experience where both declaratory and operational strategy drifted to varying degrees towards compellence, in the Soviet Union they took contradictory paths. Soviet declaratory strategy has drifted increasingly towards using deterrent rhetoric in spite of the fact that the qualitative change in the correlation of forces has granted a new primacy to the Soviet Union, not only in the communist movement, but in world politics generally.46

Since Brezhnev's speech at Tula in 1977, the year Brezhnev was appointed Marshal of the Soviet Union and a civilian made Soviet minister of defence, Soviet political leaders have emphasized the fact that nuclear war would have no winner, only losers. By 1982 the Soviet Union

officially affirmed that it would never be the first to use nuclear weapons and in 1983 the Soviet military chief of staff who had objected to these pronouncements was removed from Moscow. The events of the Reykjavik conference and the INF Treaty provided further indications that Soviet nuclear strategy may in fact be changing. Other indications that could support a deterrent explanation to Soviet strategy included the slowing of growth in Soviet defence spending and the apparent rejection of limited nuclear war.47

Other indications, however, demonstrated that significant compellent tendencies remained. In arms control, while it appeared on the surface that the Soviet Union had accepted mutual vulnerability and stability by accepting SALT I and agreeing to curtail strategic defences, the Soviet motives were probably quite different. SALT I sanctioned a significant quantitative Soviet offensive advantage and appeared to permit every strategic force structure improvement that the Soviet Union had planned. During SALT II and START the Soviet Union significantly improved its nuclear forces while insisting on a political arms control agreement that would continue to allow an advantageous correlation of nuclear forces.

Warsaw Pact, or rather Soviet, strategy in Europe also had significant compellent aspects. Although the primary objective of Soviet nuclear strategy in Europe was to deter NATO from resorting to nuclear weapons, operationally, the Soviet military long considered pre-emption as the best way to fight with nuclear weapons. Consequently Soviet nuclear strategy sought first effective use of nuclear weapons in war. From 1970

47 After 1988, Soviet defence spending has actually been cut, and in 1987 the Soviet Union/Warsaw Pact adopted the defensive doctrine of "reasonable sufficiency." See "The Foreign Policy and Diplomatic Activity of the USSR" (April 1985 - October 1989)," International Affairs (January 1990), pp. 18-26. So far these changes have not had any effect on strategic weapons.
to 1986 the Soviet military held and increased a significant advantage in long range theatre nuclear weapons which implied Soviet escalation dominance and at the same time supported a pre-emptive strategy. The 1987 INF Treaty has only reduced this advantage not eliminated it, but at the same time it removed a major threat to the Soviet strategic correlation of nuclear forces.

NATO Pershing II missiles were judged by the Soviet Union to be capable of destroying hard targets in Moscow within ten minutes of launch, giving the Soviet leadership less than five minutes warning time of a nuclear attack. Given that the SRF and the KGB appear to have a dual key launch arrangement, a good possibility existed that the central leadership could be effectively, if temporarily, incapacitated or destroyed. This spectre could result in an American first strike being able to neutralize most if not all Soviet strategic defences, attack Soviet ICBM's in their silos and allow superior American submarines a period of time to destroy those SSBN's at sea. In short the Pershing II, in conjunction with MX, Trident II and SDI threatened to alter drastically the correlation of nuclear forces to the detriment of the Soviet Union.

In the Brezhnev era, it is highly probable that correlation of forces analysis of some sort drove Soviet strategic thinking. The correlation of nuclear forces analysis suggests that Soviet operational nuclear strategy, as opposed to declaratory policy, was designed primarily to fight. From


1970 to 1986 strategic nuclear forces have gained a tremendous degree of hard target kill capability, targeting flexibility and survivability. By deliberate policy the Soviet Union designed, developed and deployed a nuclear force structure that completely reversed the correlation of nuclear forces within ten years.

While Soviet declaratory nuclear strategy appeared increasingly deterrent in nature, Soviet operational strategy remained primarily compellent. Even so at least one analyst believes that Soviet strategic policy can be explained in terms of deterrence in spite of the fact that Soviet strategy seeks to achieve deterrence through war fighting and damage limitation concepts. The Soviet Union appears increasingly able to accept the fact that mutual deterrence obtains, but it does not embrace it as a firm foundation for strategy. The powerful Soviet force construction and significant compellent tendencies in all aspects of strategic policy demonstrated that, although deterrence was important, the compellent paradigm better described Soviet nuclear strategy.

3. The Competition of Unengaged Military Strategies

The deterrent and compellent paradigms are artificial constructs that have different requirements in theory to effect their desired consequences. The preceding analysis demonstrated that significant elements of deterrence and compellence appeared in superpower nuclear strategy as it was practised from 1970 to 1986. As compellence generally requires a significant advantage and its demands for nuclear forces are theoretically higher, a force structure designed to compel can also deter, whereas a force structure designed to deter may not necessarily and

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probably will not be able to compel. Therefore it seems clear that the compellent paradigm and the correlation of nuclear forces model provide far more suitable tools to analyze nuclear strategy.

Both the Soviet Union and the United States appear to have paid close attention to the correlation of nuclear forces in one way or another. The compellent paradigm offers a powerful explanation of each superpower's calls for a nuclear freeze and the Soviet official declaration of no first use. Each initiative occurred at a time when the initiator had recently achieved what appeared to be the most advantageous correlation of nuclear forces in years and faced the prospect of a declining correlation of nuclear forces in subsequent years. Each superpower also appears to hold a slightly more relaxed attitude toward the other power when it has a significant correlation of forces advantage; i.e. the United States in the early 1970's and perhaps the Soviet Union in the late 1980's. But when each superpower sees the other developing nuclear systems that threaten to give them a significant correlation of forces advantage, each tends to assume the worst of its opponent.

The increasing competition in arms control from 1970 to 1986 demonstrated that, even in what is designed to be a cooperative forum, each superpower was engaged in a competition of unengaged military strategies. Deterrence simply cannot properly account for this process, but compellence does. The difference between declaratory and operational nuclear strategy confuses the issue by creating significant ambiguity as real capability and apparent intentions diverge. The correlation of forces model reveals these tendencies in a comprehensive and dramatic fashion, and the compellent paradigm more accurately portrays the reality

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51 For the United States the date was 1963 and for the Soviet Union the date was 1982.
of superpower nuclear strategy.

IV. FUTURE APPLICATIONS

The powerful degree to which compellent thinking appears to have penetrated superpower nuclear strategy raises important and fundamental questions that time and space limitations have precluded from this dissertation. It implies a paradigm of domination that could lead to a dangerous diversion of potential resources from investment or even to violence. To determine how and why this has occurred requires further research. The most important question however may be to what degree compellent thinking would affect a superpower crisis.

In periods of extreme tension, the way leaders and their key advisors think will to a large extent determine how a given crisis unfolds. In the Cuban missile crisis, for example, it now appears that the top American politicians and military leaders held significantly different views as to how to proceed. Kennedy and McNamara appeared to reflect primarily deterrent thinking, but the Joint Chiefs of Staff tended to mirror compellent thought "to rub in Soviet inferiority." The more that leaders and their advisors share a compellent view of the world, the more prone that nation may be to compellent action in a crisis. The degree of compellence evident in superpower strategy has grave implications for crisis stability, especially considering that nuclear strategy has not accounted for war termination.

The disturbing nature of these implications may have already been


recognized, and they may in part account for the increasing momentum toward using conventional weapons only. After the shock of Cuba, the frequency and the severity of nuclear threats has been less, and a general decline in actual nuclear coercion may have occurred.\(^{54}\) Because this tendency is not reflected in nuclear force construction in either superpower, its meaning is not yet clear.

Perhaps technological momentum is still a major force behind the degree of compellence found in nuclear strategy. Technology is seldom questioned for it has become the organizing principle of our age.\(^ {55}\) In fact many believe that in the realm of strategy, we tend to focus unduly on the technological aspects rather than on those regions of human understanding based on our knowledge of social development, cultural diversity and patterns of behaviour.\(^ {56}\)

The correlation of nuclear forces model certainly focuses on the technological nature of modern strategy, but it also highlights an important pattern of human behaviour. It provides a more comprehensive standard to measure the nuclear relationship, and it can be extremely useful in revealing or assessing the thinking behind proposed additions to nuclear forces or specific arms control proposals. The potential impact of a given arms control proposal could in fact be plotted on the various correlation of nuclear forces charts, and thus its real impact could be more readily demonstrated. This model could also be used to conduct mathematical sensitivity analysis to determine the most important


strategic variables in a given situation. In this way strategic force improvements can be optimized to obtain the best pay off in terms of the correlation of forces. No doubt a version of this model was probably used in the Soviet Union, 1970-1986.

Compellence is probably playing a much larger role in shaping reality than heretofore recognized, and knowledge of that fact will allow analysts to better deal with the nuclear dilemma. As long as nuclear weapons are considered military weapons and dispersed throughout armed forces, and those armed forces are increasingly capable of fighting nuclear wars, the operating strategic paradigm is critically important. Deterrence and compellence may not be as distinct as theory once postulated. Their subtle interrelationship means that, in practice, all those working within the deterrent paradigm may share an incomplete view of a fundamental problem confronting man. As compared to the deterrent paradigm, the compellent paradigm better explains the reality of nuclear force construction, the ambiguity in current nuclear strategy and the imbroglio in strategic arms control during the late 1970’s and 1980’s.
Annex A  The Methodology Used in Calculating the Correlation of Nuclear Forces

I. THE CORRELATION OF NUCLEAR FORCES MODEL

The correlation of nuclear forces calculations needed in this study are based on Anureyev's equation:

\[ C = \frac{\sum_i U_i \times P_i \times S_i}{\sum_j U_j \times P_j \times S_j} \]

where

- \( C \) = the correlation of nuclear forces,
- \( C_0 \) = the initial ratio of total EMT of country i over the total EMT of country j with all weapon systems summated,
- \( U \) = the fraction of a given country's EMT that is carried by a given type of weapon system,
- \( P \) = the probability that a given type of weapon system will successfully penetrate the other country's defences and reach its target, and
- \( S \) = the probability that a given type of weapon system would survive an attack upon it.

Since \( C_0 \) in itself is not terribly important other than for historical reference, this equation can usefully be reduced and expressed as follows:

\[ C = \frac{(n_{ia} + n_{ib}) \times (U_{ia} \times P_{ia} \times S_{ia} + U_{ib} \times P_{ib} \times S_{ib})}{(n_{jc} + n_{jd}) \times (U_{jc} \times P_{jc} \times S_{jc} + U_{jd} \times P_{jd} \times S_{jd})} \]
or

$$C = \frac{\sum_i n_i(EMT_i) \times P_i \times S_i}{\sum_j n_j(EMT_j) \times P_j \times S_j}$$

where \(n\) represents the number of a given weapon system, and \(a, b, c, d\) represent specific types of weapon systems in each country. Each weapon system for each country must be calculated independently as each will have different values. Within each country the resultants for each weapon systems are added and the final ratio expresses the correlation of nuclear forces. This formula can be derived from Anureyev's original formula, or it can be derived from first principles.

Since ICBM's, SLBM's and bombers all have different strategic problems to overcome, the calculations for each vary somewhat. ICBM survivability is a function of the opposing side's prompt hard target kill capability, thus bomber or ALCM attacks could not be used effectively against ICBM silos. Bombers have the largest difficulty in penetrating to their targets, but depend on adequate early warning for their survivability. SSBN's must be able to withstand specific enemy ASW operations in their patrol areas to survive in combat. Differentiated and detailed calculations are therefore necessary to determine reasonable probabilities of penetration and survival for each specific weapon type. As noted in chapters seven and eight, in this study many judgments had to be made based on the unclassified evidence.

II. ASSUMPTIONS

1. The numbers of weapons systems and their respective yields were derived from standard open sources, the major sources being listed at the
Reliability, availability and accuracy were also compiled or interpolated from the same open sources.

2. Bias is assumed to not be a significant factor. As noted in chapter seven, because polar trajectories have never been actually attempted, this assumption is not without controversy.\(^1\) Complex mathematical formulae have been developed that defence experts believe result in a rough order of magnitude error of about 15 feet, an error of minimal strategic significance.\(^2\) Both the United States and the Soviet Union have invested a great deal of effort to make ICBMs as accurate and as precise as possible, and recent technical studies have indicated that bias is not a serious problem.\(^3\) One factor that mitigates accelerometer errors (bias) is the increased ability to update INS systems after the boost phase. Thus for the modern missiles fielded in the late 1970’s and 1980’s, midcourse updates can correct most bias errors. For older systems, their counterforce potential was so low that even if the bias error was significant, the impact on the correlation of nuclear forces calculations would be negligible.

3. New systems or modifications were introduced over a span of 3 years unless more specific information was available.

4. All command and control targets in missile fields were hardened to at least that of the hardest missile silo in that field.

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5. The respective bomber and SSBN forces could be covered by attacking 50 American targets, or 20 Soviet targets.

6. The Soviet Union has 330 nuclear command and control targets and attacks on them are .5 effective due to interconnectivity and redundancy.

7. The United States has 110 nuclear command and control targets and attacks on them are 1.0 effective due to fragility of ground based command and control systems.

8. To calculate exchange models, the highest CMP or K value was targeted on highest overall K value SNDV to optimize counterforce exchange rates.

9. The SS-N-18 warhead yields were undetermined at the time of calculation. This study used those yields allocated by John M. Collins.

10. Since SSBN's can launch independently, the destruction of communications to them in nuclear war had no immediate impact on the correlation of nuclear forces.

11. The scientific revelations of nuclear winter have had no significant bearing on superpower nuclear strategy 1970-1986. Since the nuclear winter theory was only introduced in 1984, it could have had no impact whatsoever prior to that date. In fact this theory initially was met with certain skepticism, and considerable debate ensued as to the degree of its likely veracity. After intense scientific review and after the 1987 disaster at Chernobyl, however, there is now general acceptance that even a controlled intercontinental nuclear exchange would contaminate vast areas and result in at least some major climatic effects that together

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4 R.P. Turco, et al, "Nuclear Winter: Global Consequences of Multiple Nuclear Explosions," Science 222 (23 December 1983), pp. 1283-1292. This is the original article referred to as TTAPS after the first letter of the authors names. By fall of 1984 this concept had been given "some" attention in both superpowers. See Carl Sagan, "We Can Prevent Nuclear Winter," Parade Magazine (30 September 1984), p. 35.
would cause a significant reduction in world food production.\textsuperscript{5}

III. METHODOLOGY

1. **Data collection.** The first step was to compile all data available from open sources on Soviet and American delivery systems for a given year (annexes B, C, D, E, H, J and K).

2. **Lethality.** SSKP and survivability probabilities are calculated to indicate which system could best destroy which target. To determine ICBM survivability or lethality against various hard targets, the formula derived from the General Electric calculator described in chapter seven was used.

3. **Exchange model.** An exchange model was created whereby each side covered the opposing target array with at least one but optimally two warheads per target. Some SNDV’s were to be launched, others to be held in reserve.

4. Overall $T_{KP}$ for each missile target was calculated using the above data. OAR and SSKP values were used to determine $T_{KP}$ as follows:

   \[
   \text{overall } T_{KP} = T_{KP_1} + (1-T_{KP_1}) T_{KP_2}.
   \]

5. Survivability, penetration and command and control factors were calculated, and these factors were used to determine the adjusted number of surviving systems on each side should an exchange take place.

6. The EMT that would remain as surviving residuals was calculated.

7. The correlation of nuclear forces baseline C-1 was completed using Anureyev's formula, assuming the exchange model would be actioned on both sides simultaneously. All forces are treated as residuals for the C-1 calculation.

8. Calculate USSR first strike. Soviet portion of exchange model is actioned while United States forces are withheld. Remaining Soviet forces and surviving American forces are determined. A new exchange model is calculated as steps 2-7 are repeated, and a new correlation of nuclear forces after a Soviet attack is calculated (C-2).

9. Calculate U.S. first strike. The United States portion of the initial exchange model was actioned while Soviet forces were withheld. Remaining American forces and surviving Soviet forces were determined. A new exchange model was created and steps 2-7 were repeated. The new correlation of nuclear forces after an American first strike was calculated (C-3).

10. Calculate mutual exchange. The initial exchange model was actioned by each superpower simultaneously. Surviving weapons on each side were then determined and a new exchange model was created. Once more, steps 2-7 were repeated to produce the new correlation of nuclear forces that would exist after a mutual strategic exchange (C-4).

11. This procedure was repeated for each year 1970-1986.

IV. KEY SOURCES FOR DATA

In many respects, data for this study has been based on most of the bibliography. A wide variety of sources have therefore been used for the compilation of all data in the following annexes. Only the most important sources are listed below:


Soviet Military Power (Washington: USGPO, various years).


NOTE: Due to the rounding off process some of the totals in some of the charts do not appear to add up. All figures were originally calculated to two decimal places and then rounded off to the nearest whole number to simplify presentation.
### ANNEX B: UNITED STATES STRATEGIC NUCLEAR DELIVERY VEHICLES 1970-1986

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| POLARIS A2 | 128 | 128 | 128 | 128 | 64  | 32  |    |    |    |    |    |    |    |    |    |    |    |
| POLARIS A3 | 512 | 416 | 336 | 176 | 208 | 176 | 208 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 |    |
| POSEIDON | 16  | 112 | 192 | 352 | 384 | 448 | 448 | 498 | 498 | 498 | 498 | 498 | 498 | 498 | 498 | 498 |    |
| TRIDENT 2 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **TOTAL** | 656 | 656 | 656 | 656 | 656 | 656 | 656 | 656 | 656 | 576 | 520 | 568 | 592 | 640 | 640 |    |

| **BOMBERS** |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| B-52 C/F/D | 315 | 225 | 157 | 157 | 117 | 75  | 75  | 75  | 75  | 75  | 75  | 75  | 75  | 75  | 58  |    |    |
| B-52 G    | 150 | 180 | 180 | 180 | 180 | 185 | 152 | 151 | 151 | 151 | 151 | 151 | 151 | 151 | 151 | 151 |    |
| B-52 H    | 30  | 60  | 60  | 75  | 90  | 90  | 90  | 90  | 90  | 90  | 90  | 90  | 90  | 90  | 90  | 90  |    |
| B-1       |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **TOTAL** | 465 | 435 | 397 | 397 | 372 | 330 | 317 | 316 | 316 | 316 | 316 | 316 | 316 | 289 | 241 | 241 |    |
| **TOTAL ALL** | 2175 | 2145 | 2107 | 2107 | 2082 | 2040 | 2027 | 2026 | 2026 | 2026 | 1944 | 1880 | 1868 | 1849 | 1863 | 1805 | 1900 |

**SOURCE:** SAME AS ANNEX A
## ANNEX C: UNITED STATES STRATEGIC WARHEAD TOTALS 1970-1986

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**SOURCE:** SAME AS ANNEX A
## ANNEX E: UNITED STATES BALLISTIC MISSILE DATA

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* SLBMS FIRED AT REDUCED RANGE HAVE GREATER ACCURACY

SOURCE: SAME AS ANNEX A
ANNEX F: BOMBER PENETRATION DATA

US OAR SYSTEMS = .80/.85 (B-1-B = .85 )

USSR OAR SYSTEMS = .70/.80 (BEAR) (BISON/BEAR H)

BOMBER SURVIVABILITY DATA

U.S. - ALERT 30% NON GENERATED
80% GENERATED

USSR - ALERT 0% NON GENERATED
80% GENERATED

SOURCE: SAME AS ANNEX A
ANNEX G: ASW SURVIVABILITY DATA

SSBN SURV. = FORCES AT SEA X ASW SURV.

US - GENERATED = .85 AT SEA
NON GENERATED = .60 AT SEA

USSR - GENERATED = .80 AT SEA
NON GENERATED = .13 AT SEA

SOURCE: SAME AS ANNEX A
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SOURCE: SAME AS ANNEX A.
## ANNEX J: USSR STRATEGIC WARHEAD TOTALS 1970-1986

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**Source:** Same as Annex A.

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|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ICBM |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| SS-7 | 403 | 403 | 403 | 403 | 403 | 403 | 403 | 403 | 403 | 403 | 170 |     |     |     |     |     |     |
| SS-8 | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 16  |     |     |     |     |     |     |
| SS-9 | 1019| 1207| 1321| 1515| 1616| 1616| 1526| 1167| 741 | 381 |     |     |     |     |     |     |     |
| SS-11| 776 | 903 | 922 | 922 | 1263| 1483| 1720| 1607| 1418| 1229| 1210| 1096| 1040| 983 | 983 | 983 | 847 |
| SS-13| 14  | 28  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 33  | 33  | 43  | 43  | 43  | 43  | 43  |
| SS-17-1| | 28  | 66  | 166 | 266 | 378 | 432 | 432 | 100 |     |     |     |     |     |     |     |     |     |
| SS-17-2| |    | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 20  |     |     |     |     |     |     |
| SS-17-3| |    |     |     |     |     |     |     |     |     |     |     | 277 | 378 | 378 | 378 | 378 |     |
| SS-18-1/3| | 45  | 161 | 294 | 178 | 178 | 127 | 127 | 78  |     |     |     |     |     |     |     |     |     |
| SS-18-2| |    | 298 | 1042| 1146| 1205| 1205| 684 |     |     |     |     |     |     |     |     |     |     |
| SS-18-4| |    | 315 | 756 | 756 | 1260| 1940| 1940| 1940| 1940| 1940| 1940| 1940| 1940| 1940| 1940| 1940|     |
| SS-19-1| | 241 | 402 | 402 | 482 | 724 | 724 | 724 | 328 |     |     |     |     |     |     |     |     |     |
| SS-19-2| |    | 49  | 147 | 147 | 98  | 98  | 25  |     |     |     |     |     |     |     |     |     |     |
| SS-19-3| |    |     |     |     | 80  | 322 | 985 | 1447| 1447| 1447| 1447| 1447|     |     |     |     |     |
| SS-25| |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| SS-24| |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| TOTAL| | 224 | 2574| 2721| 2915| 3337| 3891| 4353| 4599| 4714| 4842| 4819| 4791| 4791| 4791| 4791| 4791| 4791|

| SLBM |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| SS-N-4 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 57 | 57 | 57 | 57 | 45 | 42 | 39 |     |     |     |
| SS-N-5 | 26 | 26 | 26 | 26 | 26 | 26 | 18 | 15 | 11 | 4  |     |     |     |     |     |     |     |     |
| SS-N-6 | 173| 266| 345| 412| 481| 557| 690| 670| 630| 590| 564| 484| 464| 423| 423| 383|     |
| SS-N-17 | 8  | 8  | 8  | 8  | 8  | 8  | 8  | 8  | 8  | 8  | 8  | 8  | 8  | 8  |     |     |     |
| SS-N-18 | 158| 158| 158| 158| 158| 158| 158| 158| 158| 158| 158| 158| 158| 158| 158| 158| 158|
| SS-N-20|     | 35 | 70 | 106| 141|     |     |     |     |     |     |     |     |     |     |     |     |
| SS-N-23|     | 35 | 70 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| TOTAL | 258| 351| 431| 507| 616| 782| 959| 1147| 1236| 1224| 1283| 1373| 1331| 1334| 1326| 1383| 1423|

| BOMBERS |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| BEAR-D | 90  | 90 | 90 | 90 | 90 | 90 | 101| 101| 101| 101| 101| 101| 101| 146| 146| 146| 292| 292| 292| 130 |
| BEAR-H | 224 | 224| 224| 224| 224| 224| 224| 224| 224| 224| 224| 324| 324| 648| 648| 648| 648| 648| 648|     |
| TOTAL  | 314 | 314| 314| 314| 314| 314| 325| 325| 325| 325| 325| 470| 470| 940| 1020| 1072| 906|     |
| TOTAL ALL| 2817| 3240| 3465| 3736| 4287| 4988| 5628| 5681| 5935| 6130| 6223| 6685| 6619| 7084| 7136| 7204| 7037|

SOURCE: SAME AS ANNEX A
## ANNEX M: SOVIET BALLISTIC MISSILE DATA

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**Source:** Same as Annex A
The great number of sources used in this dissertation reflects the attempt to demonstrate the widespread nature of thinking that does not fit comfortably within the deterrent paradigm. Many works can be categorized as appropriate to either the deterrent (Bundy) or compellent approach (Betts), but with others this simplistic delineation does not apply.

In the West, two schools of thought tend to dominate the discussion of superpower nuclear strategy, a liberal-enlightened approach and a strident-ideological one. The key difference between them is their view of the Soviet Union; the former sees the U.S.S.R. as being far more benign than the latter. Each tends to disregard the other, yet both schools have produced major works that, if nothing else, reflect the tremendous ambiguity in superpower plans for nuclear weapon use in war. To a degree, works like those of MccGwire and Garthoff reflect a deterrent approach to Soviet military doctrine (peacetime), yet they acknowledge a more complex explanation is needed to account for Soviet military strategy (wartime). Those of the right wing like Kolkowicz and Douglas tend to accept a compellent approach and focus on Soviet military strategy acknowledging that a war fighting force structure begets deterrence.

The main theoretical base for this paradigmatic distinction is provided by Schelling; what he refers to as compellence, George calls coercive diplomacy and Betts calls nuclear blackmail. The concept of trying to achieve some political leverage from some military advantage is not new, but Mandelbaum's reference to "strategic mercantilism" is particularly illuminating.

Some western analysis of deterrence confuses deterrence and compellence by treating them as one thing in the inclusive expression,
deterrence theory (Zagare, Morgan). This invites the conceptual danger wherein those that intend to attack compellence also attack deterrence and those that intend to attack deterrence also attack compellence. At times it is all of deterrence theory that is in fact under attack (Rappoport, Green), but in most cases criticisms are more specific.

It is worth noting that criticisms of deterrence come both from within the paradigm (McCwire, Jervis) and from outside (Gray, Luttwak). Obviously those attacks from outside are sharper and less subtle, and they tend to recommend rather simplistically either additions to war fighting capability or disarmament. Those from within the deterrent paradigm, on the other hand, criticize the logic of present strategy for the nuclear excess that has created arsenals larger than required to deter.

The United States right wing, epitomized by the Committee on the Present Danger, evokes images of the Soviet Union as being intent on domination. Most Soviet sources, but particularly senior Soviet military writers, portray the United States as seeking to compel the USSR. Both governments' leaders insist that the sole justification for their military forces is simply to deter the other, yet during the 1970-1986 period, each country added significantly to their nuclear arsenals in what amounts to a dual application of the Schlesinger doctrine.

There are literally thousands of sources available that address the nuclear conundrum, much of it repetitive. Those sources selected represent a wide variety of disciplines, and many demonstrate the presence of compellent thinking even though most of it is couched in terms of deterring compellence. Those sources that were particularly useful have been so noted in the text or in the corresponding notes.
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