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The History of NATO TNF Policy: The Role of Studies, Analysis and Exercises Conference Proceedings

Volume 3
Papers by Gen. Robert C. Richardson III (Ret.)

R. L. Rinne

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THE HISTORY OF NATO TNF POLICY: THE ROLE OF STUDIES, ANALYSIS AND EXERCISES CONFERENCE PROCEEDINGS

Volume 3

Papers by Gen. Robert C. Richardson III (Ret.)

R. L. Rinne, Editor
Sandia National Laboratories/California

ABSTRACT

This conference was organized to study and analyze the role of simulation, analysis, modeling, and exercises in the history of NATO policy. The premise was not that the results of past studies will apply to future policy, but rather that understanding what influenced the decision process—and how—would be of value. The structure of the conference was built around discussion panels. The panels were augmented by a series of papers and presentations focusing on particular TNF events, issues, studies, or exercises. The conference proceedings consist of three volumes. Volume 1contains the conference introduction, agenda, biographical sketches of principal participants, and analytical summary of the presentations and discussion panels. Volume 2 contains a short introduction and the papers and presentations from the conference. This volume contains selected papers by Brig. Gen. Robert C. Richardson III (Ret.).

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CONFERENCE INTRODUCTION

As events in Poland indicated the beginning of change in Eastern Europe, the question was asked at a U.S./FRG bilateral meeting whether the large DoD/DOE computer-based theater conflict simulation models could be used to examine how NATO's Theater Nuclear Forces (TNF) might evolve. Professor Henry Rowen and Dr. Robert Rinne asked a more fundamental question: had studies, modeling, analysis, and exercises influenced NATO's TNF policy and force structure in the past, and if so, how? Given that today is better characterized by discontinuities than projections of past trend lines, modeling and simulation are likely to be of marginal value. On the other hand, it is worthwhile to develop a better understanding of the past process, of how issues were examined, and of who and what influenced the decision process. The outgrowth was support for this conference on the role of simulation, analysis, modeling, and exercises in the history of NATO policy. Again, the premise is not that the results of past studies will apply to future policy, but rather that understanding what influenced the decision process—and how—would be of value.

It has become clear that the closing decade of the century will be one of profound change in international security structures. We selected the examination of NATO nuclear policy for two fundamental reasons:

1. With the changes in Europe, the collapse of the Soviet Empire, German Unification, and the increasing solidarity and strength of the European Economic Community, TNF policy clearly will undergo significant change in the next few years, and
2. The forty years of European Nuclear Force development provide a contextual continuum where the basic objective stays constant with time but with several changes in policy and force structure that might provide an educational perspective.

Over the past four decades, there has been an almost continuous series of studies addressing the issues related to the feasibility, utility, force structure, and use of theater nuclear weapons. In the 1950s, the early focus was on a doctrine of "massive retaliation." A more flexible attitude was codified in MC14/2 in the mid-50s. The foundations for studies and analysis of the relationships among nuclear weapons, military doctrine, and political policy were developed in Southern California, for strategic systems at RAND, and in the theater force study, VISTA, at Cal. Tech. During the '50s, the military studied the structure for the Pentomic Division and conducted the "Sagebrush" and "Carte Blanche" exercises. With Soviet developments of IRBMs, a strategic bomber force, and the launch of Sputnik, the viability of massive retaliation came into serious question. The 1960s saw a number of studies on force structure and use (e.g., "Oregon Trail") leading to the "flexible response" strategy endorsed in MC14/3 in December 1967. Following the formation of the Nuclear Planning Group in February 1966, a number of studies were sponsored to address TNF issues resulting in a series of papers on "follow-on use." (As early as the spring of 1966, German and British studies were presented to the Nuclear

Plannning Group.) In the 1970s the emphasis was on modernization. Within the U.S. defense analysis community, numerous studies were directed toward enhanced radiation warheads. By the late '70s and during the first half of the 1980s, Long-Range Theater Nuclear Forces (LRTNF) were the dominant topic of analysis.

Past projects have investigated TNF modeling, gaming, exercises, and analysis. Generally these have been directed towards determining requirements for improving the techniques to understand TNF issues, with emphasis on developing new hardware or software. This conference examined the relationships from a more historical perspective: what was learned and how it was communicated to those responsible for making decisions; how TNF policy and force structure was determined; and how studies and analysis could have been directed and improved to aid those decisions.

During the three-day conference, we reviewed some aspects of NATO's history related to TNF decisions. Topics included:

- Why and how were decisions made?
- What information was available?
- What was used and what should have been used?
- What information would have been useful?
- How did useful information reach or how could it have reached those who were responsible for making decisions?

The structure of the conference was built around discussion panels focused on particular events or TNF issues. The advantage of the discussion panel approach over individual interviews was the "memory jogging" aspects of bringing together several individuals who had different responsibilities during and perspectives on the same event. It also provided the opportunity to explore the different approaches used by those with similar responsibilities but at different points in time. The panels were ordered roughly by era. However, individuals generally transcend breakdowns into simple time periods, and the panels were not necessarily a review of the papers that preceded them. The panels were directed by an "interviewer," a student of TNF history. The interviewer guided the discussion, capitalizing on the experience of the panel and drawing in the expertise of the audience. The panels were augmented by a series of papers focusing on particular TNF events, issues, studies, or exercises. These papers added an element of depth to the program.

Several formal records of the conference exist. The entire proceedings were videotaped, and copies of the tapes are archived at the conference sponsors' facilities and the DOE national laboratories. This document (three volumes) contains an unclassified summary of the conference by Professor David Yost of the Naval Postgraduate School and most of the papers. Volume 1 contains the introduction, agenda, biographical sketches of participants, and analytical summary. Volume 2 contains a short introduction and the papers from the conference. This volume contains selected papers provided by Brig. Gen. Robert C. Richardson III (Ret.) from his personal files. Note: we have used the best available copy for reproduction.

1949 CONCEPT

I WAR ONLY WITH USSR

II THREAT ONLY ACROSS FRONTIERS

III U.S. RELATIVELY SECURE

STEPS TO MEET THREAT

1. REARM GERMANY - NOV. 1950
2. INCLUDE GREEK AND TURK FORCES
3. IMPROVE FORCES THRU MDAP
4. CREATE SHAPE - BRUSSELS 1950
5. T.C.C. REVIEW OF MEANS
6. SET UP COSMIC SECURITY SYSTEM
7. VANDENBERG - LECHÉRE AIR CONFERENCE

KEY LANDMARKS
1. D.C. 28 CONV. DEF. REGIONAL PLANNING GRPS
2. MC 26/2 T.C.C. REFINEMENT - LISBON GOALS
3. RIDGEWAY PLAN CONV + NUCLEAR SUPPORT
4. SH 330/54 1954 CAPABILITIES PLAN
5. MC 48 NATO CAPABILITIES PROPOSAL
6. 1956 POLITICAL DIRECTIVE - "ATOMICS FROM ONSET"
7. MC 14/2 OVERALL STRATEGIC CONCEPT
8. MC 48/2 MEASURES TO IMPLEMENT CONCEPT
9. MC 70 REQUIREMENTS PLAN (1)
10. MC 26/4 REQUIREMENTS PLAN (2)
11. ME 100 SERIES LONG RANGE STUDY
12. OTTAWA PROPOSAL & STIKKER PLAN (1963)

OVERALL STRATEGIC CONCEPT

14/2

1. GEN. WAR MAIN THREAT
2. PHASE I EXCHANGE CRITICAL
3. READY FORCES DECISIVE LIM. MOB. ONLY
4. NATO USE "A" IN ANY EVENT
5. PHASE II - REORGN. & RECOVERY
6. PROTECT LOC'S.
7. PRIORITY TO FORCES IN BEING
8. NO LIMITED WAR POSSIBLE

1956 POLITICAL DIRECTIVE

1. WAR WINNING CAP. BEST DETERRENT
2. BEST DEFENSE WITHIN RESOURCES
3. REQUIRED PROTECTED "A" RETALIATION FORCE
4. SHIELD JOB LIMITED

"SHAPE HAD NO LIBERATION MISSIONS"

1st UNDERTAKING

INSURE THE ABILITY TO CARRY OUT STRATEGIC BOMBING INCLUDING THE PROMPT DELIVERY OF THE ATOMIC BOMB (ANY AND ALL WEAPONS). THIS IS PRIMARILY A U.S. RESPONSIBILITY ASSISTED AS PRACTICAL BY OTHER NATIONS.

PLANNING FUTURE
NEW WEAPONS

THREE APPROACHES TO LONG RANGE PLANNING

I. PRACTICAL - PROGRAM PROJECTIONISM

II. CLASSIC - THREAT REACTIONISM

III. PLATO - TECHNOLOGY FULLY EXPLOITED

STALEMATE REQUIREMENTS AND PROSPECTS

DETERRENCE TO ATOMIC AGGRESSION OR RETALIATION BY VIRTUE OF A STALEMATE REQUIRES THAT BOTH SIDES HAVE ADEQUATE ATOMIC STOCKS AND MEANS OF DELIVERY WHILE LACKING IN DEFENSES CAPABLE OF PROTECTING THEIR VITAL AREAS FROM DESTRUCTION BY THEIR ENEMY. THE NORMAL EVOLUTION OF WEAPONS SYSTEMS, COUPLED WITH GEOGRAPHIC DIFFERENCES, MAKE IT UNLIKELY THAT THE REQUIRED PARITY WILL PREVAIL AT ANY GIVEN TIME, OR FOR ANY LENGTH OF TIME AS BETWEEN TWO NATIONS, OR IN A MULTILATERAL POWER SITUATION.

PRINCIPLE FINDINGS 330/54

1. SHIELD (NATO) DEFENSIVE - SAC WIN
2. SHORT WAR - FIREPOWER ON HAND
3. NEED NEW POSTURE - FIREPOWER "GREEN"
4. DEFENSE HAS ADVANTAGE OVER OFFENSE
5. SMALL FORCE HOLD LARGE ONE IF:
   - USE "A" FROM ONSET
   - WPS. IN HAND AT ONSET
   - OPTIMUM "A" POSTURE

PROSPECTS OF LIMITED ATOMIC WARFARE

IN A WAR LIMITED TO A SPECIFIC GEOGRAPHICAL AREA THERE IS LITTLE PROSPECT OF INTERCEPTING THE DELIVERY EFFORT IN ROUTE TO TARGET, AND NO PROSPECT OF DESTROYING IT AT SOURCE - WHERE THE LATTER IS OUTSIDE THE AREA - EXCEPT BY ENLARGING THE COMBAT AREA TO INCLUDE THE SOURCE.

SINCE AN ADVANCE, AND HENCE MANEUVER BY FORCES, REQUIRES PRIOR FIREPOWER SUPREMACY IN ATOMIC WARFARE A LOCAL ATTEMPT AT AGGRESSION CAN BE INDEFINITELY "STOOD OFF" BY A PREPARED DEFENDER. IN THIS CASE THE OBJECTIVE OF LIMITED WAR, CONQUEST OF AN AREA, CAN ONLY BE ACHIEVED AT THE EXPENSE OF EXTENDING THE CONFLICT TO TOTAL WAR.

MEASURES TO IMPLEMENT MC 48/2

REQUIRED BY NATO

1. "A" RETALIATION CAP. PLUS WILL TO USE
2. SHIELD TO HOLD ONLY
3. ADEQUATE FORCE SURVIVAL MEASURES
4. SEA LOC'S PROTECTED
5. REORGANIZATION & RECUPERATION

THE VARIABLES

I. Mission (The job, —committments, tasks, Etc.)

II. Concepts (The method, —policy, strategy, tactics, Etc.)

III. Resources (The means, —forces, weapons, funds, Etc.)

VIEWS EXPRESSED IN CAPABILITY PLAN

1. The expenditure of atomic weapons as envisioned in this plan will drastically change the conditions of war. The posture of Allied Forces (organization, tactics, dispositions, etc.) as it exists today cannot be reconciled with the capabilities for destruction of such weapons.

2. Since this is a plan for war in which atomic missiles will be used, essential revisions in tactics, dispositions and organization had to be considered. Some changes are evident, in other instances the direction of change is apparent. In a few cases only the results to be achieved can now be defined.

3. This enclosure is basic to the conclusions of the Plan. It attempts a first assessment of the adjustments dictated by the atomic threat. It summarizes the findings of extensive studies which lead to the conclusion that it is possible to adopt a posture for the planning period under consideration, which when combined with atomic superiority and other lesser advantages, might offset the advantage of larger forces and initiative possessed by the Soviet.

4. Provided the Allies enter hostilities with a superior posture for atomic war under stockpile positions considered reasonable, there appears to be a high probability for a successful outcome of the initial atomic exchange in Allied Command Europe. The capability conclusions of this plan are almost wholly dependent on this proviso.

5. The findings herein are based upon numerous studies by the SHAPE planners as well as other agencies. Principal among the latter are: The Inter-Allied Tactical Studies Group (Beauffre Group); The USAF RAND Corporation; the SHAPE CP-Presentations and discussions, etc. An attempt has been made to assess the atomic survival problem herein comprehensively enough for detailed staff review while avoiding the inclusion of the lengthy calculations concerned.

MISSION (THE JOB - COMMITMENTS, TASKS, ETC)

METHOD (THE METHOD - POLICY, STRATEGY, TACTICS, ETC)

RESOURCE (THE MEANS - FORCE, INSTALLATIONS, FUNDS, ETC)

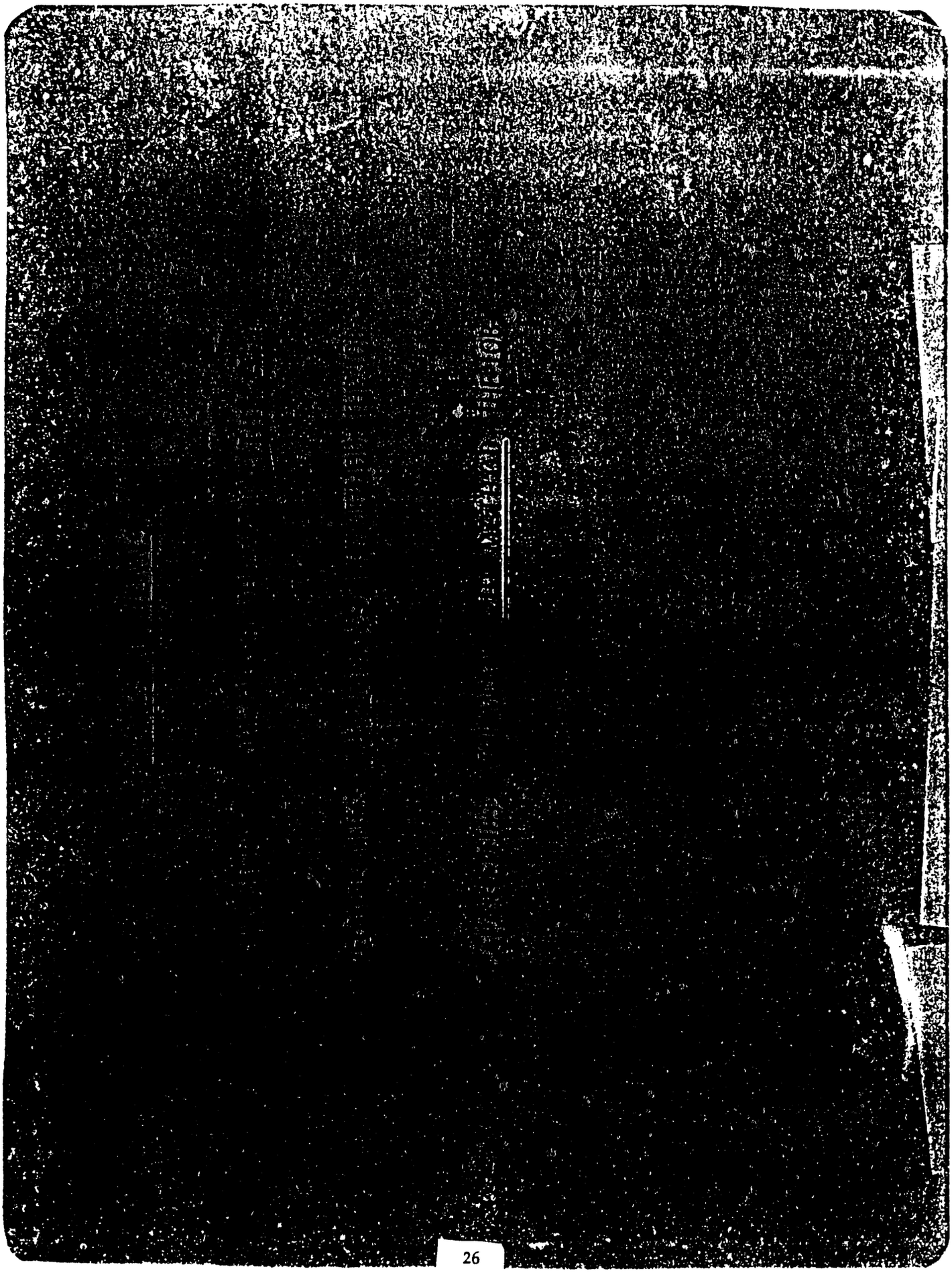
CONCEPTUAL CHANGE

PRESSURES AGAINST

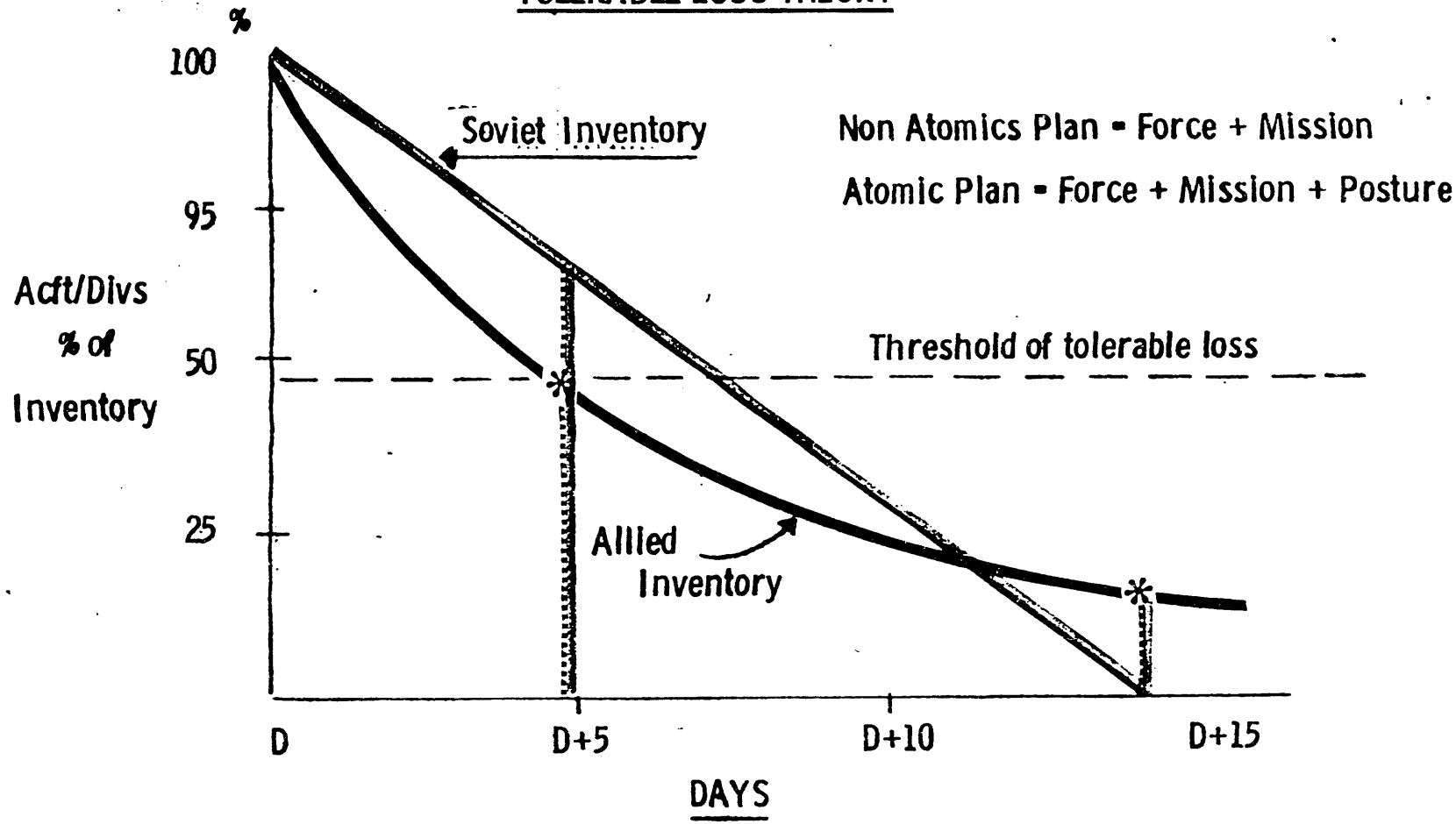
- EXPERIENCES OF LEADERSHIP
- ABSENCE OF BATTLE TESTING
- EFFICIENCY AND ECONOMY MEASURES
- FIXED POLITICAL COMMITMENTS
- CONCEPTUAL "LEAD TIME"
- JOINT COMMITTEE AND MULTIPLE LEADERSHIP ARRANGEMENTS
- LACK OF CONCEPTUAL R & D
- SPECIAL INTEREST PRESSURES

SOFT AREAS IN LISBON GOALS

1. SOVIET & SATELLITE O.B. EQUAL
2. NO SAC IMPACT ON EUR. DEFENSE
3. NO USE OF TACTICAL NUCLEAR WEAPONS



TOLERABLE LOSS THEORY



DECISIVE ROLE OF FIREPOWER

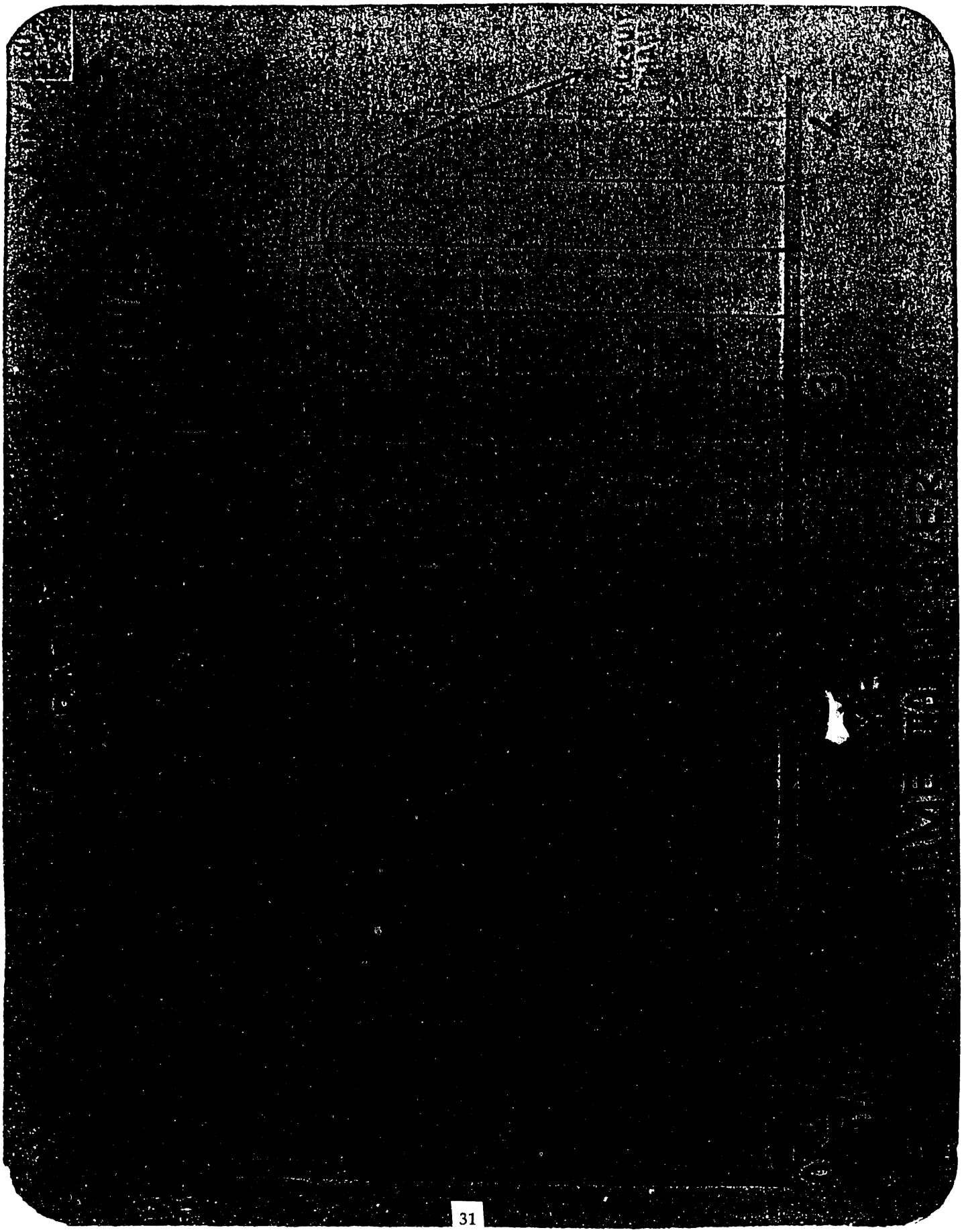
THE AREA DESTRUCTIVE CAPABILITY INHERENT IN HIGH YIELD ATOMIC MUNITIONS SUGGEST THAT HENCEFORTH FIREPOWER WILL BE THE DECISIVE ELEMENT IN WAR. IN THE ATOMIC AGE, THE FORCES MUST BE DESIGNED TO SUPPORT THE FIREPOWER, AND NOT THE CONVERSE.

FIELD MARSHAL VISCOUNT MONTGOMERY STATES:

"WE CAME TO THE CONCLUSIONS WE COULD ONLY DO THAT(HOLD FORWARD IN EUROPE) BY USING THE NUCLEAR WEAPON AND GOING IN FOR A POLICY OF DESTRUCTION WITH THAT WEAPON -- THE NUCLEAR WEAPON HAVING A GREAT CAPABILITY FOR DESTRUCTION ON AN AREA BASIS -- AND WE THEREFORE USED AS OUR CHIEF AGENT THE NUCLEAR WEAPON AND WE USED THE FORCES TO SUPPORT THE WEAPON. NOW THAT IS A REVERSAL OF PREVIOUS THINKING. IN PAST THINKING IT WAS THE WEAPON WHICH DISRUPTED AND WEAKENED THE ENEMY AND THEN THE FORCES MOVED IN TO COMPLETE THE BUSINESS. AND I THINK THE DIFFERENCE IN THE TACTICAL CONCOMITANT OF NUCLEAR WARFARE IS A VERY IMPORTANT MATTER TO PUT RIGHT. YOU USE THE NUCLEAR WEAPON FOR YOUR OFFENSIVE PUNCH AND NOT HUMAN BODIES IN THE FIRST INSTANCE."

CHANGES IN SHIELD FORCES

ITEM CHANGED	IN NON ATOMIC DEFENSE	IN ATOMIC DEFENSE
1. MASS	MEN PLUS MACHINES	KILOTON/MEGATONS
2. FIREPOWER	SUPPORTING ROLE	DOMINANT ROLE
3. END PRODUCT	CAPTURE/OCCUPATION	KILL/DESTROY
4. FORCES REQUIRED	≥ THAN THE ENEMY	MIN. TO SERVICE FIREPOWER



ADVANTAGE OF THE DEFENDER ON LAND

THE ABILITY TO MANEUVER, AND THEREBY TO ADVANCE, IN A BATTLE, WHEREIN FIREPOWER IS THE DECISIVE ELEMENT, DEPENDS UPON FIRST OBTAINING FIRE SUPREMACY. AS LONG AS BOTH DELIVERY SYSTEMS ARE ADEQUATE AND EFFECTIVE THE DEFENSE ON LAND WILL HAVE A DECIDED ADVANTAGE OVER THE OFFENSE SINCE THE LATTER INVOLVES MANEUVER AND HENSE DETECTION, CONSENTRATION, AND EXPOSURE.

BASIC PLAN'S CONCLUSION

The key conclusion of the 1957 Capabilities Plan was that NATO forces of the size envisioned in the 1957 Force Goals could effectively defend against far larger Warsaw Pack Forces if tactical atomic weapons were used. For this to be true, however, there were two (2) vital provisos:

FIRST, that the appropriate nuclear weaponry would be in the hands of the troops and available for use from the onset, and

SECOND, that NATO forces for use in atomic land/air warfare (defense operations) be reorganized, redeployed and repostured so as to be able to survive and fight effectively in the new atomic environment.

ON CONCEPTUAL CHANGE:

PRESSURES AGAINST:

- EXPERIENCES OF LEADERSHIP
- ABSENCE OF BATTLE-TESTING
- EFFICIENCY AND ECONOMY MEASURES
- FIXED POLITICAL COMMITMENTS
- CONCEPTUAL "LEAD TIME"
- JOINT, COMMITTEE AND MULTIPLE LEADERSHIP ARRANGEMENTS.
- LACK OF CONCEPTUAL R & D
- SPECIAL INTEREST PRESSURES

Key To NATO ATOMIC STRATEGY

LIMITED WARS

and the

RELATIONSHIP BETWEEN MANPOWER AND FIREPOWER

IN ATOMIC WARFARE

I. MANPOWER vs FIREPOWER

1. The objective of this paper is to obtain general understanding, and appropriate application of the principles

a. That in wars where atomic munitions are employed, firepower becomes both the dominant and decisive factor. All other forces must be designed to maximize the ability to deliver it, and successfully absorb it;

b. That whereas the principle of mass remains valid, it will henceforth be measured in terms of kilotons and/or megatons applied in the battle and NOT in terms of quantities of manpower or delivery vehicles, and that

c. These changes in the impact of weapons on warfare mean that local aggression can be effectively interdicted by a small defensive force supported by tactical nuclear firepower suitably deployed.

2. General Twining stated in a speech in 1956 to the National War College that: "In future atomic wars mass will be measured in kilotons and not in terms of manpower."

3. Speaking to the NWC in 1955, Field Marshal Viscount Montgomery, Deputy SACEUR, stated:

"We came to the conclusions we could only do that [redacted] (hold forward in Europe) by using the nuclear weapon [redacted] and going in for a policy of destruction with that

weapon -- the nuclear weapon having a great capability for destruction on an area basis -- and we therefore used as our chief agent the nuclear weapon and we used the forces to support the weapon. Now that is a reversal of previous thinking. In past thinking it was the weapon which disrupted and weakened the enemy and then the forces moved in to complete the business. And I think the difference in the tactical concomitant of nuclear warfare is a very important matter to put right. You use the nuclear weapon for your offensive punch and not human bodies in the first instance."

4. The above pronouncements stem from recognition, by students of strategy and tactics, that the area destructive capability inherent in atomic munitions means that firepower and destruction will henceforth be the decisive elements in atomic age war. Atomic destruction will be the end-all of the battle, as such it replaces past emphasis on counter attack and maneuver, by men and materiel, to achieve the ultimate objectives.

5. Where, in the past, artillery (missiles) and air forces had a supporting role, in the future, firepower, and hence these means of delivering it, will have the dominant role. This was already evident to a degree by the influence of strategic air in WW II. This decisive influence has now extended on down to all means of delivering atomic destruction.

6. With the advent of atomic weapons, the target's ability to absorb attack and survive has been greatly reduced. Conversely,

the atomic weapon with its large lethal area, has tremendously increased the ability to destroy. In past wars the probability of destroying a target with any given bomb or shell was, relatively speaking, small since each such target has to be pin-pointed and hit. Random fire, while producing some kills and disruption, was not decisive due to the fact that there was invariably more vacant space in relation to the area destroyed than space occupied by objectives worth destroying. When the lethal area of one weapon is increased to the extent of providing a greater probability of a kill than of a miss against any given target complex, the dominant role clearly shifts from quantity of forces to the firepower or destructive agent.

7. The changeover from the case where weapons support the forces, to where forces support the weapons, occurs when the probability of kills by a random shot exceeds the probability of misses. This occurs with the introduction of atomic munitions at any level where same can be used and effectively delivered. In future battles the forces will support the firepower and not the conver.·. The objective will be destruction instead of disruption, defeat, and ultimate capture.

8. The new role of firepower will have far-reaching effects on tactics and on force requirements for war. It appears to confer upon the defense a decided advantage over the offense in a fixed land battle. Conversely, it confers upon the air or missile offense a decided advantage over the defense by reducing the magnitude and frequency of the effort required to accomplish

the desired destruction. The classic principles of mass and mobility of forces must be reviewed. It brings into question the importance of manpower in assessing relative military strength. In this latter respect it is a principle which is of current and vital importance in view of the financial demands imposed by new weapons, missiles, and satellites and which may have to be obtained at some expense to the strength of peacetime forces.

II. ON LIMITED ATOMIC WAR

Very little has been said or written on the use of nuclear weapons in limited wars. This is partly because there is a popular -- though wholly unsubstantiated -- opinion that any use of such weapons will result in a progression to general nuclear war, and partly because those most concerned resist the above conclusions and the resulting fact that very small land forces can effectively contain limited aggression anywhere if atomic weapons are used.

Limited tactical atomic counterforce leads to a theater level form of stalemate. When two forces face each other across a land front neither can successfully advance against the other until the opponent's atomic firepower has been dealt with. Since this is a factor in granting small forces the capability of defending themselves against invasion by an enemy with far greater manpower, air planners should understand this type of stalemate, particularly with respect to its deterrent prospects against limited war ventures.

In theory where two opposing forces face each other across a front or along a frontier, they can totally destroy each other's combat formations so long as they each have adequate and secure atomic stocks and delivery means. The constraints imposed by geography as to the length of any land front, plus the constraint imposed by mobility limitations on the depth to which invading or defending formations can be deployed and still influence the battle, when considered in relation to the area of primary

effects of atomic weapons in the megaton range, make such mutual annihilation a practical proposition.

Thus two conditions will ensure a stalemate or standoff in a limited aggression opposed with atomic firepower. On the one hand mutual suicide of forces is a practical proposition with high yield weapons. On the other hand the advantage conferred on the defense by the use of selective tactical atomic firepower can prevent invasion as long as the atomic fire support of the defender remains adequate and secure. In either case the frontier remains uncrossed. It follows from this that a successful invasion by limited military operations against an atomically defended frontier requires that the defender's atomic means first be destroyed or neutralized.

In a limited war situation, as in total war, the outcome depends on the relative effectiveness and security of atomic stocks and delivery means. Until these can be dealt with, by one side or the other, land forces cannot advance and occupy or conquer territory and the battle front remains frozen along the initial defense positions. This is a new situation which has an important effect on the probability of successful limited war.

If a stalemate will exist on land until the battle for local atomic supremacy can be resolved, the question of local air defense, and the vulnerability of delivery forces, both

assume importance as in the case of strategic warfare. The atomic firepower can either be intercepted or destroyed at source. What are the prospects in both instances and how will they effect the likelihood of a tactical atomic stalemate either as a deterrent to limited aggression or as a deterrent to use of atomic weapons?

Air Defense in Forward Areas

In a limited war between adjacent forces and territories there is little or no depth available for warning and in which to intercept. The condition in the forward areas is generally fluid and the availability of large fixed warning and control radars cannot be counted upon. Finally, delivery ranges are short, hence missiles, artillery and aircraft with very limited flight time can be used. Under these circumstances the possibilities of defining a wholly effective local air or missile defense against an enemy's tactical atomic delivery capability are remote. It is about on a par with finding a way of preventing enemy artillery fire from penetrating into one's frontline formations. The only effective defense lies in destroying the enemy's atomic capability at source, and this, if and where it can be done, will ensure victory.

Vulnerability of Delivery Means

If one side could succeed in destroying the other's atomic delivery system at source it would then fall heir to a local atomic monopoly and could invade the territory of the other with

impunity and regardless of the strength of the defending forces. These latter would be systematically destroyed without risk of retaliation. The prospects of doing this, however, in a localized war are poor by virtue of the limited area of active conflict and resulting existence of sanctuaries from which the delivery force can operate.

The atomic delivery means required to support a limited war need not be deployed in the combat zone. Not only can they operate from sanctuary bases effectively but there is also precedent for this. In Korea the air striking power on both sides was based outside the area of limited war. Unlike the land combat formations, air forces and medium range missiles are by no means constrained to be along or near the front. Therefore, these are vulnerable in a limited war only if they are in the war zone, or if the contestants are willing and able to run them down outside the war zone.

The first alternative, to be decisive, would assume that one side would accept defeat before basing outside the theater. The other alternative, to pursue and attack them wherever they may be must mean -- in this age of global range air power -- over the better part of the world. In this case the war would no longer be a limited one.

Thus:

The range of modern air power and missiles allows them to operate effectively from great distances and remote base areas.

This permits nations engaged in limited wars to base their atomic delivery arm in areas secure from enemy attack unless the enemy is willing to risk enlarging the war [illegible]

Prospects for a Tactical Stalemate

An atomic stalemate condition has better prospects of occurring in a limited war than in total war. The aggressor has no chance of successfully invading until he deals with the atomic delivery capability of the defender. Both sides can annihilate the other's forces in the combat zone, but such a policy of "baby" mutual suicide accomplishes nothing in so far as the conquest of the territory is concerned. [illegible] Thus a would-be aggressor is deterred from a massive megaton attack against forces defending an area by knowing that this would lead to his forces suffering like damage. He is deterred from selective atomic attack by the advantages conferred on the defense in this maneuver, and he is deterred from attacking the only objective which would break the stalemate -- the enemy's delivery force and weapons -- by the need to enlarge the conflict to total war in so doing. In summary:

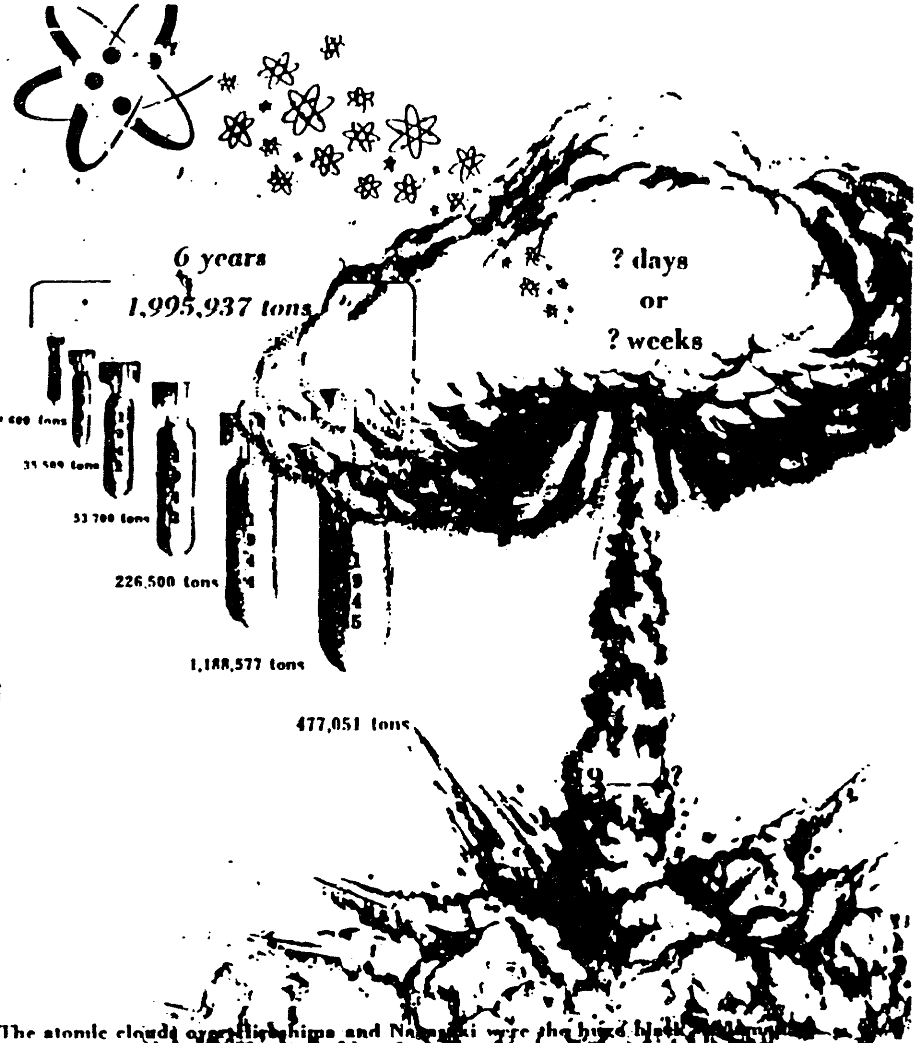
In a war limited to a specific geographic area there is no prospect of effectively intercepting the delivery effort enroute to its target, and no prospect of destroying it at its source -- where the source lies outside the area -- except by enlarging the combat area to include the delivery base.

Since a successful advance by land forces against a defended area requires the prior destruction or neutralization of the delivery means, a stalemate or global war are the inevitable results of a limited war effort.

Importance of Prepared Defences

In the above conclusion we referred to a "defended area." By this is meant an area where ready defense forces and their atomic support are available and in or near their combat stations at the onset. The conclusion does not apply to the same extent where the act of aggression is not initially opposed. In this case the mutual atomic capabilities remain the same but the advantages conferred upon the defense by not being exposed while moving, or concentrated while attacking are lost. If the shield forces have to be built up after the onset they are as vulnerable to atomic destruction as are the aggression forces. Considering the relative effectiveness of atomic firepower in this situation, the tables are turned and, the aggressor is in reality defending the periphery of the area he wishes to conquer from invasion by the would-be defenders.

A stalemate condition, and hence effective deterrent, to a local act of aggression will occur only where there are some defending shield forces in position and ready at the onset, though these do not have to have an atomic capability of their own if they are supported by outside delivery forces - at sea or in sanctuary.



The atomic clouds over Hiroshima and Nagasaki were the huge black [illegible] points that ushered in the age when man could kill civilizations. As the day of "mutual atomic plenty" comes closer to reality, the bitter question of our age is "If World War III comes, what will be its form and how can we win it and survive in doing it?" The answer crucially involves the incredible reversal of the rate of destruction from World War II to atomic blitz. Nuclear weapons compel the strategist to face stark alternatives. The starkest is global war—all-out air atomic blitz to shatter a foe beyond ability to retaliate. This threat must be dealt with first. Some of its momentous implications are ably discussed by Colonel Robert C. Richardson III on p. 3 and by Dr. Stefan T. Possony on p. 43. The strategist who grasps the transcendent reality of the air vehicle-atomic bomb will see it not only as the ultimate deterrent and cataclysmic weapon of retaliation but as a highly flexible, decisively potent, and uniquely global instrument for preventing war and for rendering unprofitable all gradations of limited war. These latter aspects of air power will be treated in subsequent issues.—*The Editors.*

1954-55

Atomic Weapons and Theater Warfare

Colonel Robert C. Richardson III

Part I: Will Nuclear Weapons Be Used?

THE YEAR 1954 ushered in the second phase of the atomic age. Nine years after Hiroshima and Nagasaki the public is being confronted not with an atomic or hydrogen bomb but with an *atomic weapons system.* Even more surely than the first nuclear explosion led to the perfection of the hydrogen bomb, it had to lead to a family of atomic weapons. One by one these weapons and the means of delivering them have been perfected and military units have been trained in their use. As the possession of one kind of atomic bomb revolutionized World War II concepts of strategic bombing in the years immediately after the war, so the possession of a rapidly widening family of atomic weapons, tailored to meet the variety of military requirements, has revolutionized doctrine, tactics, and requirements in every military activity.

It was of course inevitable that changes so sweeping in implication would be met with grave misgivings and with die hard opposition. Today even a schoolboy would laugh at the idea of employing the machine gun in just the same way as the bow and arrow, simply because man had used the bow and arrow first. Yet the gap between the firepower of the bow and arrow and the machine gun is nowhere near as great as that between conventional ordnance and the atomic weapon. The impact upon strategy and tactics and equipment was bound to be staggering in its magnitude.

In the last year the ground swell of the great debate has begun to rise. The first shots have been fired, and the ammunition is not nearly exhausted. Among the first salvos was a theme which will reappear many times. One of the places it appeared was in the *New York Times* of 11 August 1954, in an article entitled,

"The Ability of U.S. and NATO to Win War by Non Atomic Power Is Declared Vital." The theme was that "we must, paradoxically, maintain two fundamental capabilities—the capability of waging an atomic war unequaled in destructiveness by any opponent and the equally important capability of waging a victorious war without utilizing atomic weapons." The argument also included the often-heard assertion that "we should shun atomic warfare, primarily because such warfare would inevitably lead to total and unlimited war from which no 'victory' and no stable political results could be expected by anyone."

Such conclusions generally emerge from a first and shallow analysis of the contingencies of nuclear war. They stem from the normal tendency to assume, first, that all atomic devices are typified by the largest and most destructive of known models; and, second, that commanders in war will invariably strive for maximum indiscriminate destruction without regard to their objectives or to the aftermath. I submit that such views ignore the relationship of "cause and effect" and the selfish intelligence of man.

The eventual use of nuclear weapons in wars—even local conflicts—is inevitable under present conditions. It will remain inevitable unless, and only unless, the enemy's capability to use such weapons can be wholly and effectively eliminated by appropriate controls or other means.

To date, the relatively limited enemy atomic capability has not posed a threat to the whole panoply of military targets. When

[illegible] prospect confronting military planners of the atomic age is a global atomic war beginning with both sides expending their accumulated stocks of atomic weapons in awesome salvos. In such a conflict the range and speed of modern aircraft may preclude theaters of operations from fighting the virtually separate wars that made up World War II. But the theater will continue to be a frontline against the enemy. Like the homefront it must prepare itself for an entirely different war both on the surface and in the air. However preoccupied we may be with the new importance of the Polar air route and with massive retaliation, we must not forget the impact of the nuclear rate-of-destruction curve on a theater of operations and the implications of the growing versatility in the family of nuclear weapons. Colonel Robert C. Richardson III, of the Office of the Air Deputy, Hq SHAPE, presents the first two of five articles on *Atomic Weapons and Theater Warfare*. Assuming that each side might open the war with an atomic blitz designed to knock out opposing forces in a few days, Colonel Richardson outlines the drastic, far-reaching revisions this assumption imposes on planning, strategy, deployment, tactics, and supply of surface and air forces in an overseas theater of operations.

atomic stocks were limited, both sides could safely be counted on to budget the weapons they possessed, reserving them for targets of a primary or decisive nature. As long as this condition existed, it was possible to choose between conventional and atomic war. The existence of the nuclear weapons had not as yet affected our conventional capability; atomic bombs were an addition to the Allied arsenal, not an essential component thereof.

As nuclear stocks in the hands of potential enemies increase and we approach an era of atomic plenty, two things occur. First, more and more elements of our military power—land forces, depots, communications, etc.—must face up to the possibility of coming under atomic fire. Major targets will no longer be the sole recipients of atomic attack. Second, combatant levels which heretofore could not aspire to the use of "priceless strategic weapons" can now begin to study and experiment with the atom in relation to their particular roles. The great mass of the forces on both sides is faced with the prospect of having to absorb atomic attacks and of having to be able to deliver atomic weapons.

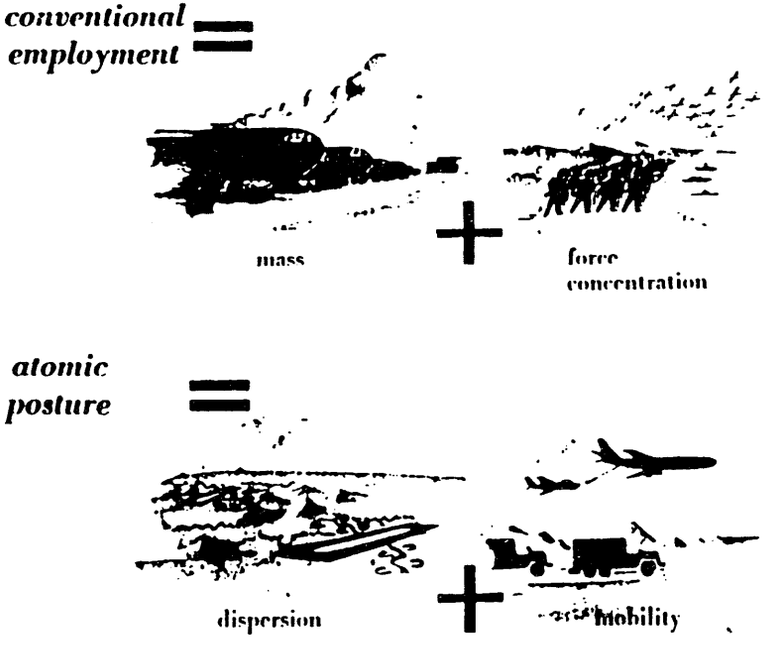
The very existence of this atomic threat to Allied defenses must lead to the adoption of postures—organizations, tactics, dispersion, and weapons systems—that will give us a reasonable chance of surviving should the enemy choose to exploit his capability. Failure to readjust all potential targets so that they can absorb atomic attack would be criminally negligent. Indeed such negligence would attract war by offering the enemy the prospect of quick victory.

I

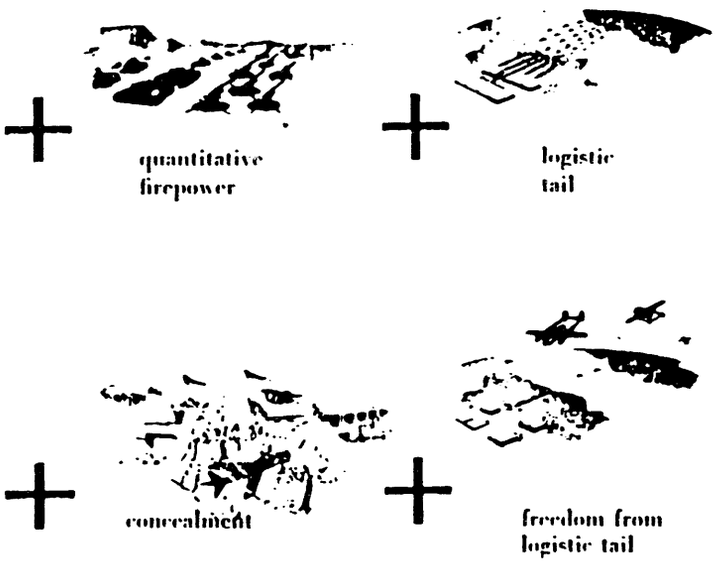
Thus brings us to the inevitable facts to be faced when we realize that a major war must now be atomic in nature. Even the minimum postures essential to the ability to absorb and survive atomic attack are incompatible, in many if not most instances, with the retention of a conventional capability. The very dispersion, mobility, concealment, and freedom from heavy logistic "tail" and from fixed installations which atomic survival dictates are the antithesis of mass, force concentration, and quantitative firepower employed in conventional war.

The military is thus faced with a dilemma. To ensure survival in event of atomic attack—a survival which if nothing else is necessary for its deterrent effect—there must be a progressive evolution to an atomic posture. This in turn leads to the inevitable use of such weapons when and where these postures cannot be reconciled with retaining a conventional capability. It is clear

War Equations



Old and New



that when the advent of nuclear weapons imposes upon any force, arm, or weapons system a posture which parts company from that required to fight without the new weapons, there is no alternative, if war comes, but to engage in nuclear operations or accept defeat.

Faced with these alternatives, we are not free to choose whether or not we will fight with atomic weapons if we have to fight. Now the question for decision is how long we can afford, or even risk, retaining a progressively decreasing conventional capability, good only for limited use, in face of an increasing and more diversified atomic threat. This is not a new situation, nor have its implications only recently dawned on the strategists. Notwithstanding a rash of articles that would have one believe there has been a change of concept—a so-called "New Look" or "New Approach"—the evolution toward atomics has progressed smoothly since 1944. It did not result from any great decision but from an occurrence—the development of the first nuclear bomb.

The idea that we are today faced with a dire choice—to create an atomic army, navy, and air force or not to create them—is ridiculous. The choice was forced upon the world ten years ago. The current publicity arises from the fact that the atomic age is now passing out of its first developmental stage. Growing stocks of atomic weapons and resultant evolution of forces are just beginning to touch a level of military unit (land forces, tactical air, convoys, etc.—where they are suddenly obvious to the layman. This seems to cause consternation and is interpreted as a sudden change brought about by some recent "great" decision. I suggest we glance at the facts.

The evolution began at the end of World War II and was given impetus by the shocking implications of the atomic tests in

Soviet Russia. The size, organization, and equipment of our strategic air arm were oriented for an atomic war. Next came carrier forces. I doubt if one could seriously justify the cost of Forrestal carriers in terms of their feeble conventional effort and without any atomic delivery capability. The sorely strained British budget supported a bomber command of a few scores of aircraft because the considered opinion was that even this size force would be potent in its atomic firepower. These are all steps in the evolution; item by item we adjust to the presence of the new weapon.

If compared to the damage they could inflict using conventional firepower, the cost of new atomic delivery vehicles is completely out of proportion with the resources of even the United States. Intercontinental, or even tactical, missiles are in this category. In certain areas of aircraft and guided missile development this fact must soon be faced. These weapons will have to be built for atomic delivery purposes alone, with any conventional capability being purely incidental.

The same writers who state that we require both an atomic and a conventional capability divide the task between strategic air, for atomic, and all other military forces, for conventional. Nowhere have I seen the suggestion that we should have a conventional heavy bomber capability as well as an atomic one. Yet without it where would be the balance in our forces for conventional war? If it were reasonable to consider atomic capability as no more than a small addition to the conventional forces, a "special weapon" to be used or not at discretion, we should by now possess a force of several thousand heavy bombers in the U.S. and U.K., and our air defense effort should be limited to the small, elite force that would be the nucleus of a post D-Day build up adequate for a long, conventional interhemisphere war of attrition.

Opinion, opposition to change, and wishful thinking cannot change the inexorable march of evolution. The cause for atomic war is present—a capability in enemy hands. The effect will be gradual change and acceptance of the weapon as a normal addition to world arsenals. The danger in the stubbornness of human nature and resistance of vested interests to change is the waste of money and precious time. While these elements cannot stem evolution, they can blind a nation to the nature and direction of the evolutionary process until it is too late to recover the lost ground. By trying to be strong in both conventional and atomic capabilities during the transition, we may become weak in both. At best, money and time will be wasted on obsolete weapons systems because of specious reasoning that atomic weapons will never be used.

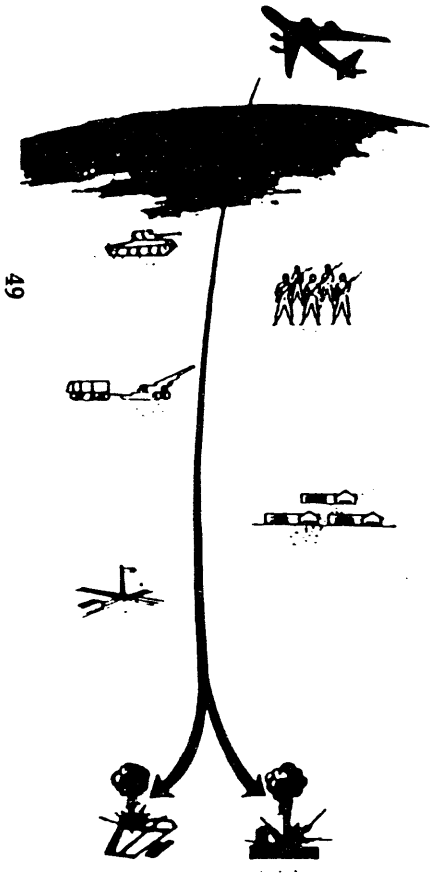
Is the inevitable use of atomic weapons in war necessarily synonymous with the mass destruction of the population centers and cultural landmarks of civilization? Does the fact that a certain order of capability exists necessarily ordain that it shall be used to its fullest extent? I think not. I prefer to believe that the use of any weapons system against any given target complex in war will still be wholly dependent on whether it contributes to the objectives or aims of the user. Wartime errors in judgment are frequent, but seldom have weapons been used or targets destroyed when the instigator knew the act would work to his disadvantage.

The assumption that centers of population and civilization are automatically atomic targets has two origins. First, it can be attributed to the school of thought that believed wars can be won solely as a result of the psychological impact of so-called "strategic bombing." This philosophy, which represents a World War II extension of the Douhet theory, has not been proved to date. Second, it stems from the more rational past employment of heavy bombardment to destroy the sources of enemy power. This was the philosophy adopted by the U.S. in World War II, where precision bombing of German industry was the primary objective. Even the bombing of centers of population had this objective in that it destroyed skilled human resources, thus paralyzing the German war potential almost as effectively as the actual destruction of the industrial facilities themselves.

Should the concept of a blitz victory by the psychological impact of mass destruction of government centers prevail, the result would approach the total or unlimited war to which the *New York Times* article referred, and from which neither side could expect "victory" or stable political results. Such a concept would hardly be implemented unless the author was certain that his initial blow would be so successful as to prevent retaliation in kind. Optimism on this point might possibly be entertained during the transition period from conventional to atomic war, where preparedness has lagged. But it is not compatible with any reasonable defense posture which included an immediate and secure ability to retaliate. We must anticipate that so long as both contestants can be expected to retaliate in kind, regard-

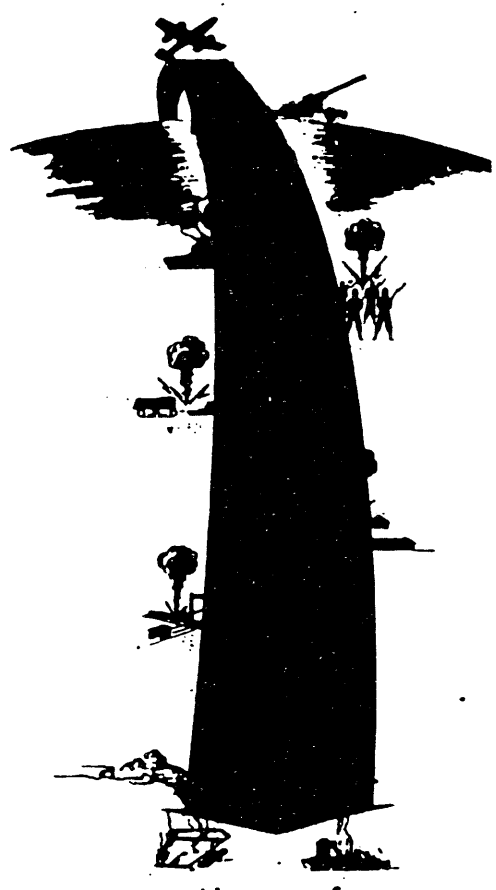
What are Atomic Targets?

in atomic scarcity



decisive targets

in atomic plenty



wide range of military targets

less of the damage sustained in the initial attack, it will not be in the interest of either one to rely upon a concept of sudden victory solely through the psychological impact of mass destruction of centers of population. This psychological-impact strategy also ignores the problems which such destruction would present to the victor in trying to capitalize on the peace. A series of population destruction attacks powerful enough to be decisive could produce such physical and psychological chaos as to make useful reconstruction an impossible task.

We therefore return to the concept that strategic use of atomic weapons will, as in the case of conventional weapons, be primarily aimed at the destruction of the enemy's combat potential or power resources. In World War II these targets were composed primarily of industrial and production facilities, aircraft, armament, and petroleum products which, if destroyed, would have a gradual, cumulative impact on the ability of the combat forces to pursue hostilities. The same would no doubt be true in a future war of attrition. This poses two alternatives as to the nature of an atomic war: first, that the weapons systems available can be sufficiently selective so as to destroy the desired individual targets without necessarily entailing the mass destruction of the population centers in the neighborhood; or, second, that the nature of the war will be different and will not consist of a war of attrition.

Now that atomic arsenals are becoming more and more diversified both in type and yield of weapon, it should certainly be practical to restrict the nature and area of destruction in most instances to the specific target to be destroyed, provided an effort is made to do so. But the limiting factor will be that an atomic war of the future will not be a war of attrition. D Day will find both contestants armed with adequate stocks of destructive power to permit hope of an early decision if the power is properly employed. This situation points to a short conflict in which the primary target system would consist of "quick pay off" objectives.

With the advent of higher yield weapons the protection afforded combat forces by local cover and dispersion will steadily decline. Major land, air, and naval units can be included in our list of "quick pay off," profitable atomic targets. When the enemy's land threat to any area of interest to us can be largely destroyed regardless of the formation of the opposing forces—in attack, in assembly areas, in mobilization areas, or on the road—there will be less need to destroy the power sources upon which these forces depend. Higher yield weapons would seem to decrease

the dependence of theater defenses on the indirect effects of destruction of enemy production facilities, because these weapons can now directly destroy the combat forces in the field.

In addition to the immediate military advantages of employing nuclear power against quick pay-off targets, and particularly combat forces, planners must henceforth give greater consideration to the problems of the subsequent peace. When wars are a lengthy affair of several years' duration, the primary objective becomes military victory. In these cases victory is usually equated with the most rapid and expeditious termination of hostilities. Atomic war promises to be a truncated affair, with the build-up and exploitation phases reduced from the customary months and years to a matter literally of hours and days. If wars of the future start with the decisive phase, the prospect of coping with the outcome is much more vivid to all concerned. More careful plans will then be laid to ensure that the combat phase is conducted to best achieve the ultimate peace objective and to prevent a situation of no gain to either side.

I BELIEVE that the increasing importance of quick pay-off target systems—especially combat formations of all arms and services—combined with the prospect of a shorter conflict—and hence the need for careful plans to shape and deal with the outcome—will mitigate against an irresponsible use of nuclear power which would devastate both sides with no gain to either. In no other field of human endeavor have people overplayed their hand to the point of suicide, particularly when they started with full knowledge of the consequences. There is no reason why possession of the atomic bomb should incline nations to premeditated suicide. A war of attrition is a thing of the past, and the attendant destruction of demographic centers should also go with the decrease in importance of targets whose "pay-off" is too gradual for the swift decision in atomic war. Likewise it may be presumed that the prospects of a quick victory, if not the fact, will lead to careful consideration of the subsequent peace and thereby minimize unessential or wanton damage during the atomic exchange.

Part II: Nuclear Weapons and War Strategy

IF WE accept the premise that the advent of atomic weapons will have an impact on the conduct of future wars, it behooves us to establish the reason why. Atomic war plans are currently called the "New Look." The question is: "What's new in the New Look?"

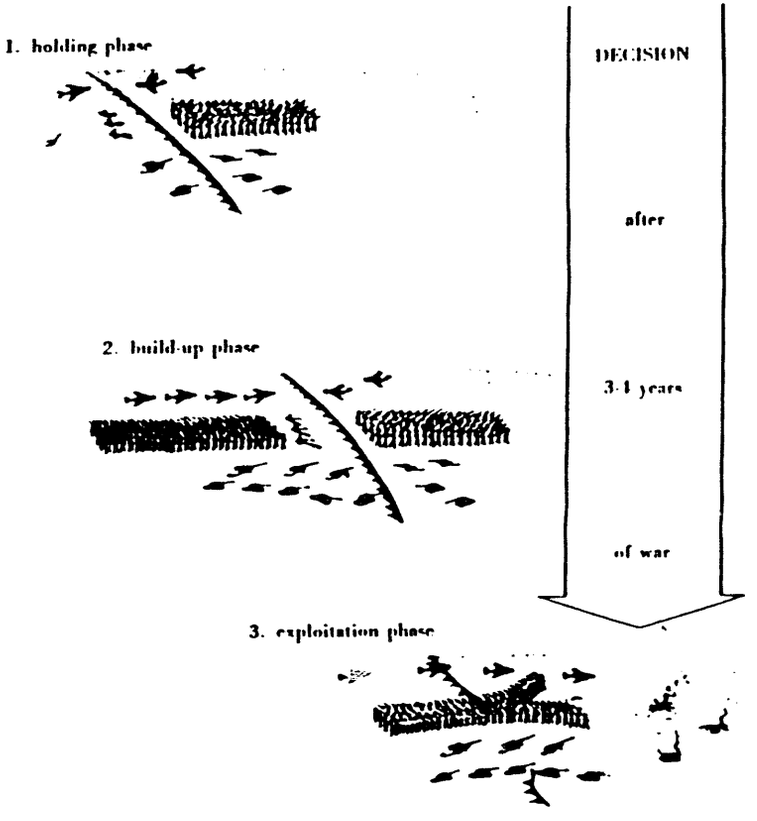
The availability of atomic weapons to both sides enhances combat capabilities. They provide an area destruction capability that opens up whole new systems of profitable targets and new problems for the defense. They permit the desired degree of destruction to be achieved with a minimum delivery effort. But the greatest consequence is that they permit both sides to aspire to decisive results from the onset of hostilities and without awaiting the cumulative strength to come from production and mobilization.

The old concept of a three-phase war—the holding, build-up, and exploitation phases—is dead, and with it died the tempo of gradual increase found in the classic war of attrition. The basic "new" aspect of the atomic age is the ability to accumulate and store up destructive power in a form and quantity which permit its immediate application at the onset of hostilities. The war and the decisive phase will hereafter begin at the same time. The next, and last, phase concerns the consolidation of the victor's conquests in accordance with his objectives; it may or may not require military forces.

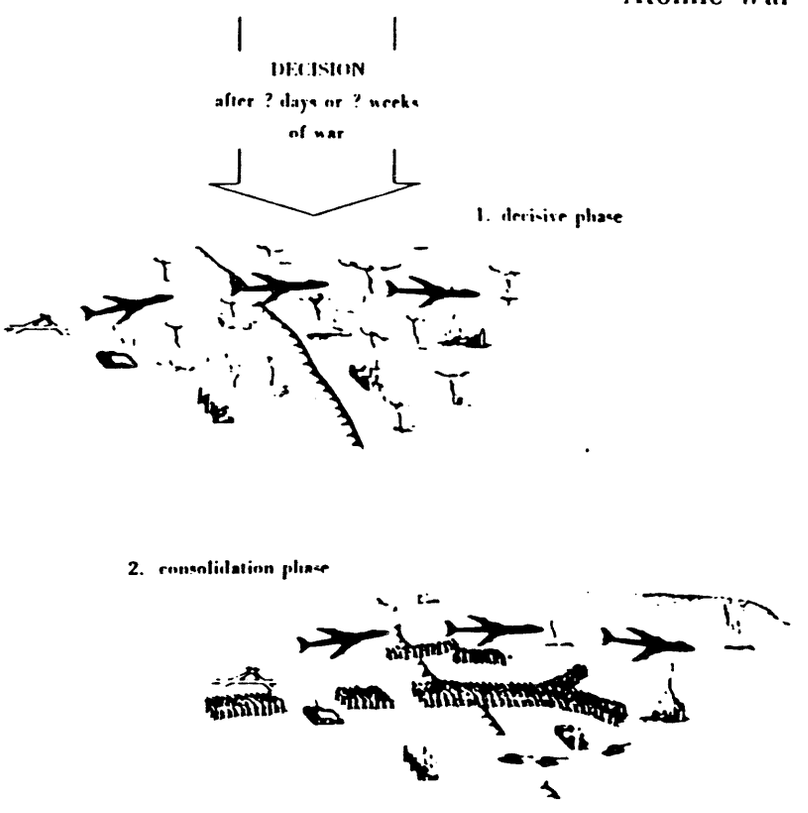
An atomic contest must start with both sides immediately discharging their accumulated nuclear stocks as rapidly as possible and against those objectives whose destruction promises a decisive advantage. Initial operation will strike directly for a decision. No other concept makes sense, because the instigator need not start the war until he feels reasonably confident that he has on hand the means of destruction necessary to give him the decision. His success will depend upon his delivery capability, his target identification and choice, and the enemy's defenses. The fact that he will strive for an early decision and will have the means to achieve it, if he has calculated the above factors correctly, cannot be contested.

The Revolution in War Tempo

Conventional War



Atomic War



All new aspects in military planning stem basically from the presence of these accumulated stockpiles. Our past thinking was tied to a gradually intensifying conflict. Each day saw a few more units committed and a little more ammunition expended until all forces were in combat and a climax was reached. Then the decisive phase began.

In atomic war we will have a situation akin to one where two small children have built up large stocks of snowballs. As soon as the fight begins, they will throw their snowballs as fast as they possibly can. Having done this, they can never hope to attain the same bombardment effect during the rest of the fight since each snowball will then have to be laboriously made before it can be delivered. Although production capabilities may increase, it is obvious that the peak effort will stem from the use of the stockpiles—else why accumulate stockpiles?

A strategy of a massive atomic exchange at the onset will reverse the rate of destruction curves from those of prior wars. Past destructiveness built up in degree from D Day onward, with gradually increasing intensity as more and more forces and resources were generated, assembled, and thrown into the battle.

Future destructiveness will rise immediately, or start out, in the case of the attacker, at a maximum. The rate can only decrease in intensity as the accumulated stocks of weapons are expended and availability depends more and more upon new production.

At first glance this change of tempo in war may not be impressive. Ironically, because the period of peak destruction or atomic exchange is so short, there is a tendency to gloss over it and then get ahead with planning the rest of the war on a more conventional basis. Many wish to believe that the initial massive atomic exchange concerns primarily the air people. Others hope the airmen will get it over quickly so all the rest can forget the short bad dream and carry on the real war in the traditional manner. This dangerous illusion exists today in many circles.

Assuming a minimal exchange of atomic fire at the onset of war, simple calculations will show that both sides could sustain greater destruction than resulted from all wars fought in modern history. Is it rational to assume that this has been absorbed without effect? Can one seriously believe that conventional warfare of the past will follow without change of form or intensity? Such an assumption seems utterly unrealistic, yet we daily see evidence of plans relying on normal production and mobilization beyond D-Day, on the use of mothballed equipment, on the commitment of reserve formations, etc.—all of which seem to count on a "business as usual" economy and military establishment.

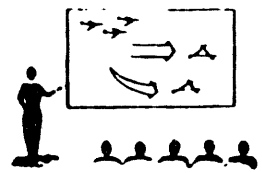
Notwithstanding the almost unlimited destructive capabilities in the hands of both contestants at the start of a future conflict, we still do not accept the formidable evidence that the initial phase will in all likelihood be decisive. We are still diverting a great deal of effort to the build up and maintenance of forces which may never enter the fight until after the basic decision has been reached. It may be too soon to assume that the conflict will be completely ended as a result of the atomic exchange. But it does seem clear that whatever form war may take in the subsequent stages, it will not be that of the classical war of attrition. The very idea is untenable that so much destruction can be exchanged without far-reaching effects.

THE advent of the atomic era therefore suggests that the strategy for the conduct of any future war be divided into two separate and distinct phases: first, and in first priority, a strategy

Requirements for Atomic Wa.

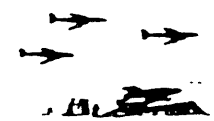
Decisive Phase

1. Gaining a favorable decision in the atomic exchange



superior planning

and



forces superior in quality, modernness of equipment, and training

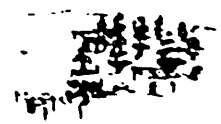
to produce

superior employment of stockpiled atomic weapons

2. Surviving the atomic exchange

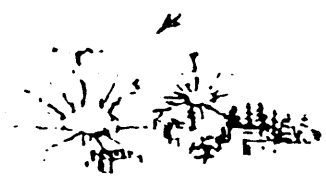
superior active defense

and



superior capacity to absorb atomic attack

to produce



maximum invulnerability to enemy's atomic attack

that offers the best promise of a favorable decision in the atomic exchange; and, second, a strategy or alternate strategies to pursue our ultimate objectives under conditions which might be expected to prevail following the exchange.

Survival of the first phase is a prerequisite to a favorable outcome. The rapid incidence of the destruction rate points to certain measures that are obvious parts of a survival capability: D-Day readiness; alert and warning systems; reconnaissance and atomic delivery capabilities; and, last but not least, disaster measures to ensure, insofar as humanly possible, that the inevitable damage to both forces and facilities will not destroy our command and administrative control over the situation or our recuperative and retaliatory ability.

The overall strategy in the first phase of an atomic war will emphasize the ability to deliver and absorb atomic attack. The ability to deliver will be a prerequisite to achieving our objectives. Since the initiative may not rest with us, it is also obvious that survival will be equally prerequisite—both to the ability to deliver and to the ability to pursue hostilities in the second phase. When the stockpiles and delivery systems of both sides are relatively equal, or reach a level of relative plenty, the greatest advantage will fall to the side that can best absorb attack. This means that an atomic strategy must envision a progressive modification in the organization, tactics, and posture of Allied forces for survival purposes—a modification which must take place more rapidly than a similar modification on the part of any potential enemy.

The offensive strategy in the first phase must ensure delivery of atomic weapons to the desired target systems, notwithstanding losses or defenses which might be erected against us. This being a primary objective, the accompanying defensive strategy should logically emphasize the protection of our atomic striking and delivery forces. Technical considerations, coupled with the size of the offensive made possible by the enemy's accumulated atomic stocks, make it doubtful that active defense can provide adequate protection, particularly in theater areas where the prime military elements are close to enemy bases. Our forces must therefore develop an ability to absorb attack. In the case of atomic weapons, this means that vital formations must not be allowed to present themselves as a target; or if they must present a fixed target, particularly on D Day, they should not be on the target at the time of the attack.

An objective of our defensive strategy should be to impel the enemy to increase the number of weapons he will have to

deliver to achieve a decisive effect. The greater the number required, the more difficult becomes his delivery problem, and the less likely his ability to achieve any useful degree of surprise. Pursued to its logical conclusion, this strategy enormously complicates the enemy's problem. He will have no fixed target system whose attack can be preplanned. The decisive elements of our theater forces become so many and so diversified that a much greater effort would be required to inflict decisive damages upon them even if they could be located.

When we have achieved this goal, the primary consideration of an enemy offensive will be to locate the targets rather than to penetrate to them. He will have resort to the massive employment of reconnaissance forces. This in turn may well bring back attrition type active defense as a useful capability, not against the delivery element but against the reconnaissance necessary to locate the target before an attack can be made. Both in peacetime and in wartime whenever minimum warning is available, a strategy of progressive dispersal and decentralization of forces is essential if we are to survive the first phase of an atomic conflict.

The strategy of the second and final phase—which may begin in a matter of days or at most a few weeks after D-Day—will depend upon the outcome of the atomic exchange. It is unlikely that it will be solely or even primarily based on military considerations. In essence it would seem that the application of the massive atomic effort by both sides should have "cleared the roadblock" in the first phase. After that the course to be followed, with or without substantive military assistance, must depend upon the national objectives—objectives which must go well beyond that of "military victory" if they are to permit the peacetime preparation of the means to accomplish our overall aims. We can only speculate upon the nature of the second phase but several alternatives present themselves for consideration:

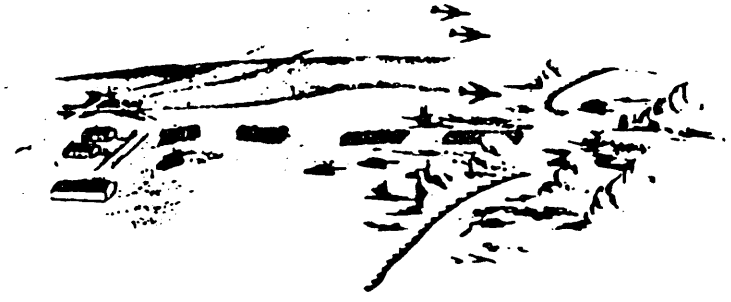
- First and foremost is the possibility that the war might be over, that active conflict on one side or the other has ceased. In this case an in being strategy to achieve and consolidate the post-war objectives will be required.

- Second, we may find ourselves in a position to exploit an advantage gained during the atomic exchange even though this be with seriously reduced forces or with fresh forces mobilized

Requirements for Atomic War: Consolidation Phase

1. If the atomic exchange ends the war, an in-being strategy will immediately be needed for the consolidation of military peace in terms of post-war aims

2. If the atomic exchange (a) leaves the enemy broken but unconquered or (b) is so effective that no organized agency is left to make and enforce the surrender, fresh forces from outside the theater or from the theater reserve must move in to enforce surrender



3. If the atomic exchange is unfavorable to the Allies, the surviving forces in the theater must be immediately withdrawn to peripheral areas for regrouping

or deployed to the theater after the period of peak destruction. Plans must therefore contemplate the objectives of such an operation.

• Lastly, caution dictates that planning take into account the possibility that the exchange in any theater of operation will be to our disadvantage. We would then be faced with the need to extract to a peripheral area or the Western Hemisphere as much useful military potential as possible and pursue the war under those circumstances.

One interesting aspect of the possible alternative strategies of the second phase is the likely prospect of being faced with a military decision or at least a termination of active hostilities, very quickly after D-Day. This immediately points to the need for pre-war planning on the post-hostility objectives of the conflict. There will no longer be time during hostilities to develop post war plans. Also a war starting with the decisive phase precludes consideration only of achieving "victory" without regard to the effect of the actions exploiting the so called "victory."

Increased planning in peacetime with respect to post-hostility objectives in turn should produce guidance as to the targets or target systems that can be destroyed versus those that should be spared during the first phase. The tendency may well be for both sides to adopt a first-phase strategy which shies away from the type of destruction associated with long wars of attrition, the sole goal of which is the unconditional surrender of the enemy without regard to the subsequent impact on the peace. Thus we again see that the often expressed cliché that atomic war will automatically entail the destruction of civilization or mutual suicide of nations does not adequately consider that such action may not further the plans and objectives of either side.

It is also possible that in any given theater of operations the initial atomic exchange will end with one side or the other delivering the *coup de grâce* by a limited military exploitation. This could happen where the magnitude or manner of destruction was not adequate to gain completely decisive results. It could also come about if the results were so decisive that no organized agency remained to deal with. Then exploitation in the sense of going in and establishing some form of administrative and command control over the loser's government and territory would be required. This type of operation would seem to demand fresh forces—forces arriving from the Zone of Interior shortly after D-Day and which have not been subjected to atomic attack, or

forces which had been successfully protected in strategic reserves. For this contingency some built-up reserve should be retained.

It seems unlikely that an early exploitation could draw upon mobilized resources, particularly if these had to be mobilized in the area which sustained a fair portion of the initial attacks. The outcome of the first phase of an atomic war is quite unpredictable, but the best course seems to be to retain a ready capability, adequately protected, and available for exploitation either to firm up a decision or to bring one about if the initial destruction did not quite achieve the desired effect. A reserve of ready force would also be valuable should the enemy find himself in a position to exploit his attack in any sector and thus force us to withdraw to peripheral areas. It could then assist in establishing adequate beach-heads for a withdrawal or in diverting pressure.

In the broad sense, the introduction of nuclear weapons in theater warfare tends to create two separate and different wars: an initial short, completely military, and perhaps decisive war which will involve the exchange of atomic stockpiles; a subsequent conflict situation which may entail additional combat operations on a reduced scale but which will more likely consist of politico-military maneuvers to obtain the post-war objectives.

Although it is too early to determine the strategy to be employed after the initial phase—the short war—a great deal of evidence points to the likelihood that the nature and scope of any subsequent phase may be very different from anything we are familiar with. A great deal of study will be needed before we can hope to see a little more clearly and prepare our forces and our national policies accordingly.

The basic new aspect of atomic war strategy stems from the reversal of destruction rates over those in previous wars. The fact that peak destruction occurs almost immediately after D-Day, with a decrease in tempo as accumulated stocks are expended, is directly the reverse of the gradual increase in destruction that existed in past wars of attrition. This tremendous shift in rate of firepower will change the very nature and time phasing of the conflict. Our future planning and operations must accept this one basic fact as a point of departure if they are to provide sound force requirements, plans, and organizations for atomic war.

Paris, France

Atomic Weapons and Theater Warfare

COLONEL ROBERT C. RICHARDSON III

Part III: Atomic Weapons and Tactics, Organization, and Doctrine

MAJOR new weapons systems have always changed the structure of combat forces. In the past such changes came about gradually. New doctrines, tactics, and organizations were developed by trial and error—generally in battle or as a result of combat experience with the weapons. In today's world this leisurely process invites catastrophe. The very power and nature of the atomic weapon decree that the side best equipped during the first days of a war both to absorb and deliver these weapons can expect to achieve decisive results. There will be no period of training and no room for errors in a future war.

Recognition of the need for changes to meet the atomic realities has recently become quite general. Some strategists argue that a new posture may now be tailored to fit the atomic age just as World War II produced an optimum posture of forces for conventional war. Nothing could be more dangerous than to assume that the necessary change is to be merely a shift from one fixed condition to another. On the contrary, the change we now face is far more complex, involving a readjustment not only from the old to the new but from the fixed to the fluid. Henceforth we will have to modify tactics, organization, and doctrine progressively to keep step with the evolution of weapons and their availability to both sides. It will be a process of constant change in which one optimum solution exists only when related to one point in time.

We saw in Part I of this study why atomic weapons will inevitably become a normal part of our military arsenal. We also saw why this development need not necessarily mean that future wars and the destruction of civilization are synonymous.

In Part II we discussed the concept of atomic warfare, par-

ticularly as it stemmed from the presence of accumulated stockpiles of such weapons on both sides. The likelihood that the war and its decisive phase would begin at the same time emphasized the need for D-day readiness to absorb and to deliver, as well as to have in being, already prepared in peacetime, the plans for the exploitation phase.

These factors will have a far reaching impact on tactics, organization, and doctrine—the posture of the forces. It would be presumptuous to attempt to draw final conclusions at this early stage in the development of this subject. What we can do is analyze the situation caused by the introduction of atomic weapons in quantity into the land-air battle. We can then try to isolate some of the obvious problems that this threat will present and to derive a general indication of the nature and rate of the changes that will have to be made.

First attempts at analyzing a hypothetical land-air battle in which atomic weapons were used in reasonable quantities produced predictions of fantastically high losses. Planners seriously debated the outcome of the battle in the standard terms of having advanced or retreated. Yet on each side only a very small percentage of the forces had survived the decisive phase. This was clearly theoretical. The most elementary experience with human endurance under combat conditions suggests that such a battle would have been decided long before both contestants had deteriorated in strength to the extent of practically committing mutual suicide.

No sound plan can contemplate the probable loss of the bulk

In Parts I and II of "Atomic Weapons and Theater Warfare," published in our Winter issue, Colonel Robert C. Richardson III, of the Office of the Air Deputy, Hq SHAPE, assumed that a future war might begin with a mutual atomic blitz designed to knock out opposing forces in a few days. He outlined the drastic revisions this assumption imposes on planning, strategy, deployment, tactics, and supply of surface and air forces in an overseas combat theater. Now, in Parts III and IV Colonel Richardson analyzes the impact of these revisions on the posture—tactics, organization, and doctrine—and the survival of air, land, and naval forces committed to combat under atomic situations. He points out the three basic elements that will form future power equations: (1) the atomic stockpile, (2) "control of accessibility"—the capability to deliver atomic weapons to selected targets and to deny deliveries by the other side, (3) the conventional forces necessary to support effective deliveries of atomic weapons and to prevent the enemy from advancing into vital friendly areas before the atomic attack can control his aggressive operations.

of the forces during the initial operations. This would leave no margin, either for error or for exploitation of success. Caution dictates that national security—which in future will rest more heavily than ever on the outcome of major military operations—not be governed by one throw of the dice. Yet we would be doing just that if we passively accepted the loss rates foreshadowed by the simple addition of atomic weapons to modern arsenals and did not attempt any compensating adjustments in the posture of our forces.

Unless we readjust military formations to the atomic threat before D-day, unit commanders will themselves readjust to survive the onset of the war. With each unit improvising its own survival plan, effects upon operating rates, striking power, and ability to accomplish the mission will become completely unpredictable. No formation endowed with human discretion could be expected to continue to present an unnecessarily vulnerable posture in the face of inevitable destruction. After the first attack, surviving elements can be expected to readjust as best they can. Their first thought will be to reduce their future losses to tolerable limits, notwithstanding the effect on operations of their modified posture.

It could be argued that well trained organizations—particularly regular formations—would continue to fight effectively regardless of the degree of loss that they sustained. Even if this were true—if all our forces stood fast on a do-or-die basis and accepted the losses inflicted upon them—it seems likely that a too rapid deterioration rate would swamp command and communication echelons with problems of disaster control, rehabilitation, and recuperation. These and psychological and morale problems might be of such magnitude as to prevent the coordinated direction of the war effort. This could well occur while there still remained a substantial theoretical capability, in terms of inventory, that was superior to that of the enemy at the time.

In short, if we neglect in peacetime to adjust the posture of our forces to the atomic threat, we will not only cost ourselves an indefensible number of casualties, but may also jeopardize the outcome of the war. If not adjusted to an atomic war posture, forces will (1) readjust themselves with unpredictable results; (2) lack the recuperative power to exploit any success achieved in initial operations, and (3) suffer paralysis of command and communications because of excessive destruction of forces and resources in a short period of time.

Thus the finger is pointed at the posture of our forces—their physical presentation to atomic attack—as a new variable in the

planning equation. It is clear that from now on we must modify the physical presentation of our forces to atomic attack to fit a given time, magnitude, and nature of atomic threat. The importance of this factor *as a variable* has only recently been understood. Traditionally plans and operations were developed by the interplay of two basic variables, the forces or resources and the mission or task. In conventional war plans and operations the posture of the forces was generally treated as relatively constant for any given era. This was not because we failed to appreciate that major changes in posture would have an effect on the outcome of such plans or operations but because such changes were long-term, gradual affairs. Atomic war has introduced another major variable in the planners' problem:

Conventional war: Forces + Mission = Plan or Operation
Atomic war: Forces + Mission + Posture = Plan or Operation

Since the enemy has an atomic capability we have no alternative but to readjust our organization, tactics, and doctrine—our posture—sufficiently to ensure our survival if he should elect to exploit that capability. Readjustment is indicated even if it means the progressive abandonment of a conventional capability for large or small wars. As discussed in Part I, we find ourselves face to face with the inevitable use of the atomic weapon in any future important conflict.

In our search for guidance in readjusting posture we must keep in mind the objective that we seek. At first it might appear that the sole purpose of modifying posture is to achieve security and survival. This is unquestionably one of our objectives. But it should not be considered the end objective. As planners of our defense in a war where the existence of Western civilization would be the stake, we cannot allow the question of casualties to be our sole determinant. Rather we must take the larger view of what effect such casualties or losses will have on our operational capability and hence on the accomplishment of the mission. The true objective is to balance our survival capability with operating effectiveness under any given set of conditions. Our minimum goal must be to remain above the threshold of maximum tolerable loss—losses a force can sustain during any given period and still maintain effectiveness.

If it were possible to establish a valid maximum limit to tolerable loss, the survival problem would be greatly simplified.

We would possess minimum criteria as to the effectiveness of various postures at any given time. While this possibility should be given further study, particularly by competent operational analysts, there are so many immeasurable factors involved, such as psychological conditioning, that it does not seem practicable now to establish any valid limits for readjusting tactics, organization, or doctrine.

In the last analysis it seems clear that there are only two valid principles for surviving atomic attack. The most important is not to present a fixed or worthwhile target. Next, if presenting a fixed, known target is unavoidable (*i.e.*, runways, barracks, ports, cities, etc.), the forces should *not* be on the target if and when it is hit.

The first aim, not to present a target, can be achieved in two ways. We can decentralize our forces so that no element subject to destruction by one weapon is worth that weapon's expenditure in light of stocks available. Or we can rely on a combination of dispersion, mobility, and cover to prevent the enemy from pinpointing his target, regardless of its size or worth. Since our greatest concern is the initial surprise attack, we can greatly increase our chances of survival by minimizing the number of worthwhile targets attached to known, fixed geographical points. We must compel an enemy either to reconnoiter before striking—thus giving us warning and a chance to counterattack his delivery forces—or to launch haphazard and wasteful strikes.

The second aim, not to be on the target when hit, can be achieved only by exploiting our advantages of warning. Our forces will still be wedded to a good many fixed targets for some time to come, particularly to runways, barracks, ships, and ports. This places a premium upon the ability to obtain some warning of enemy attack and to exploit that warning for survival purposes.

Even when the enemy is granted the initiative, there is a limit to the degree of surprise that he can achieve. He cannot completely prevent us from using the warning supplied by our radar. To this extent we have the power to prevent total surprise. There are many other considerations that, properly exploited, should give us the benefit of further, though highly equivocal, warning. With this much warning we can protect our forces by evacuating obvious targets before they can be hit. While this measure will require a high order of readiness, adequate mobility, and dispersal plans that can be implemented on very short notice, it promises to be useful under some circumstances.

Increased mobility, a higher standard of alert and readiness,

organizational adjustments to exploit both of these, and the ability to live and operate as much as possible away from known, fixed geographical points constitute definite objectives in readjusting the posture of our forces for atomic war. These general indications apply to all forces alike. But beyond this point the problem of atomic posture will be different for each military service. Since there is no common solution, we have to consider not only the nature of the force but its general location with respect to the enemy, its role—and hence its value to the enemy as a target—and the dependence of the force concerned on known geographical points that can be preplotted for attack.

Land Forces. The problem in the case of land forces is undoubtedly the most complex. Any changes in the posture of land forces, particularly in organization, equipment, and dispersion, must automatically entail changes in tactics and doctrine, since land forces will be obliged to fight in whatever new posture is introduced.

A first objective might be to adjust the posture of land formations so that no one weapon can be expected consistently to neutralize any large tactical force responsible for the defense of a major sector. That is, a land organization controlling both forward and reserve elements in one sector and having sole responsibility for a sector of the front should be so organized and disposed as to have a high probability of continuing its defensive mission under normal atomic attack conditions. This does not mean that lesser elements might not be totally destroyed if located and bombed. The aim is to retain the continuity of the front. One weapon should not be allowed to create such a complete breach in the line that some other organization must be diverted from another mission to replace the loss.

On land the achievement of these aims indicates a need for greater dispersion with attendant increases in mobility and in communication facilities. Combat units can no longer maintain weapons systems and vehicles with heavy logistic "tails" requiring fixed lines of communications and concentrations of support vehicles and stocks. These weapons systems are incompatible with the basic need to present a minimum target and to increase mobility. This is particularly true of the heavy drag imposed by conventional artillery and by the fuel and supplies required if mobility takes the form of an increase in heavy vehicles and armor.

The trend should be toward small, economical, and light transport coupled with airlift. Firepower previously provided by massive artillery action must in the future come from a proper

balance between very light weapons and atomic devices. Only through the concentrated power of atomic weapons can we hope to get the desired effects without handcuffing ourselves to mass and quantity.

The concentrating of land forces to an extent that they present atomic targets can be attempted only under cover of darkness or if an intelligence black out can be maintained. This means that land forces will probably be faced with a tactical dilemma. They must be able to concentrate forces for an advance against a defended enemy position and yet be able to disperse before atomic attacks. If a battle develops in a prepared area between two major land forces when both have adequate atomic means, the side on the defensive will have the advantage so long as the availability of weapons to both sides remains relatively constant.

Naval Forces. In the case of naval air forces the carrier itself is the primary concern. But here the survival solution must differ from that of land based air, since the passive defense measures that carriers can adopt are limited. In the last analysis carrier survival will probably depend upon improved active defenses and upon keeping carriers well out of areas where they can be readily located and attacked—areas where the offense has a distinct advantage over the close in defense.

Carrier air survival measures seem to fall mostly in the category of not presenting a target—or not being located without prior enemy reconnaissance. The fact that they are not constantly at a known geographical point gives carriers a distinct advantage over fixed bases, particularly in surviving a D day surprise attack. On the other hand the ability to get off the target—the ship—is denied naval air as a useful survival measure. Loss of the ship entails also the loss of immediate support, maintenance, and operating facilities necessary for continued effectiveness of the unit, even though the aircraft themselves might be away from the carrier at the time of the attack. A greater percentage of land based air establishment can evacuate its base when threatened and then can return if the threat fails to develop or move to a secondary site should the fixed establishment be destroyed. Moreover, land bases also have a rehabilitation or salvage value regardless of the damage sustained.

Greater intervals between ships in convoy will be required for naval surface forces. When required dispersion within a convoy becomes so great that close in submarine protection by accompanying escorts becomes impractical, the convoy system will have to be re evaluated as to its relative worth. A careful balance between dispersion and protection will have to be struck, particu

larly at night. This will introduce new problems of communication and control of surface movements.

Concentrations of ships in ports present obvious known targets that must be minimized. In forward areas idle ships being unloaded or awaiting unloading will certainly be incompatible with survival. The use of secondary ports and across-the-beach unloading will tend to reduce the number of fixed preplottable targets that the sea line of communications normally presents. Again, once they are located there is little that these surface forces can do to get off the target. Emphasis must therefore be on minimizing the worth of any one ship or concentration of ships as a target in light of the probable enemy stockpile and in avoiding areas where its location is likely to be known to the enemy.

Air Forces. For air forces, with which we are particularly concerned since they constitute our primary means of retaliation, survival measures come more generally under the category of passive defenses. They involve dispersion, mobility, alert and evacuation planning, and, in selected instances, increased physical protection for materiel and personnel. The atomic threat to air forces need only be considered as it applies to the base itself at this time. Thus the problem is somewhat simpler than in the case of land forces. The measures to be taken to reduce the sensitivity of our units and of their bases need not necessarily entail major changes in the combat or in-flight doctrine, although they may affect sortie rates.

The principal problem on the air side stems from dependence on fixed runways. The base—more particularly the runway—violates in every respect our first principle of not presenting a known, fixed target. In fact it constitutes the perfect fixed target. Thus the obvious goal is ultimately to eliminate the need for such runways and the accompanying base installations. But for some time to come we are wedded to runways, so we must go to our second principle of not being on the target when hit. Here we must first consider decentralizing our operations to maximize the number of fixed targets, since we cannot eliminate them. Secondly, we must be able to exploit any warning by evacuating these certain objectives at the critical time, while retaining an operational capability.

A combination of these two measures is possible through increasing our normal off base dispersal activities outward from the fixed target. The worth of this expedient will vary with the relationship between the size of the enemy's weapons and the distances that we can practicably disperse to without unduly reducing our

effectiveness. This measure would seem to serve a useful purpose for some time to come, particularly if we can develop some assurance of warning and a land mobility in our aircraft and heavy equipment, so that we do not need reinforced taxiways for off base dispersal.

The alternative of going to more and more bases with less and less equipment on them seems to me to have little appeal from the long-range survival standpoint, particularly in forward areas and in theater warfare. So long as we know that we can occupy more bases than the enemy has weapons to allocate against our air complex, we are achieving protection. But since it seems reasonable to assume that one can build bombs quicker and more cheaply than bases, a race of this nature shows a profit only as it relates to a limited enemy capability. It does not further either of our basic principles. It simply creates more known fixed targets, without directly improving our ability to evacuate them when they are subjected to attack.

Conversely a progressive increase in off base dispersal, along with the organizational changes minimizing centralized exposure of equipment and personnel, would seem to show immediate benefits. If we disperse from the aiming point—the runway—to points beyond the destruction diameter of one average weapon, an attacker is obliged to choose between destroying the runway or offsetting his attack to hit our units. This immediately multiplies the effort required for decisive results. Next, as the circumference of our dispersal area grows, any slight outward increase tremendously enlarges the size of the dispersal area. This correspondingly increases the number or the yield of weapons required to ensure a worthwhile return if our personnel and equipment are to be the objective.

Off base dispersal seems likely to yield more lasting survival benefits than would decentralization to many small-unit bases. This will be particularly true where ground mobility can be combined with warning to allow a balance between the equation of cost, peacetime operational needs, and the degree of dispersal normally maintained, *versus* the degree of dispersal adopted under various alert conditions. Even then off base dispersal cannot be considered the ultimate solution since it does not prevent the destruction of the base and the possible trapping of the equipment in dispersal areas.

This problem of loss of the base will exist as long as we retain a base of any sort. As a result loss need be considered only in connection with survival measures that are predicated on inde-

pendence from fixed bases. Until development permits operations of that nature, our only recourse is to provide certain alternate sites that we can hope will not be attacked because to the enemy's knowledge they would not be occupied during the initial strikes. While his reattack capability will naturally bring them into focus, the counterair effort by then should have begun to equalize the situation. We will have warning from the prior reconnaissance an enemy will have to make if he is not to waste weapons.

The readjustment of the posture of air forces for atomic war must therefore include a greater degree of ground mobility, an increase in the capability for operations and maintenance (even if only dispersed around one fixed installation), and emphasis on obtaining warning and on alert procedures and techniques to exploit such warning to the greatest degree possible.

As we develop improved launching capabilities for aircraft, we can foresee the ultimate use of launching devices to recover equipment saved by off-base dispersal but left up in the air by the destruction of the runway. Following this we might even be able to institute launching from dispersal areas, using runways only for recovery. Lastly, we would hope to achieve the complete abandonment of the known target—the runway—and proceed to mobile operations from undefined locations. This action would oblige the enemy to reconnoiter and identify the target almost immediately prior to attack. With this kind of tip-off to enemy intentions, we would have the necessary warning to implement our survival plan and the time to trigger off our counterattack against his delivery vehicles.

Most of the survival measures and adjustments in posture we have discussed can only be taken at the expense of some effectiveness in operating rates. This loss, however, will be more than offset by the increased striking power of aircraft with atomic weapons. Thus as part of our readjustment we can accept a reduction in operating capabilities and in the tempo of the war effort. Obviously there will be no profit in adopting measures which will decrease our unit effectiveness more than if the unit absorbed the attack against which it is being protected. There may be extreme cases in which the nature of the threat is such that all active, passive, and organizational measures to keep us above the minimum survival threshold while retaining effectiveness have been exhausted. In this extremity we may progressively have to abandon attempts to carry out that particular mission. This is a theoretical and distant ultimate, because the survival problem is relative on both sides. If the enemy fails to keep up with weapons development, his antiquated formations will be an easy mark, and the outcome in our favor will be a foregone conclusion. If he does evolve, his effectiveness will be reduced in like proportion to ours.

For the first time in history we are faced with the absolute necessity of modifying radically the posture of our forces in peacetime. We must risk the outcome on untried solutions. This places a high premium on analytical studies and scientific advice. All of us must give the greatest attention to this problem so that our new postures are certain of being the most practical. In past wars attrition built up gradually in intensity from D-day onward. This time scale permitted us to begin with the lessons of a previous war and modify these to fit new situations and weapons. Today the presence on D day of decisive destructive power on both sides no longer allows the luxury of a training period. We will probably have to stand or fall on our ability to solve the problem on paper, in advance. The outcome may well be a foregone conclusion before the first shot is fired and have depended on the competence of the contestants to grasp the problem and to generate sound solutions.

Provided we face up to the necessary modifications, our land, sea, and air forces in combat theaters should continue to serve a useful role in atomic warfare. This should remain true until such time as the technique of using the atomic weapon may change from one of application to selected targets in support of specified tasks to one of area destruction or of barrier-type operations. The cost, quantity, and magnitude of weapons required for such applications and the multitude of problems that they would create make their adoption unlikely for some years to come.

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Part IV: Balance of Power in the Atomic Age

FOR the past year the press—and the statesmen—of the Western world have been speculating about the impact of atomic weapons on international relations in peace and war. Their conclusions have been diverse. Some advocate the concept of massive retaliation, others the banning of all atomic weapons unless they are first used against us. All point to the dire consequences to civilization from the unrestricted use of so-called weapons of mass destruction.

While the North Atlantic Council endorsed a strategy of atomic defense in Europe* and pressed for a German contribution, a well-known British militarist, Captain Liddell Hart, argued in a recent series of articles in the London *Times* and *Picture Post* that theater forces would be of "little value" in a major atomic war and that what NATO needed in the theater was "an extensive gendarmerie." While Colonel Walkowitz, in the February 1955 edition of *Air Force* proposed a counterforce strategy for future "hot" wars, Air Marshal Sir Robert Saundby, in the February 11th *Spectator*, concluded:

> . . . full scale global war has become unthinkable, so long as both East and West have the power simultaneously to destroy each other. And the more clearly the peoples of the world understand the nature of thermo-nuclear warfare, the more quickly shall we reach the stage at which all nations will realize that they must renounce war as an instrument of policy, or accept the probability of the extinction of the human race.

The effects of atomic arms on world affairs are by no means clear. Many questions are unanswered. Without pretending to solve all problems, we can narrow down some of the unknowns by applying to the broader field of power relations the lessons derived from the analyses of the use of these weapons that were undertaken earlier in this series. Of principal interest in this respect are (1) the inevitability of using the atomic weapon, forced on us by the changes we must make in the posture of our

*See Hanson Baldwin, "Use of Atomic Arms," New York *Times*, 21 December 1954.

forces in light of the atomic threat; (2) the obvious change in the tempo of hostilities brought about by atomic stockpiles; (3) the enhanced importance of D day ready forces in comparison to the mobilizable base; (4) the effect of new weapons on the survival of land, sea, and air forces; and (5) the obsolescence of any concept of a long drawn out war of attrition.

The revolution in military capabilities brought about by these and related changes will certainly alter the balance of power among nations. In the past, mobilizable manpower, economic potential, and natural resources determined to a large extent the potential strength of a nation. Today atomic stockpiles, delivery capabilities, and their supporting ready conventional forces are the sole major factors that influence a nation's military worth. These new factors are more tangible and less dependent on the circumstances of geography, size, and population. On the other hand the cost of the atomic weapon and particularly of the attendant delivery systems is so enormous that many nations are being priced out of any independent capability.

In a recent article in the *New York Times** Mr. C. L. Sulzberger suggested that the day will come when not only great powers but also smaller nations will have access to atomic weapons and will regard them as conventional. "The international balance has already altered as weak countries with large deposits of fissionable material have assumed new importance. It will alter again when little lands possess arms capable of blowing up the world." He further suggested that when this time comes the atomic bomb will be "the equalizer that the six shooter was in the days of our own Wild West. The revolver gave the small man a chance against a bully. Now the little nation will be capable of completely hyperbolic action." In effect he was proposing a variation on the old Western saying about men and Mr. Colt—"God made *nations* large and small but the *atom* made equals of them all."

The importance of ready atomic force in the power equation makes it theoretically possible for these "little nations" to become as powerful as their larger neighbors. Yet clearly the trend today is toward a more black and white distribution of strength than in the past. Until recently all modern countries had a war waging potential of varied effectiveness. Now the world is being divided into "have" and "have not" nations: the "have" can afford an atomic arsenal and its accompanying delivery system; the "have not" cannot afford these and, in many instances, can no longer afford balanced conventional forces.

*See "Foreign Affairs," New York *Times*, 20 November 1954.

WHAT are the factors that enter into an assessment of a nation's strength in the atomic age? Obviously the atomic weapon itself, with its vast destructive capabilities, is a major consideration. For the first time in the history of conflict, the means of destruction are practically unlimited. Inability to destroy an accessible target need no longer restrict the scope of operations in a future war. One constraint has been lifted--inability to destroy. Thus other considerations must govern our planning—such as the objective, the ability to deliver and to absorb atomic attack, etc.

Next in importance to the advent of the atomic weapon is "accessibility."* A nation that "controls accessibility" can be said to combine the ability to deliver anywhere in the world while denying like freedom to an opponent. The first requirement is air power with sufficient range to strike any target on earth; the second requirement is an offensive/defensive performance adequate to ensure the survival of the delivery force.

In the past, distance and geographical barriers afforded a high degree of protection to favored nations. The advent of modern aircraft with global range and strike capabilities has made all parts of the world accessible to atomic attack. "Without accessibility resources are valueless. The most important strategic factor [in the air age] is then seen as control of accessibility."** Air power adequate to control "accessibility" is therefore a vital element in determining a nation's strength.

We must now ask ourselves where conventional forces come into consideration. These forces, of all services, now constitute a substantive element of national strength only to the extent that they are needed to ensure effective atomic delivery and to prevent undesirable enemy operations pending the outcome of our own atomic attacks. Air forces will be needed to saturate enemy defenses, to intercept his attack, and to reconnoiter for the delivery forces. Land forces must prevent the enemy from physically occupying friendly areas by infiltration, subversion, or other means that are not subjects for atomic attack. Naval forces must defend lines of communication until the enemy's offensive submarine

*[For a more detailed analysis of accessibility and its implications see "The Power to Penetrate," *In Controls Quarterly Review*, VI, 1 (Winter, 1953-54), 29. The Editors are constrained to accept the term "accessibility" as used here. In normal usage, it would be the target that had the property of accessibility, not the attacking aircraft. Since no other useful term exists for this important aspect of air power's flexibility, it is employed here in the special military sense defined by the author.—*The Editors*.]

**Lt. Col. R. Taylor, *Geography of an Air Age* (London: Royal Institute of International Affairs, 1948), p. 55.

capability can be destroyed at its source. Conventional forces in the atomic age should therefore be considered as an adjunct to the atomic delivery system, whether the weapons are delivered by air or ground. The purpose of these forces is to ensure effective employment of the atomic weapon.

If it were possible to envision an immediate payoff from the atomic destruction of any given target system, we might dispense with most conventional requirements for major wars, as was recently suggested in the articles by Captain Liddell Hart. But there is a time factor involved in the act of atomic delivery, whether strategic or tactical, and a further time lag in payoff. Also some targets must be adjusted to the capabilities of the weapons. Thus enemy formations that can move and disperse rapidly, such as most land formations or naval units, must be opposed by their counterparts who will locate them and force them to concentrate into worthwhile targets.

It seems clear, therefore, that a certain level of conventional forces must be taken into account in assessing a nation's strength. It is equally clear that once a country or coalition attains the force level required to ensure the effective application of its atomic weapons system, any further increase in conventional forces will be of little or no consequence to the outcome of the battle. Such an increase may even prove to be a liability, since it must lead to greater concentrations and, hence, to greater losses for each atomic weapon absorbed, without in any way bettering the atomic delivery capacity.

The importance of mobilization and industrial potential has been changed by the atomic weapon. We have noted in the previous parts of this series that the decisive phase of an atomic war would be of short duration. There simply would not be time to mobilize untrained manpower or to convert and expand industry from a peacetime to a wartime economy. This factor is no longer of real consequence in assessing the strength of a country. Only force in being on D-day matters, a fact which greatly facilitates the analysis of the relative power of nations because it eliminates a highly speculative, intangible element from consideration. In wars of attrition, particularly the last two wars, the aggressor lost through his failure, or inability, to assess properly the mobilization potential of his enemies. This nebulous element with its psychological will to resist--counterpart introduced a high risk in every act of aggression. Future aggressors will be able to estimate with relative accuracy the ready capability—atomic, conventional, delivery, and defense systems—of his opponent.

There are therefore three basic elements in the power equations of the future—(1) the atomic stockpile; (2) "control of accessibility"—including the ability to deliver and to deny delivery to the other side; and (3) conventional forces, to the extent required to ensure effective delivery and to prevent the enemy from advancing in vital areas pending the payoff from the atomic attack. There are many secondary factors which admittedly affect the balance of power, such as the national psychology, the will to resist, and warning of attack. But these are so overshadowed by the three basic elements that they need be considered only if and when a general balance exists among the basic elements, and when the ensuing situation is sufficiently tense to make marginal differences of consequence.

ATOMIC weapons are now available only to those countries able to obtain the necessary technical knowledge and to support the cost. For some years hence this is likely to be a relatively small group. Even in cases where these weapons might be ultimately provided or developed, the steady increase in cost of delivery systems and of supporting conventional forces threatens to price many governments out of an independent military establishment. This entails an attendant loss of freedom and authority in foreign affairs.

The value of military forces to a nation—in backing up a foreign policy or in discouraging minor war—is not necessarily in direct proportion to their over all strength. Differences in strength have always existed, yet diplomatic relations among both large and small countries have been effectively supported by forces of varying size. This worked in the past because a balanced, independent force—even though small in size—could be expected to put up sufficient defense either to make aggression costly and uncertain or to gain time during which allies and world opinion could be solicited in their support. The key factor was the quality of the forces resulting from a *balanced, properly diversified,* and effective military establishment.

Most countries today seem to believe that they possess a useful, balanced, independent military capability, at least in conventional forces. On this capability they establish their precedence in the line up of world powers. In my opinion such an independent military capability no longer exists in many of these countries. This is true not merely because in lacking atomic weapons they

lack the basic ingredient of modern military power. It may be that in a few years atomic weapons will have come down in price to a point where most nations can afford them. But there is no indication that this will happen in the case of the attendant delivery system. The increased intricacy of all weapons systems and the greater demands that they place on the economy for rare materials, technical perfection, manpower, and complicated manufacturing techniques have priced many of them out of national arsenals. The cost factor is slowly, quietly eroding away the balance—and therefore the effectiveness—of many national military establishments.

Up until World War II nearly all major countries maintained armed forces which included elements of all important weapons systems. Navies had both capital ships and submarines. Air forces ran from heavy bombers to fighters. Armies possessed all worthwhile categories of tanks, armored vehicles, and artillery weapons. In 1955 few countries even attempt to budget for such items as heavy bombers, carriers, capital ships, heavy tanks, or large guided missiles. These weapons were not dropped from their military requirements because of obsolescence or for tactical or strategic reasons. Rather it was because the governments concerned could no longer afford them. Since those few remaining nations that can afford all these weapons continue to maintain them, it seems clear that failure of other countries to do so reflects a weakness or unbalance and in most instances is not attributable to tactical or strategic considerations.

If these prohibitively expensive weapons systems were only those associated with major world wars, the matter might not be so serious. In this day and age most smaller powers do not presume to fight a world war without allies to balance out their team. Thus if the weapons systems that they can procure and maintain are useful in a joint defense effort such as NATO and also provide that minimum balance necessary for their overseas and local security and for other lesser national needs, these governments could be satisfied that they still had national armies in a sense. Yet this is not the case. The gradual loss of independent military capability on the part of most nations is not limited to their ability to prosecute major wars. The cost factor is well on its way to reducing a small nation's force to little more than a constabulary, of value only for internal police purposes. If this trend continues most nations will be totally unable to claim any military backing for their foreign policies, or the ability to contribute to the "control of accessibility" in a collective defense effort.

For example few nations today are building light bombers or guided missiles of consequence. Many are still constructing fighter aircraft, but more often than not with the financial assistance of one of the larger countries. Although these countries could probably initiate a program to build a modern jet fighter force on their own, it is highly doubtful if they could do so a few years from now when the 1955 models are being replaced by supersonic types now in the experimental stage. These aircraft are far more costly and demanding in engineering skill, materials, and productive capabilities than current jets. They will be as far beyond the economic and financial means of most nations within the next few years as medium bombers are today. The next step for such nations is to eliminate a combat air force from their force structure, since the fighter is at the bottom of the ladder of air weapons in terms of cost and intricacy. Without an air force no country can claim any effective military capability. The same applies in varying degrees to other services. Future navies without atomic engines and armies without guided missiles cannot be deemed fighting forces. Assuming that atomic weapons eventually become available to these nations, they would still lack the means to deliver.

All these considerations suggest that only two or three major world powers can hope to maintain effective independent military establishments during the next decade. Other nations must look for their security to coalitions, federations, or regional defense pacts. Even within such alliances the smaller nations will have further to centralize their armament programs if they are to make an effective contribution to the group effort. Had the European Defense Community countries appreciated the futility of their struggle to retain national forces in face of the cost of modern weapons systems, their combined efforts could have lifted them out of the "have not" category for some years to come. The proposed Brussels armament pool does attempt to salvage the loss and should temporarily fill the gap with respect to the NATO group.

Thus we see both the atomic age and the cost of weapons acting as a catalyst for coalitions, alliances, and federations. Yet in entering these unions the countries find that, "What we make on the beer we lose on the peanuts." In return for the collective capability afforded by a balanced team, they must sacrifice some independence in foreign affairs, since all members obviously must agree on any objectives that might lead to the use of the collective military establishment.

In summary the net effect of atomic monopolies and increased costs of armament of all types is to limit the number of powers, or power groupings, in the world. For practical purposes we need only deal with two such factions in considering the balance of power at this time: NATO and its allies on the one hand and the U.S.S.R. and its satellites on the other. The possibility of creating a balance of military power by the use of a so-called third force seems to be limited. There are aspirants to a third-force position, but their influence, for lack of the major elements of independent strength, is largely restricted to the cold war propaganda and psychological field.

Some of the current East-West tension can no doubt be attributed to the sensitivity of the balance of power in a two party game. When a third power served to balance two conflicting areas, a wide range of military capability on the part of the third power could tip the scales on one side or the other. This acted as a dampener, and fluctuations in the capabilities of the primary contestants did not arouse undue concern. Loss of this stabilizing element, together with the advent of weapons of mass destruction on hand and in decisive quantities, has placed a high premium on marginal differences. If either man takes his eyes off his opponent for a split second, he is likely to get shot. This generation must face life on the *qui vive*.

WE have seen how the ability to wage war is gradually being centralized within a very few nations or coalitions whose strength is basically atomic. It is inconceivable that a nation, or coalition, without atomic weapons could defeat an opponent who had and used nuclear force. Since these weapons are the key to real power in this day and age, we must consider how they might be used in conflict, and what the consequences would be. This will allow us to gain some insight into the relative capabilities of the East and West for either global or peripheral war during the next decade.

In modern war the application of force can be divided into two broad categories: first, that applied against the heartland of the enemy to destroy the national will and ability to wage war; and second, that applied against an enemy's combat potential, generally in the field, to prevent this potential from achieving specific military objectives. In considering the use of atomic weapons in both situations I shall, for the sake of convenience,

refer to the former as the "strategic" use and to the latter as the "tactical" use. This differentiation in no way implies that any delivery system or type of targets comes solely under either category. It relates only to the nature of the objective to be furthered by attacking certain specific targets.

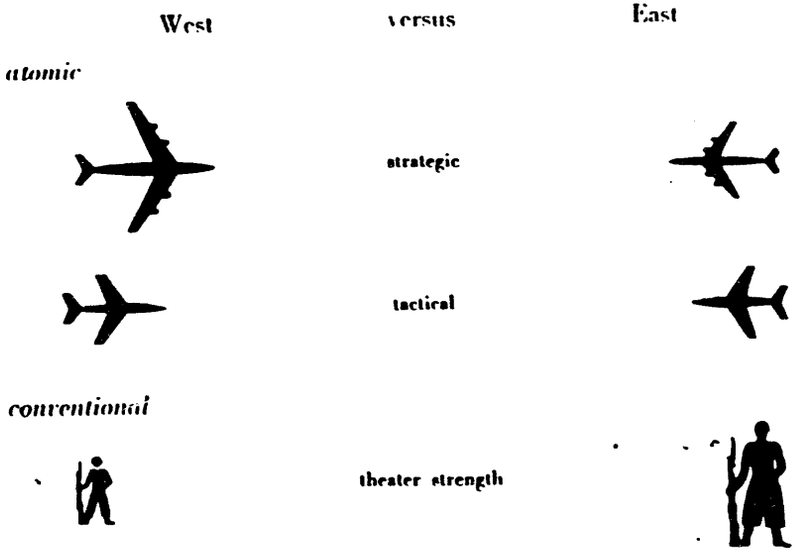
Should a global war develop, it will inevitably be atomic—for the reasons discussed in Part I of this series. A major atomic war can only take two forms: (1) total war where atomic weapons are used in both the tactical and strategic senses, and (2) limited or peripheral war where these weapons are used only in the tactical sense, as defined above, and where operations may also be limited to a specific area. A solely strategic exchange is not considered a realistic possibility, since this would postulate that all other forces remained idle.

Strategic Atomic Warfare. Where do we stand in a total war that subjects both the national will and the ability to fight, as well as the military forces, to atomic attack? Under these conditions it is theoretically possible for both sides, should it serve their purpose, to carry mutual destruction to such extremes as to be synonymous with what is commonly called "national suicide." The fact that this capability exists need not imply that it will be used. The operative phrase becomes "if it serves their purpose."

Total war involving the massive atomic exchange of sizable stockpiles could not last in an organized fashion for many days. Modern society is highly dependent upon communications, distribution of essential supplies, transportation, and community relationships. The simultaneous destruction of most major centers of population in any country would create problems of catastrophic proportions. These, coupled with the ensuing epidemics and panic, could be expected to swamp the capability of any remaining government to maintain order and perform its functions. When a single atomic attack against a major population center can produce some 30 million wounded and 9 million deaths, it is hard to envision a human endurance that could endure such catastrophe and still conduct organized warfare and readjust remaining national resources to support a prolonged war of attrition.

No rational government would intentionally submit its people to such extensive devastation. The outcome would be too indefinite. Even if ultimate victory could be rationalized and foreseen, it would be a Pyrrhic victory. This type of operation against the enemy hinterland makes sense only so long as there

Power Relationship Today



are good to excellent prospects of keeping it one sided. This is the situation today, in which the Western powers are dominant in the strategic atomic, or global war, capability. Both the weapon and accessibility factors are on our side. Conversely we are inferior in the conventional mass, or local war, capability.

Under these circumstances if the Soviet exploits his superiority in conventional mass in actions against peripheral areas of major interest to the West, we can retaliate in the strategic nuclear field and do so with reasonable certainty that his strategic counterattack capability is sufficiently limited to warrant the risk. This, in an oversimplified way, tends to explain the current reliance of the West upon "massive retaliation" a formula which can only be valid so long as one side has a clear advantage in strategic capability.

As we analyze all of the ways the East might initiate and prosecute a major war today, with today's relative capabilities, we find that the balance of power lies in favor of the West. If the East should attack under almost any set of circumstances, the West can react so as to defeat them with our decisive strategic

and atomic superiority. The only profitable course of action open to the East under these circumstances would be to strive for limited objectives by attacking in peripheral areas with conventional forces, withholding all atomic weapons except in retaliation against Allied use. The gamble here is that the West can be prevailed upon not to use atomic weapons, even at the expense of the probable loss of the peripheral areas. Thus the only course of action which would promise the East success is one dependent upon the Allies not using atomic weapons except in retaliation.

When the atomic stocks and the accessibility factors of two nations or groups of nations are such as to promise an exchange of strategic destruction, regardless of who initiates the conflict, the advantages of strategic war to either side are less clear. The weapons systems and the strategy involved will tend to neutralize one another. At this point a condition of balance commonly referred to as "atomic parity" or an "atomic stand off" would develop. This is a condition where the strategic atomic capability has reached sufficient proportions on both sides to produce decisive results. The delivery systems versus the defenses are such as to make effective delivery relatively certain for both sides—regardless of who strikes the first blow. Neither side wholly "controls accessibility."

In a situation of relative parity any attack to destroy the sources of national power must be carefully weighed against the inevitable retaliation in kind by the opponent. The outcome of such an exchange would be uncertain, provided always that the atomic and accessibility factors remain relatively equal. Both sides would suffer devastating losses. Mutual destruction sustained under these circumstances can hardly be shown as being advantageous to either side. It seems probable that when the atomic and delivery capacities of two powers assume a balanced relationship, a strategy of massive retaliation will not be initiated except as a "last resort." This last resort might arise if the enemy's success in pursuing a conflict by other means, hot or cold, so "cornered" the other side as to leave him no alternative between being occupied and annihilated or gambling on mutual suicide. This suggests that in the atomic age it may be critically important not to pursue any local or initial military success to the extent of forcing a dire choice—such as unconditional surrender—on an enemy who still has a strategic nuclear capability.

Some spokesmen have claimed that when an atomic stand off occurs between two powers, a valid deterrent to hot war will exist. I consider this to be wishful thinking. It assumes that total

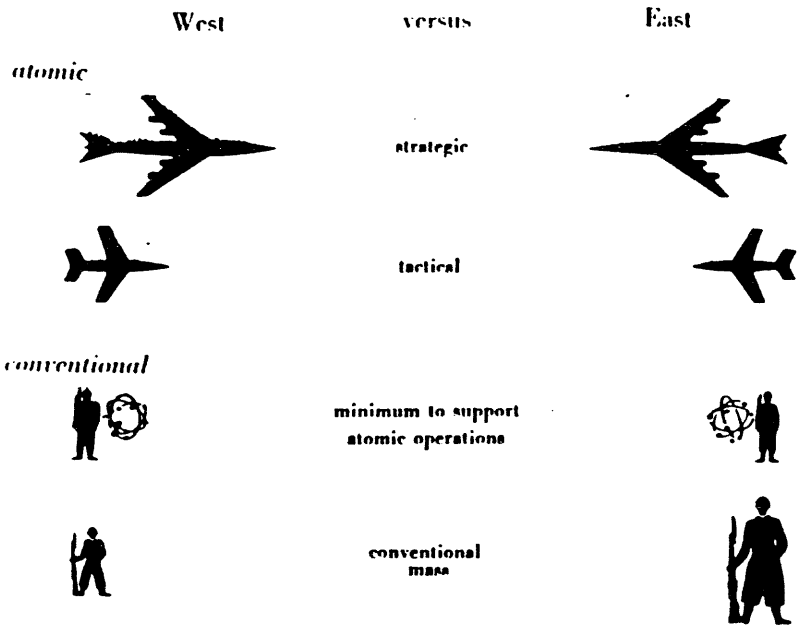
atomic war must inevitably result from any sort of active warfare, even though nothing is gained thereby. A far more realistic view is that nations will not give up conflict as such but will continue to pursue their aims by any and all means that promise to serve their purposes. This being the case we must consider what form active conflict might take if both sides refrained, out of mutual interest, from strategic attack against the hinterland of the other.

Tactical Atomic Warfare. If atomic weapons are used in theater warfare, primarily against military targets, any aggression by organized armed forces can henceforth be stopped and defeated. This is true notwithstanding a relative local strength in conventional forces, so long as both sides have the minimum required to make their atomic delivery systems effective. The nondiscriminatory characteristics of the atomic weapon, responsible for its devastating effects against strategic targets, also provide the means of directly annihilating the enemy's armed forces. If it is possible to destroy the arrowhead, there is no need to break the bow or the shaft. Thus tactical use of atomic weapons against military or quasi military objectives can maintain a balance of power. If necessary, war can be waged through the tactical use of atomic weapons when the Soviet atomic and accessibility factors approach equality with those of the Allies, even though an equality of Allied conventional power vis à vis the Soviet's has not been reached.

The NATO powers have the economic, political, and technical capacity to maintain parity, if not superiority, with anything the enemy can develop in the nuclear field or in "controlling accessibility." In addition we can maintain with little difficulty that minimum level of conventional forces necessary to support our atomic delivery capability. But should we fail to use atomic weapons in theater warfare out of fear that their use would spread to the strategic field, the East would have a decisive local advantage in their superior conventional capabilities. This would create an unbalanced situation and invite Soviet aggressive ventures on the periphery, particularly against NATO and other areas. This could happen any time we gave the Soviet reason to assume that massive retaliation would not be used unless his aggression were pursued to the point of last resort.

When we can no longer safely checkmate Soviet force with predominant massive retaliation, the substitution of tactical atomic weapons can redress the balance of power. At that time the West and East may be considered essentially equal in the atomic and accessibility field, both tactical and strategic. Both can main

Power Relationship Tomorrow



tain conventional forces in those minimum quantities required to make their tactical atomic capability effective and hold vital areas pending the payoff. And the East can maintain additional conventional strength.

Assuming a strategic stand-off, strategic aggression obviously will not be initiated. Should it take place, the West can retaliate in kind, and both would suffer with no benefit to either. If the East attempted local aggression, the West would have both the atomic and conventional team required to halt their attack. Any superior conventional strength that the East commits will be a liability to the extent that it will increase their concentrations in the combat areas and thereby provide greater returns to our weapons. Thus we can say that provided the strategic, tactical, and minimum conventional forces are kept approximately equal, or are believed equal by those concerned, a relatively stable situation will exist. Neither side can hope to conduct successful military operations against the other with any degree of certainty as to the

outcome. There is no "invitation to aggression." Thus the maintenance of East-West balance of power in the event of atomic parity depends upon ability to make tactical use of the atomic weapon.

The only valid argument against using atomic weapons in theater warfare is that this will progressively lead to their strategic use. This is admittedly a debatable point. A recent analysis of the subject by Cyril Falls in *The Spectator** concluded that "the sober view must be that while the tactical weapon would not necessarily or logically bring down the hydrogen bomb, there is a grave risk that it would." I am inclined to believe that the risk is not very great, mainly because no rational government will commit an act which will not further its objectives and will also obviously be to its ultimate disadvantage. Individuals, and in certain instances dictatorships, have taken steps that could be described as "mad" or unreasoned, but sound planning cannot assume that great powers in the modern world are likely to act this way. The limiting factor in expanding from tactical to strategic employment of atomic weapons will be the objective pursued at the time. Demarcation should occur at whatever point the objective changes.

To illustrate this, let us assume that both sides in a contested peripheral area elect and are able to use atomic weapons. The aggressor's objective is clearly the occupation of the area. The defender's objective is to prevent the occupation. By no stretch of the imagination can we expect the immediate objective on either side to be the conquest of the other's heartland. If it were, we would not be dealing with a local act of aggression. This being the case, let us assume that the adversary destroys the screening forces protecting the area. What would be the defender's reaction? Bomb the aggressor's seat of government? Why? It does not serve *directly* the purpose of defending the contested area. The objective in destroying the screening forces would be to open the way for invasion. The countereffort would logically be directed at the destruction of the invasion force, either in its home stations or en route as a substitute for the holding action previously envisioned. This would maintain the conflict within the scope of the objective to conquer or defend the local area.

In retaliation for destruction of the invasion force the aggressor might conceivably attempt to destroy the bases from which the atomic bombs were launched against his invading force. Again this would constitute a reasonable continuation of the objective in that it eliminates the threat against further attempts at invasion. But at this point the conflict can be stabilized, and the progression from local to general war should cease. All forces directly

*11 February 1955

concerned with defending and attacking the contested area have been brought into the light.

If the aggressor extends his target system to, say, London or Washington or if the defender in turn elects to attack Moscow or Peking, the objective must change. The defense or conquest of the contested area would no longer be the primary aim. Rather the defeat or conquest of the U.S.S.R. by NATO or, vice versa, of NATO by the Soviets, would become the objective. Had the greater objective been desired by either contestant, he would not have started the conflict in the comparatively disadvantageous setting of a local operation. Because of the disadvantages of extending the fight to a case of "last resort," the tactical use of atomic weapons in a local situation with local objectives need not necessarily lead to an extension of the conflict to total war. In fact the retaliatory aspects of atomic weapons, in the sense of their destructive capabilities, will tend to mitigate against the expansion of local conflicts far more effectively than if they were not employed.

The atomic age will not necessarily eliminate "hot" wars. Nor will these "hot" wars necessarily lead to the destruction of civilization. A more rational view is that man will continue to adjust his means to his ends. The atomic weapon will be used only to the extent that it will further someone's objectives. In due course this, when coupled with the advantages of quick-payoff targets and the imminence of posthostilities considerations in a short war, will act as a constraint against massive wanton destruction by either side. The vital thing is to maintain a balance of power between the East and the West at each stage in our evolution.

Thus we see that as two contestants with unequal conventional capabilities move toward strategic atomic parity they are obliged to introduce tactical atomic weapons if a balanced situation, and hence peace, is to be retained. With the introduction of these weapons it is then possible to establish a tactical atomic and conventional force combination against which conventional forces above certain minimums would be of little consequence.

Introduction of the atomic weapon into theater warfare, rather than constituting a threat to the existence and security of the free world, is the one factor which will permit us to maintain the desired balance of power between the East and the West. By the same token the raising of a German contribution to provide the necessary minimum force to support our tactical atomic delivery effort in Europe for the next few years without resorting, except in the last resort, to strategic warfare is another valid requirement in furtherance of a stable world condition. It is interesting to note in this regard that the two main objectives of Soviet diplomacy have been to prevent the West from considering the use of atomic weapons in warfare, either strategic or tactical, and to prevent the achievement of the German contribution.

The Soviets perceive quite clearly that if they are successful in either one of the above objectives, all they have to do is await the period of atomic parity and then exploit their conventional superiority in peripheral areas, including NATO. As long as they were careful not to push the U.S. into an extremity where, defeat of our own system being unavoidable, we would just as soon make it mutual, they could hope to conquer the greater portion of Eurasia.

The rapid growth of the Soviet strategic atomic capability is evidenced by advances in thermonuclear weapons announced in February by Mr. Molotov and by the appearance of heavy jet bombers and missiles in the Soviet arsenal. It would seem that the adoption by the North Atlantic Council in December of authority for SACEUR to plan the use of tactical atomic weapons was none too soon. The Allies may well just have got under the wire in maintaining a balance of power and hence preventing any aggressive adventures, at least against NATO areas and the Western periphery as a whole.

Paris, France

Ex

KEY CONSIDERATIONS IN NUCLEAR WARFARE THAT ARE NOT GENERALLY UNDERSTOOD

27

R. C. Richardson

The possible use of nuclear weapons in warfare requires that consideration be given to the changes that this could bring about in such basic areas as: force requirements, assessing relative military capabilities, roles, missions, doctrine, and the cost of building and maintaining effective defenses.

At first it was generally assumed that the nuclear weapon merely added a new dimension to the effectiveness of firepower. They were considered a more devastating and cost-effective form of bombs or artillery. Their impact on force requirements was erroneously perceived as merely reducing the number of sorties, hence vehicles, previously required to deliver any given level of destruction. Attention to the differences they brought about focused in the effects area, such as fall out, incidental damage, potential for escalation, etc. - rather than in the impact that these might have on the requirements to wage wars and the capability to do so.

In the early 1950's, General Eisenhower was obliged to choose between admitting that the minimum forces required to defend Europe were unachievable, with the attendant probability that NATO would disintegrate as governments sought other security solutions, AND finding a credible and achievable (costwise) military solution. The solution that kept NATO viable was the NATO New Approach that led to the NATO Political Directive of 1956 which called for a forward defense based on the use of tactical

nuclear weapons from the ONSET. The evolution of this solution, 1952-1954, brought out some of the fundamental new implications of resort to atomic warfare. Since the mid-1950's, many of these have neither been confirmed or disproved due mainly to anti-nuclear attitudes plus resistance to the changes they dictated by service vested interests.

The defense costs, military capability, and warwaging risks and advantages of adopting a nuclear defense strategy from the onset for all but minor incursions and incidents are staggering. If even half of the findings of the early NATO studies, and related theoretical research and writings, proved valid, the entire problem of coping with the Soviet threat and providing the U.S. and NATO with an affordable and effective, if not superior, military capability can be solved. As a few examples of the type of conclusions that emerge from unbiased evaluation of the implications of nuclear warfare and related considerations the following findings have never been disproved except by assertions:

1. Provided the nuclear weapons are in the hands of troops on D-Day, and the forces are postured and deployed from the onset for nuclear survival and combat, a smaller force can effectively defend against a much larger enemy aggressor. (Not defeat the aggressor forces but effectively stop and stalemate their advance.)

2. In nuclear warfare the classic principle of mass remains valid, but relative mass is to be measured in terms of relative firepower, the ability to destroy, and NOT in relative manpower or quantities of weapon systems at the point of engagement.

3. In all war and catastrophies there is a probable Threshold of

Tolerable Loss. This is the point at which the compression of massive losses and destruction into a short period, visible to the participants, results in combat capabilities going to zero even though sizeable elements of manpower and weapons remain fully operational and combat capable. This can be a decisive factor in atomic warfare resulting in the finding that force size and concentrations above certain levels can actually be counterproductive by inviting a breach of the threshold.

4. Any war fought with atomic weapons will be of short duration. The outcome will be decided in almost all instances by the relative capabilities of the forces in being, if not deployed, at the onset. This must be so because the war starts with maximum destructive means on hand, phase one is the decisive phase during which these are exchanged, and there can be no logical holding, build up, and mobilization phases as a prelude to the decisive phase.

5. In the strategic force arena, superiority is cheaper to acquire than equality. The factor that determines relative strategic power is the control of accessability. The nation that has access to its objectives, whatever, and can deny its opponent access, is both defacto and perceived to be superior. This is determined by the capabilities in "cutting edge" systems - bombers, missiles, space systems, ABM's, etc. - and the quantity and quality of these. Exclusive ownership of these systems confers superiority, so does a generation gap in quality. Competition limited to like types of third and later generation systems makes the quantity factor decisive. Since equality (parity) presumes no exclusivity in dominant capabilities, the decisive quantity requirement makes equality more

costly.

6. Balance, equality, parity, or rough equivalence in strateic nuclear capabilities automatically establishes a requirement for similar equality in tactical nuclear and conventional capabilities if the ability to deter, or deal with lesser acts of aggression, is to be maintained. Only strategic superiority, the umbrella effect, allows for imbalance in relative mass at lesser force levels without accepting overall military inferiority. Strategic equality, as envisioned under SALT agreements, will thus drive up overall defense costs by establishing a new requirement to match Soviet conventional "mass," and tactical nuclear forces. The Pershing II and GLCM NATO programs are early symptoms of this.

Since the advent of nuclear weapons, what used to be a homogenized warwaging establishment, whose capabilities were measured in terms of the sum of the capabilities of all its parts in a single integrated effort, has become essentially three separate components whose use and capabilities tend to be evaluated independently of one another: (1) The Strategic capabilities, (2) The Conventional capabilities, and (3) The Tactical Nuclear capabilities. These are no longer envisioned as being employed simultaneously, or interchangeably, and relative power is frequently discussed and evaluated on the basis of comparisons between one or more of these elements while ignoring the others. This results from indecision as to how a future war will be fought and with what weapons and constraints. It is a subconcious endorsement of limited or controlled warfare and this notwithstanding the historical fact that citizen soldiers won't fight well, and the public will not accept major losses or defeat, in wars wherein weapons or capabilities are withheld for political or emotional reasons

that had they been used might have led to victory and/or prevented the losses. Viet Nam is the classic illustration of the bankruptcy of the concept of limited, controlled warfare. When a nation's vital interests are at stake, and public support for the war effort is required, it should fight with any and all means and weapons it has or not fight at all.

If the above principle were accepted, as it is by the Soviets and should be after the Viet Nam experience by the U.S., the above artificial compartmentalization of military capabilities would disappear, at least in so far as it affects the evaluations of relative U.S. versus Soviet capabilities. Having accepted the principle that any and all means would be used in any major war, such as in NATO or between the U.S. and U.S.S.R., the so-called DUAL capability implicit in the NATO Conventional-Flexible Response strategy, and in the present U.S. force structure, would give way to optimizing the U.S. forces and capabilities on the basis of the most advanced and cost-effective means and weapons, and to fully exploiting those of the above implications of atomic warfare that were validated, as well as other capabilities such as offensive and defensive space systems, biological and chemical weaponry where useful, and the integration of these into one total warwaging military capability.

In summary, the U.S. today is paying for three different ways to wage what should be one type of war. The cost of this political and emotional

approach to national security is tremendous in both money and military effectiveness. To maintain the figment of a major conventional capability we are paying for mobilization, post D-Day build up, and deployment capabilities as well as for certain forces and weapon systems, we cannot afford in quantities to match the Soviets, or needed to sustain a major conventional war of attrition, and would not need at all if we planned for a tactical nuclear response to any Soviet aggression of consequence such as against NATO or against our vital resources in the Persian Gulf.

For over 20 years the U.S. national security has been bastardized unduly for non-military reasons. Ideas, aspirations, emotional conclusions increasingly influenced the selection of weapon systems and strategies in the 1960's and 1970's. Historically, and today in Russia, military capabilities evolute with the fullest exploitation of technology. Military weapons used to be determined by ONLY three factors: (1) that they conferred a clear advantage; (2) that they were technically feasible, and (3) that they were cost-effective - we could afford them. Since the 1960's a fourth consideration: political, emotional, or arms control acceptability, was introduced. By constraining growth in certain areas for non-military reasons - such as in ABM defenses, offensive space systems, nuclear weaponry of all types, etc. - we perturbed the balance in what might be called the National Security "ecology." We bought delivery systems like aircraft and carriers that are clearly incompatible cost-effectivenesswise with conventional munitions, but denied these the use of nuclear munitions. We placed reliance, logically, on space reconnaissance systems while not developing the associated defensive and

offensive space-based capabilities required for their survival and optimum effectiveness in wartime. And, we agreed to arms limitation treaties like SALT I in one sector - strategic systems - while ignoring the impact these would have on the balance of forces in other sectors such as in conventional or tactical nuclear capabilities, along with the costs in money and the draft of them having to right these.

There is a fundamental principle that has been largely ignored for over twenty years and that must be re-applied if the U.S. is to recover both an effective and affordable National Security posture. That is:

> "A nation's defense forces and capabilities must inevitably evolute towards the fullest exploitation of all existing and cost-effective technologies. Only if this is done, and strategy, tactics, and doctrine adjusted accordingly, can the nation hope to have optimum defenses at minimum costs. Conversely, non-military limitations to otherwise logical military requirements lead to snowballing inconsistencies, confusion, and increasing costs in national security."

1959

REVIEW OF THIS MATERIAL DOES NOT IMPLY DEPARTMENT OF DEFENSE ENDORSEMENT OF FACTUAL ACCURACY OR OPINION.

A

A DISCUSSION OF THE IMPACT OF ATOMIC AGE TACTICS ON LOSS AND DAMAGE IN WAR

(as amended by AF)
OBJECTION TO PUBLICATION ON GROUNDS OF MILITARY SECURITY
14 OCT 1959
OFFICE OF SECURITY REVIEW (OASD L&PA)
DEPARTMENT OF DEFENSE

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SUMMARY. This theoretical study argues that the development of new weapons has always been accompanied by dire predictions as to their effect on nations and civilizations. In practice the predictions never materialize since strategies and tactics are adjusted so as to derive useful returns from the new weapons. The atomic development is no exception, and the new tactics to exploit it actually suggest that nuclear warfare in the future may be less destructive than past conventional warfare, provided we accept it as inevitable and adjust our forces and target strategy accordingly.

Whenever atomic warfare is mentioned we unconsciously envision tremendous damage and destruction coupled with massive loss of human life. The tendency to associate the use of any or all types of atomic devices with catastrophic destruction, and our fear of this, in turn influences free world strategic thinking and defense policies. Any argument or theory that reduces the prospects of atomic warfare, in the mind if not in fact, is avidly received. Conversely, attempts to obtain the economics and security advantages possible by normalizing the use of the new munitions are actively opposed.

The stalemate, or mutual deterrence, theory is an excellent example of the popular effort to somehow wish away atomic war. A rational analysis of the military facts gives little confidence in the likelihood that atomic plenty has eliminated premeditated nuclear warfare, by creating a state of mutual deterrence. Notwithstanding this, many otherwise objective people grasp at this straw;

some to satisfy their desire to wish away any atomic holocaust, and others with the obvious intention of capitalizing on this popular desire to seek reductions in our expenditures for strategic general war forces.

There is nothing in history, or in the present international situation that suggests an end to wars. On the contrary, it seems likely that there will again be wars, of varying sizes, and that, as in the past, all weapons and devices which are clearly useful to either side in achieving their objectives, will be used. This is not to say that all weapons will be used in all types of wars. Under some conditions certain weapon systems may not best serve the military or political objectives of the participant. It is to say, however, that their use or non-use will be determined in the last analysis by whether or not they will help one arrive at a favorable outcome rather than by psychological considerations, treatées, or fear of the effects.

There are two conditions under which atomic weapons will probably be used in future wars, whether large or small. The first, and most generally recognized use will occur when one or both sides find themselves in a situation which we might term "of the last resort." This is where there is no other way of solving the security problem by military means. It is a condition where either the maximum atomic destruction anticipated is accepted as a lesser evil than any other outcome; or, where the weapons have to be used, if the forces are, due to the practical impossibility of retaining both an atomic and conventional capability.

The second condition under which atomic weapons will be used is where such use makes sound military and political sense. This condition exists when there are conventional ways of solving the military problem, but where these conventional ways prove to be less practical, more costly, and generally speaking less politically and materially desirable than would be the use of the atomic weapon. To date very little consideration has been given to atomic warfare originating under these circumstances because of the general assumption that any war with such weapons will produce catastrophic levels of destruction and as such could never qualify as politically or militarily desirable. If this assumption should be wrong, however, an entirely different point of view would exist as to the desirability of using atomic weapons. Let us examine this possibility.

Throughout history the advent of improved means of destruction has been accompanied by dire prophesies as to their impact on national survival. When the bomber first appeared after World War I, Douhet forecast that a few of these new weapons would soon be able to destroy entire nations.

Throughout history, the military has succeeded in devising strategies, tactics, and organizations with which to effectively exploit all useful new weapons. The world has survived and the prophets have always been wrong. Is there really a basis for assuming that this process must now end merely because we have greatly increased our ability to kill and destroy with the invention of the atomic bomb?

Individuals and, sometimes, even governments occasionally do irrational things. On the whole, however, the normal instincts of self-preservation, the profit motive, and, as a last resort, common sense tend to prevail. Men invariably learn to live with new inventions, including advanced weapons for war, and in due course they manage to exploit most of these to their advantage.

If one really believed that the use of atomic weapons in war will result in the destruction of entire nations or civilizations, one would be inclined to accept the argument that this type of war will never occur. In fact, I suggest that neither development is likely. There will be wars in the future in which atomic weapons are used to the extent that they are found to be advantageous, and these wars need not necessarily result in greater losses or in more extensive destruction to the nations involved than occurred in past non-atomic world wars.

Cataclysmic Damage Possible

There is, however, one set of circumstances under which the use of atomic weapons could result in mutual devastation to no one's ultimate advantage. If the soldiers and their governments fail to appreciate and fully exploit the impact of the new weapons on the conduct of war, and if the use of atomic weapons in such wars as do occur continues to be deterred for an exceptionally long period there could be a major conflict in which civilizations was destroyed as a result of one or both sides overplaying their hand out of ignorance.

Were it practical to deliver and absorb atomic bombs in series, and with sufficient time intervals to allow all concerned to reflect on the effects in light of the issues at stake, it seems very likely that civilized governments would not allow their countries to exchange more than a score, or less before finding good reasons to return to the conference table. Unfortunately, this is not a realistic method of waging war. Under present concepts both sides are most likely to make a maximum effort as soon as the battle starts. As a result, it is possible that both sides will simultaneously unleash far more destruction than either one would actually need to achieve its objectives if the timing were different. The extent to which commanders "overplay their hand" in this respect, however, will vary directly with their understanding of the capabilities and effects of the new weapons.

In the past, nearly all military developments of consequence could be tested in any war, no matter how small. The frequency of small wars kept pace with the development of new weapon systems. Much of our knowledge of tactical air at the start of World War II came from the activity of German pilots and equipment in the Spanish civil war. Thus, the ability to test new weapons, acted as a safety value, by providing experience with respect to what could be expected from new inventions.

The bi-polar nature of today's conflict, the monopoly of the large nations in radically new weapons, and the fear of the effect of their use have prevented small scale tests in lesser wars. Concurrently, the increased tempo of technological progress is generating more and more radical, yet untested, devices. Some forces have been re-equipped with several generations of new weapons since those last used in war. Most of the atomic devices, missiles, and long-range bombers that form the backbone of our military capability have never seen active combat.

The growing gap between weapon capabilities and practical experience as to how best to exploit these, create a situation in which it is all too easy to hedge against ignorace with quantity and plan the massive efforts dictated by the limited capability of World War II weapons but with the new and far more lethal devices. The obvious outcome is overkilling of the target. This is what we must now guard against, since it is one way in which an irrational amount of destruction could be unwittingly and unnecessarily turned loose on the world.

The Causes of Excessive Damage

The damage sustained by a nation in war depends to a large extent on the number, type, and location of targets its opponent seeks to destroy in pursuit of his military objectives. The fear that the use of atomic weapons will lead to cataclysmic levels of damage stems generally from the erroneous assumption that in future wars the military will necessarily seek to destroy the same types of targets as in past wars, using the new and far more powerful weapons. This assumption is made due to the fact that each new war has historically been started wtith
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veloped in the interim. Thus, the most prevalent error in contemporary writings on the nature and effects of atomic wars can be traced to a tendency to equate the new weapons with classical tactics and strategies.

A historical equivalent of this error would have occurred had we provided both sides in a Napoleonic battle

with machine guns, assumed they would fight in their classical close formations - in the open - and drawn conclusions as to the outcome. I suggest that we would have concluded that losses would be tremendous, the battle would be over in a few minutes, and the side that fired its machine guns first - had the initiative - would clearly win. These conclusions sound vaguely familiar, although things did not turn out that way because tactics and organizations were changed.

The opposing armed forces are, have been, and will remain the primary target in any war. If one can eliminate an enemy's offensive or defensive military capability, as contained in its armed forces, victory in war is assured. Had it always been possible to directly attack and destroy the enemy armed forces, there would have been no valid military purpose in attacking other targets. Unfortunately, this has not always been possible. Of all possible target systems, military forces are the most difficult to deal with. So far they have always constituted a large and highly dispersed objective, especially designed, equipped, and trained so as to minimize their vulnerability.

As a result of the inability in past wars to effectively destroy by direct attack the enemy military formations, commanders were led to attacking target systems that were easier to locate, such as cities, factories, communications, etc., and whose destruction was calculated to affect the capability of the enemy forces. The end objective, however, remained the enemy military capability, that is, his forces. These other targets were engaged only because they provided an indirect means of attempting to destroy the effectiveness of the forces.

Even where the stated objective of a strategic attack against urban centers was to "break the national will to resist," the real target remained the military capability. Unless success against this objective could be obtained in terms of instructions to the forces to cease fighting, or of a failure on the part of the enemy government to supply its forces so they could fight, attacking the national "will to resist" could not be said to contribute to the outcome of the war.

~~Although the above discussion may appear to belabor the obvious from a military point of view~~, the fact that in all

wars victory can only be obtained by the reduction of the enemy military capability, no matter how one gets at it, is fundamental to estimating war damage and losses. Had it been possible to limit destruction to the actual weapon systems of the enemy and to the men in uniform that directed and operated them, the ravages of war on the nation as a whole would be at a minimum. This is essentially the condition that prevailed in the days of Caesar and Napoleon when wars were fought between armies, with little or no incidental damage to non-combatants or to the national economy. Nations suffered serious effects from defeat but not generally as the direct result of the military engagement.

As warfare became more complex it became increasingly difficult to find, separate out, and decisively destroy the enemy's forces in battle. This fact, coupled with the advent of long-range means of delivery, the airplane, led to the attack of targets whose destruction would indirectly affect the combat forces. These targets included the support base on which the forces depend; lines of communications on land and at sea; military command posts; the national directing authority; and in some cases urban areas as such. The massive damage to national economies associated with past wars stems almost entirely from the attack of these secondary targets or results from damage incurred as a bi-product of targeting combat forces located in or adjacent to cities and other populated areas. In the latter case, the extent of damage in addition varies directly with the effectiveness - accuracy, selectivity, etc. - of the weapons available. lethal area

War Damage and Target Selection

Thus, the level of damage a nation sustains in modern war will vary with: the extent to which the attack of non-military targets will help to reduce the military capability, the number of force targets; how closely these are intermingled in the national economy and civil population, and the accuracy of the delivery systems used. Obviously, the use of atomic weapons against World War II-type non-military targets or forces in the vicinity of these, would greatly increase losses and damages, particularly if we assume that our accuracy with the new weapons is no better than with the old ones. On the other hand, if we can show that the very advent of the atomic weapon will lead to a change in

the number, type and location of targets that can usefully be attacked, and that accuracy of delivery - and hence selectivity - has improved, this conclusion no longer remains valid.

The ability to both locate and hit the principal military objective is the variable that has most affected target selection and, hence, war damage levels in recent years. If the capability to locate and hit any given target were not a consideration, the only target strategy that would make sense in any war would be the direct attack of enemy combat forces. It has been the limitations in the military's capability to find and destroy the enemy forces that lead to the attack of other objectives in earlier wars as I have already pointed out.

The strategic bombing of Germany and Japan caused the greatest destruction in World War II. One will recall, however, that the U.S. Strategic Air Forces limited their attacks to industrial and communications targets in Europe. Since the factories and rail centers were in cities, and the bombing was none too accurate, the surrounding areas suffered greatly. The British bomber command, on the other hand, lacking the daylight precision bombing capability enjoyed by the [redacted] B-17's and B-24's, attacked German cities at night. Their objective was to weaken the enemy war economy by destroying or disrupting the workers and thereby weaken the support of the forces. Thus, their inability to do selective daylight bombing obliged the U.K. forces to introduce an additional step in the chain reaction aimed at eventually hurting the German combat capability. At the same time this additional step - the attack of cities in search of workers - obviously caused far more damage to the economy of Germany than the selective destruction of armament factories and COMMUNICATIONS TARGETS.

Some of the strategi

The location of military forces with respect to non-military installations also greatly affects war damage. Even when forces could be located and attempts made to attack them directly, they were more often than not in or near cities, civil communication lines, or other real property. As the number of men in uniform increased with each war, the frequency of their presence in or near non-military personnel and property increased. By World War II the destruction of almost any city would include military

casualties, and conversely the attack of many military formations involved extensive damage to the civil real estate in which they were located. If atomic warfare leads to a decrease in active forces, this should in turn decrease the damage sustained in any areas as a bi-product of the attempt to destroy the forces.

Thus, before one jumps to conclusions with respect to the extent of damages nations will sustain in either limited or general wars in the nuclear-missile-space age, a sound relationship has to be established between the size, location, and type of forces involved; the accuracy and effectiveness of weapons available, and the strategy and tactics best suited to the destruction or protection of the former with, or from, the latter. The relative destructive power of weapons used is a consideration only when the answer to the above factors is such as to entail intentional or incidental attack of non-military targets. In recent years, progress in weapon development has been so great and related changes in tactics and force requirements so slight that I suggest these basic factors may have gotten badly out of phase. Let us examine some changes in tactics and force requirements that should affect target selection.

The Nature of Atomic Warfare

The military is now in l agreement on the concept that the decisive phase nuclear war will start with the onset of hostilities and be of short duration. This does not in itself mean that less damage will necessarily occur as a result of the shorter period of active combat. It does suggest, however, that the outcome of the war will largely be decided by the actions of those ready forces in being and equipped on D-day.

Since there will be little or no requirement for manpower or industrial mobilization as a prerequisite to the decisive battle, the national economy essential to such mobilization loses its attractiveness as a target system in future wars. If, additionally, its attack will not affect the military capability of the forces in being at the time, since they are already deployed and self-sufficient in weapons, the attack of the industrial targets would seem to serve no useful purpose in a short war.

When destruction was delivered by conventional means - shells, bombs, and bullets - the relationship between the accuracy of delivery, the lethal area of the burst, and the size of the target versus that of the overall area under attack favored the target by a factor of 1 to 1000. In other words, under optimum conditions one had to drop literally dozens of bombs, fire hundreds of shells, and shoot thousands of bullets for every effective hit obtained on a finite target. If the target had good mobility, concealment, or physical protection, it could often survive under saturation quantities of classical firepower, as was frequently demonstrated in World War II and in Korea.

In past wars of attrition there are innumerable examples where forces - manpower - had to move in, capture and occupy an objective in order to actually drive the enemy out, notwithstanding maximum prior bombardment by air and artillery. This requirement dictated the need for many men in uniform.

Conversely, since the advent of conventional strategic bombing there have also been examples wherein the target could not adequately protect itself from the firepower and was destroyed, or the forces were driven out before the target could be physically occupied. This showed that even conventional firepower can be decisive in some situations. It seems clear, therefore, that the effectiveness of the available firepower systems in destroying an objective depends on the lethal capability of the weapons used in comparison with the target's ability to absorb and survive the destructive forces unleashed.

The nuclear weapon has removed almost all doubts from the contest between firepower and force survivability. With very few exceptions, any force target whose reasonably exact location is known, and one that lies within the range of contemporary aircraft or missiles, can be utterly destroyed. This means that in atomic wars, nuclear firepower will be dominant and decisive. The end result of most military engagements in the future will be death or destruction instead of capture and occupation as in the past. Mass and military strength need henceforth only be measured in kilotons and megatons and no longer in terms of men and machines; and the land, sea, and air formations should be designed to support the nuclear firepower instead of

firepower supporting the forces.

In a war where ready forces and firepower are decisive, the artillery, missiles, and aircraft become the new "queens" of the battle. The maximum "forces" - organizations - required are the minimum available at the onset to service or, in other words, support these "queens." More force than this merely invites destruction without contributing commensurately to the outcome of the fight. It is this fact that makes large conventional forces not only unnecessary but actually a liability in atomic [redacted] warfare since they tend to draw nuclear firepower like garbage draws flies without contributing to the outcome of the battle, although adding greatly to the levels of damage incurred.

Up until now we insisted that the primary target in war was the enemy military capability. We can now refine this conclusion in light of the nature of nuclear age warfare by defining the enemy military capability as consisting almost wholly of his ability to deliver nuclear firepower. In a war wherein the atomic delivery act is decisive the key force targets are delivery systems and those defensive devices and forces that keep us from getting at the delivery systems. For practical purposes these will be the only elements of the enemy forces that should be of real concern. The remainder of the armed forces will be of consequence only if they can operate under cover of nuclear firepower or against forces which also lack a nuclear capability.

Thus, the primary military problem in the nuclear age revolved itself into gaining an advantage in protecting and launching one's own nuclear delivery forces while destroying the delivery capability of the opponent. If we are correct in this assumption, the extent of the destruction attempted in future wars will vary directly with the size and location of the nuclear firepower delivery systems plus that of any other forces still required to shield or service these. Let us examine the likely size and nature of these systems and other forces in light of the extent to which they may lead to non-essential damage in war.

Size and Location of Delivery Systems

In future wars only three target systems appear valid: atomic-delivery systems, atomic air and missile defense and

warning systems, and land-, sea-, and aerospace units designed to service these systems or assist them by locating, or forming up targets. In terms of today's weapons this means that the important forces and, hence, targets are strategic and tactical air and missile units -- land- or seabased; anti-air and missile weapons; and warning and support units.

Today our atomic delivery capability is spread throughout the entire spectrum of former forces. We have in essence married the new weapons with every classifcal formations in the three Services: land, sea, and air. This has resulted from the fact that most nations still look on nuclear firepower as supporting the conventional forces rather than the converse which, as I have pointed out, is actually the case. Accordingly, there is a tendency to provide every military formation with atomic firepower to replace its conventional firepower, and without regard to the fact that the new cumulative destructive capability may in due course exceed in each large defense establishment not only that required to destroy all conceivable enemy firepower targets, but probably life on earth. This is a condition directly attributable to the piecemeal approach to the use of the new weapons and the tendency to substitute these for the old ones without commensurate force reductions in other areas.

As the military gains a greater understanding of how to derive maximum returns from the effects of atomic weapons and as weapon yields, delivery system ranges, force survivability, and accuracy increase, the quantity of systems required to wage either offensive or defensive wars will decrease. We have already seen where quantity of forces is no longer the governing factor in the military capability. The same applies to firepower whose quantity beyond a given level will be secondary to its survivability, initiative, and ability to find and hit the target. The cost of space and missile systems alone will lead to increasing reduction in quantity as it has consistently since World War II.

On the other hand, improved defenses will tend to increase the amount of delivery units to the extent that saturation of defenses will assist in penetrating the target. This increase in weapons, however, does not in

this case produce a commensurate increase in the level of destruction estimated since it is designed to offset enroute losses rather than permit a greater effort on target. While there is a relationship between quantities of weapons launched and the number of force targets that must be attacked, this should increase incidental damage only from fallout or in nations where lack of space precludes deployment of all delivery systems away from urban or industrial areas. There are also limits to the extent one can build weapons to have them destroyed either before use or enroute, before economic considerations force a different solution to penetrating defenses.

Size and Location of Shield Forces

One might argue that although atomic delivery forces can be reduced as weapon accuracy, target intelligence, and selectivity of yields go up, there will still be a requirement for sizable "shield" forces along enemy frontiers. If true, these forces will draw enemy firepower, be dependent by their very size and nature on the economy and national communications net, and, as such, justify the continued attack of the latter even in the atomic age.

If we are prepared to rely upon firepower to interdict and destroy an invasion, even though aggression may be attempted by the infiltration of widely dispersed and concealed individuals, then we have no requirement for a land "shield" type organization. It is possible to use our nuclear firepower effectively in this role. It is also extremely costly in terms of incidental damage to the defense zone and to all that may reside or exist in it. In most cases this strategy would be self-defeating to both the aggressor and the defender alike.

To rely solely upon a nuclear firepower shield to hold the frontiers of the nation pending the outcome of the firepower duel must presume the maintenance of an atomic "no man's land" where utter devastation, high-radio activity, and constantly repeated attack deny any amount of movement beyond that of very small forces which could be dealt with by the populus or police in the communities on either side. Reliance on this device to defend areas having common frontiers with the enemy might be acceptable if these were all

in remote or desert territory. This is not, however, generally the case. A high percentage of the population and industry in most allied countries of concern are in the frcntier or combat zone; hence we must adopt a more selective means of destroying forces attempting an invasion by infiltration.

On the one hand, we know that we can destroy any force that attempts an invasion if we are willing to accept the consequences of massive nuclear interdiction. On the other hand, we would prefer to avoid accomplishing this by the simple process of blanketing an area with atomic fire and thereby destroying everything else along with the military objective. The problem therefore is to create a situation which obliges an aggressor to provide us reasonably lucrative targets, sufficiently well defined so that they can be destroyed on a selective basis. To do this we will no doubt need a small highly dispersed and relatively secure frontier force, preferably dug in along a physical barrier and designed solely to identify an enemy attack without itself presenting targets which can be easily defined and destroyed.

Since we must assume that the frontier forces will draw firepower, we will want to keep them as small and as dispersed and protected as possible. We thus find ourselves obliged to accept a certain amount of incidental destruction in the combat zone if the enemy attempts a policy of infiltration, notwithstanding the fact that he has not succeeded in destroying the overall nuclear delivery system opposing him. On the other hand, the extent to which he can usefully employ this tactic is limited. Anything beyond extremely small-scale infiltration will automatically present targets which we can destroy as a result of our satellite or ground intelligence surveillance and thus without sole reliance on frontier forces.

It appears therefore that very small hardened or mobile and concealed land forces equipped with small nuclear firepower and maximum detection systems should be able to obtain and maintain a stalemate condition on the land frontiers of two aggressor nations during the battle for nuclear firepower superiority. With a force of this nature in position, neither side would attempt an invasion until such time as they had resolved the firepower battle.

high invulnerability; select number of missiles of diversified types and ranges, and of aerospace bombers, should be able to meet most requirements. These missile units and aircraft, with atomic weapons, can more than do the job of all the bombers, fighter-bombers, and artillery in World War II.

The number of delivery systems we build will vary with our assumptions as to possible losses. The more invulnerable we can make our systems to enemy attack at source or interception enroute the less diversification and alternate means will be required. There is also a limit to the amount of invulnerability one can obtain merely from multiplying delivery means. Generally speaking, the less systems we build the more we can afford to invest in their protection in terms of performance, hardening, concealment, mobility, sophistication, etc.

Since nations will rely primarily on few delivery systems with nuclear warheads for optimum effects, they will quickly appreciate the fact that these are the prime enemy targets and will scrupulously avoid deploying these systems in, or near, cities or populated areas. Concealment in space, under the sea, or in hard sites protected with anti-missile firepower seem clearly indicated. Mobility may also help although it now appears less unattractive than other measures due to lack of unpopulated space, easy surveillance from satellites, and high vulnerability to the area effects of atomic weapons. An exception would be if delivery systems can ever be made so small that they could be moved while remaining completely concealed from any forms of observation or intelligence.

In countries not adjacent to a land threat there will be no requirement for so-called shield forces. These are the forces needed to allow our nuclear firepower to be selective in interdicting an aggressor. In areas where a "shield" is required its density and depth of deployment will vary with the amount of nuclear damage we are prepared to accept, and this in turn will depend on the civil population density in potential combat zones and along disputed frontiers. Even where this is quite dense, as in Europe, the shield can be small and dispersed. Some damage in the combat zones remains inevitable, but in theory it can be limited to these zones if there is no reason to deploy forces elsewhere and if those in the combat zone are small

enough to be relatively self-sufficient, hence unaffected by attack of most targets in their rear.

Damage in Future Wars

Thus, we see that when the full implications of atomic age warfare are understood and the necessary changes are made to realize the maximum benefits that these weapons can confer at minimum costs in both forces and potential losses, the destruction of property and of non-combatants will probably be less than in past wars of attrition. This stems from the fact that there appears to be no good reason why the firepower delivery systems of either side, which will make up 90 to 100 percent of the forces, need to be located near or supported by the civil economies of the nations concerned.

There would clearly be no purpose to destroying non-military targets where this will in no way affect the capability of the military forces to carry out their mission. If the military forces required to provide either an optimum defense and deterrent or a suitable aggressive capability are limited in size and quantity; are wholly self-sufficient; and are so located that their attack with the weapons best suited to destroy them will not entail incidental damage or non-combatant losses, destruction of this type should be at a minimum.

Atomic warfare must primarily involve a duel between atomic delivery capabilities. Success in this spells certain victory. Having destroyed the enemy's nuclear firepower, it is a simple matter to blackmail him into submission by threatening to destroy his economy at leisure. To this end it is to the victor's advantage not to have destroyed the economy during the firepower duel phase of the war since its destruction would not contribute to the outcome of the duel, and its survival will present a hostage in seeking surrender.

In other words, the annihilating and costly side effects of atomic war as envisioned today can be attributed primarily to the existence of forces which contribute little or nothing to the outcome of such a war, and to target policies which are a carry-over from war of attrition requirement rather than to the relatively small percentage of these

fear stems solely from the increase in power associated with these weapons, and fails to take into account adjustments in their employment which may well take place in order to accommodate the new power.

If the military employs the new weapons in the most effective manner, the chances are that future wars will result in less damage and destruction than occurred in recent non-atomic wars. The key words here are "effective manner." This phrase is meant to imply that both sides will fully understand and exploit the possibilities of atomic warfare and will have readjusted and modernized all their forces in light of the requirements of this type of warfare.

Since, as we have seen, most losses in war can directly be related to the size and deployment of the armed forces at any time, there can be no compromise with a non-atomic capability if nations are to minimize destruction and damage. It is clearly the attempt to maintain both conventional mass and a nuclear response that create conditions favorable to cataclysmic damage in future war, not to the advent or use of the atomic weapon itself.

The Case for Atomic Weapons

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This is an unpopular title that will illicit violent reactions on the part of those whose emotions have convinced them that there is NO case for atomic weapons. The time has come for emotions to give way to logic in this matter. At the risk of throwing the cat in among the canaries, I suggest that there are excellent arguments that favor the fullest use of atomic weapons, both to deter and wage future wars. This is true for limited as well as general wars.

If there were no valid arguments for atomic weapons, few if any would ever have been built. The intense, persistent, and worldwide anti-atomic weapons pressures would obviously have prevailed years ago were not the unspoken counter-arguments more quietly persuasive.

The atomic weapon has been in existence since 1945. Moral hang-ups and political constraints, plus the unfortunate fact that it appeared on the world scene at Hiroshima in its crudest configuration, have prevented nuclear explosives from gradually replacing gunpowder or T.N.T. wherever they would have been militarily cost-effective. Later, in the 1960's, space technology should also have given birth to cost-effective weapon systems if emotional arguments had not forced their delay. Had this occurred in an evolutionary, rational, and unfettered way, the U.S. would not be faced in 1978 with a $130 billion defense bill along with forces inadequate to cope with the growing Soviet threat.

The truth is that atomic weapons are here to stay so long as the use of military force remains a possibility. They are essential to the successful pursuit of any major new wars that might occur and to national security postures that Free World nations can afford in peacetime. Without atomic explosives to make today's high-performance, high-cost aircraft carriers, missiles, submarines, bombers and fighters cost-effective, these should never have been designed or acquired.

This conclusion has nothing to do with whether or not atomic weapons are desirable, although a case can be made that they are. It stems instead from the evolutionary changes in the complexity and cost of most military hardware bought since WW II — changes that have made many of today's weapon systems inefficient for conventional warfare.

Technological progress has made it possible for advanced nations to develop and acquire military vehicles with ever greater performance and survivability. This improved performance required higher unit costs, but this, in turn, was made economically acceptable by steadily reducing the quantities bought by the military.

What we have witnessed since, and as a bi-product of, the advent of atomic weapons has been a gradual abandonment by most nations of their ability to build and concentrate military "mass" in more and more key elements of their forces. Not only have quantities of vehicles and weapons, on hand, decreased as unit costs have risen, but the ability to build the simpler weapons quickly in time of war or emergency no longer exists.

In the pre- and early post-WW II eras large nations still relied on their manpower and industrial mobilization capabilities to provide the bulk of their wartime forces. Large reserve forces and/or universal military training provided a source of ready manpower. Mass production methods and facilities, which were bought along with each new weapon system, permitted the rapid production of new weapons in a national emergency. When fighting men became available for battle before their weapons could be produced by new factories, older weapons were supplied from stockpiles bought in peacetime and kept in reserve.

Since the early 1950's, there has been a gradual, though unadmitted, shift towards ever greater reliance on those weapons and forces in being at the onset of war. We still talk about mobilization, and we still train and maintain some reserves. But neither planning nor funding envisions the early delivery of major vehicles or weapons from orders placed after D-Day. No major weapons are stockpiled for a post D-Day force buildup or to replace earlier losses. Planning, engineering, and tooling for mass production are no longer required to insure rapid industrial mobilization. With the possible exception of Russia, no country

can now afford these prerequisites for sustained conventional wars of attrition.

In 1978 America and its NATO allies rely largely on a "one-shot" defense capability. Except for minor wars fought by expeditionary forces, or wars where the aggressors can be held at bay with low loss rates for months or years while U.S. reinforcements are generated, the security of Western nations rests primarily on the capabilities of the weapons and forces in existence at the outset of conflict. And, the only thing that converts the relatively small inventories of these weapons in being into a valid national defense capability is atomic firepower.

While few will openly admit it, the military has sacrificed the "quantity" of force, historically essential to the successful outcome of conventional wars of attrition, in order to obtain high performance or quality weapons, available from advanced technology. This has been subconsciously rationalized as acceptable by assuming that, if necessary, the amount of destruction required to stop the enemy can be accomplished in the time allowed by the use of nuclear explosives.

Lip service, along with a great deal of money, is devoted to maintaining so-called flexible, conventional, military capabilities — particularly in NATO. These conventional capabilities have been gradually reduced in quantity to the point that NATO forces can no longer rely on the principle of "mass" in the conduct of their defensive and offensive operations. Without the ability to generate and sustain adequate "mass," NATO forces are at best a holding force, able to buy a little time during which to seek a ceasefire or to decide to go atomic — if these forces still have left some aircraft or missiles with which to deliver atomic firepower.

A classic conventional war is a war of attrition that has four phases: a holding phase, a force buildup phase, a decisive phase, and an exploitation phase. Such a war today is an impossibility because the production, mobilization, and training time required for the buildup phase far exceeds the time during which the forces in being at the onset can be expected to hold effectively. Given the limited inventory of major weapon systems which 1970-era forces can afford in peacetime, and the impossibility of quick, post D-Day production of these weapons, a successful conventional defense of NATO would have to operate at a near zero loss rate to provide at

least a two to three year buildup period.

Atomic wars have often been defined as short wars. While many in the military hate to admit this, for it suggests that those forces and weapons that can't be brought to bear quickly are not worth buying, the fact remains that this is a completely logical and correct definition.

Wars wherein atomic explosives are used will inevitably be much shorter than classic conventional wars for the simple reason that they start out with the decisive phase. The key factor in any war is the relative ability to destroy. Both sides try to interdict or destroy the other's forces. Alternately they may try to destroy the other side's "will to resist" or in long wars of attrition, the industrial base that provides the weapons for the other side's forces.

Since no nation envisions building atomic munitions *after* the onset of hostilities, and since atomic powers can and do build and stockpile in peacetime the entire amount of atomic weapons that they deem necessary to carry out their war plans, the outcome will be decided by the exchange of these stockpiled weapons. It cannot be otherwise because these weapons contain the greatest potential for destruction either side will ever enjoy during the entire conflict.

What all this really means is that the advent and use of atomic munitions will primarily *compress the time factor* during which the killing and destruction takes place. In WW II it took four years to kill about forty million people and to destroy much of Europe and the Far East. In a modern atomic war, this might be accomplished in days if not hours.

But is this time-compression necessarily bad, assuming a major war to be inevitable? While few if any studies have been made of this, I suggest that although the shock of such large and sudden losses would be great, certain benefits might well offset this.

First, in a short war only the regular forces and ready reserves will participate in the military combat operations. This places a ceiling on potential *military* losses way below that of past conventional wars wherein millions of citizens were mobilized, trained, and sent into battle.

Second, there will be no massive, hence costly, wartime arms buildup if the outcome of the war is largely determined by the

forces in being. The great cost of the weapons needed to wage long conventional wars of attrition such as WW II and Vietnam need no longer be added to the costs of the nation's post-war recovery.

Third, the physical destruction that takes place will be more concentrated and probably considerably less overall. The finite numbers of atomic delivery vehicles and weapons available to both sides will make both sides highly selective in their targeting. While some whole cities may be laid waste, the steamroller effect of a conventional invasion is improbable.

It seems also likely that the loser in an atomic exchange will rather quickly perceive his hopeless situation and sue for peace or surrender long before all atomic munitions are expended by both sides. This would occur for instance when it became clear that further attacks would only lead to useless destruction of that side's indefensible, hence hostage, population.

These benefits, if they are benefits, will only be derived from atomic warfare when nations accept the inevitable use of these weapons and optimize their forces and plans accordingly. The militarily unrealistic overkill factors, inherent in such concepts as Mutual Assured Destruction (MAD), must first give way to a return to the time-tested concept of destroying the enemy's means to wage war — his forces and weapons — while preventing him from destroying yours. In a short war the proper role for atomic firepower is to destroy the "cutting edge" of the threat.

Since atomic wars will be short, and the relative national industrial and mobilization capabilities will not be a factor in their outcome, for lack of time to exploit these, why destroy them? The only logical reason for an aggressor with atomic weapons to target cities would be to try to break the opponents "will to resist." This is a dubious strategy tried and found wanting in WW II. Conversely for a defender to waste weapons retaliating on urban targets is, at best, mass murder in revenge. This will not reduce the aggressor's military threat and would probably result in his launching indiscriminate urban attacks in retaliation.

The truth is that counter-city atomic bombing (MAD) makes sense only to people who are convinced that wars with atomic weapons can never be profitably pursued. Having admitted in their minds that atomic explosives are not merely a more concentrated, hence cost-effective, means of destruction, yet being

unable to abolish them from war without first abolishing war itself, they seek to relegate these weapons to a role only in the deterrence of war. The likely outcome of this illogical approach will be the disastrous and useless losses of human life when deterrence fails and the atomic weapons are used to destroy people, not weapons!

True deterrence should stem from an aggressor's rational assessment that he will lose any fight he starts. This in turn should stem from the maintenance by possible attacker and deterrer of visibly competent, if not superior, atomic counter-force capabilities, strategies, and deployments. The only reason industry and urban command centers were attacked in WW II was that the other side's forces could not be dealt with directly; therefore, we tried to weaken them by cutting off or destroying their supplies and supply channels. The goal remained to weaken the invading or defending forces, even where the means of getting at these had to be indirect.

In a short atomic war, of necessity decided by the forces in being at the onset, no one seriously argues for bombing factories and cities with atomic weapons as a means of indirectly reducing the capabilities of combat forces. This strategy is only valid in wars of attrition, and we have already seen why atomic wars cannot, by definition, be wars of attrition. Technology may have given the world new weapons, but nothing has come about to change the classic principles of warfare. Destroy or defend effectively against the enemy's military threat, and you win. Let him succeed in destroying your means to defend yourself, or to destroy him, and you lose. Only if one argues there can be *no* winners or losers in atomic wars can one logically violate these elementary, time-tested principles.

Soviet military theoreticians recognize this. They are students of the basic principles that govern success or failure in actual wars. They see the atomic weapon for what it is in the real world, a more concentrated, hence cost-effective, means of achieving destruction — no more, no less.

The Russians have never accepted the view of some U.S. intellectuals to the effect that the advent of a new and more concentrated means of killing people and destroying targets automatically makes wars unprofitable politically and, therefore,

unthinkable. Instead Soviet strategists are carefully assessing — as we should be — the advantages, liabilities and cost-effectiveness of these weapons in offensive and defensive operations. They are trying to determine how one should deal effectively with: fallout, contamination, excessive peripheral destruction, and, time-compression in battle, along with how to design better and cleaner weapons, like the neutron bomb among others — certainly with more selective targeting and with adequate civil and passive defenses.

The nation that deals with these types of questions and does not ignore or violate basic military principles and sound logic is most likely to learn first how to live with, and even profitably exploit, atomic firepower for political as well as national security purposes.

America, still under the influence of a "Hiroshima Complex," is a land where vocal, if misguided, minorities increasingly advocate nuclear policies and decisions predicated far more on "the wish being the father of the thought" than on sound, rational thinking or even U.S. national interest.

The environmentalists want to clean the world regardless of energy needs; the liberals want income equalization regardless of differences in individual abilities or of how it is to be paid for; the minorities want equal influence without equal numbers; and the anti-atomic weapons people dream of some sort of cheap but effective national security without atomic weapons! The one thing all these groups have in common is the view that the Defense Department budget is the "pot of gold" at the end of their rainbows.

Eliminate war as a means of achieving national goals and you can eliminate all forces, weapons, and defense budgets. But so long as even one country continues to develop and to consider using military force in the pursuit of its political or ideological aims, then all those who might be its prey must provide for their defense. In today's environment to tinker with part of the total national "system" based solely in political aspirations or moral prejudices — whether it is in the areas of energy, ecology, economy, or defense — will either make that segment less effective or more costly. The classic defense example of this truism is the politico-moral decision to keep a "dual" flexible conventional strategy in NATO.

NATO is now paying for an inadequate conventional, one-shot defense capability with no possibility of its conventional forces being sustained in a war of attrition against the quantitatively superior Warsaw Pact forces in being. NATO's atomic, last-resort capabilities are vulnerably concentrated and could well be lost or immobilized at the onset of hostilities. This concentration and exposure stems from political fears. Military plans that considered only the real-world Soviet nuclear threat and the time compression factor of an atomic war would dictate that all atomic weapons be in the hands of the troops who might have to use them at all times.

The cost of the minimum of conventional "mass" required to cope with a conventional Warsaw Pact attack in Europe has been growing yearly. Korean War-era F-86s ($330,000) were replaced in the early 1960's with F-4s ($3.7 million), which were replaced in the late-1960's by F-111s ($13.2 million), later to be replaced in the 1970's by F-15s ($17.6 million). Meanwhile, the quantity of these aircraft dictated by the NATO flexible response strategy — that is how the defense battle is to be fought — remains constant. Similar cost rises apply to the tanks, guns, and ships built since WW II as a result of technological progress.

Where will this cost rise end? No end is possible so long as a conventional war-fighting capability remains a political requirement. Our politicians now argue that it is the superior performance or quality of NATO weapons that offsets the Warsaw Pact's numerical superiority, a superiority of as much as 3 to 1 in key conventional weapons, such as tanks. If this is true, how can NATO cut "quality" by not modernizing its forces with ever higher performance and more costly equipment and still retain a semblance of balance? The logical, historical, and inevitable solution to spiraling costs of military weapon systems lies in reducing the quantities required and increasing their capacities for destruction, i.e., by adopting a tactical nuclear strategy in NATO from the onset. The West cannot afford to risk losing its handful of $15 million fighters delivering a few pounds of TNT or million-dollar tanks in an assault on a conventional target with no replacement in sight. Not only does this make no sense financially or militarily, but the present NATO "dual" posture strategy invites disaster in the event of an all-out Soviet atomic attack.

So long as the Soviet threat remains constant or increases, the

cost of our defenses can only be reduced to the extent that U.S. armed forces are allowed to exploit fully the products of advanced American technology. In recent years the military has not been allowed to do this to any great extent principally due to domestic political and arms control considerations.

The Defense Equation

In its simplest form the national defense requirement to deter or defeat any given threat to the country is determined by a combination of only three factors:

1. The task assigned to the forces, such as: defend NATO, protect U.S. shipping, or destroy Soviet tanks.
2. The strategy or method adopted to accomplish the assigned job, such as: with atomic weapons, with conventional mass, alone or with allies.
3. The means available to do the assigned task in the desired or directed method, that is, the men, weapon systems, and logistical support.

The task plus the method plus the means must add up to a capability to overcome the threat. If the task is to defend Germany, and the directed method is by using conventional mass, then the means provided must be sufficient to overcome the enemy's conventional mass offensive capabilities. It's that simple. Each of these factors is a variable; thus a valid defense against any given enemy capability can be maintained by reducing the task, or changing the method, or modifying the means so long as the combined result is constant. In the above example, if the "conventional mass" means NATO can afford are deemed inadequate to defend Germany, then the method can be changed either to one that utilizes tactical nuclear weapons or to strategic retaliation; or, alternatively, the task of defending Germany can be changed in favor of a delaying action in Europe or some lesser goal, such as holding at the Pyrenees or on the English Channel.

Thus the overall cost of a nation's defense effort is essentially a function of the numbers and types of men and weapon systems required, which in turn will vary with the tasks that must be accomplished and the strategy or method adopted to accomplish

them. In the strategic arena, for instance, America could defend its ICBM's and cities with hundreds of ABM sites of the now-defunct Safeguard variety that Congress dismantled in 1976, or alternately, we could defend our ICBM's, cities, and all of America, with an anti-ICBM satellite system proposed in the early 1960's and which required only a few vehicles and practically no manpower to operate. The satellite ABM approach was cancelled by arms controllers in the early 1960's, even though it would have cost far less than half as much as the Safeguard or point defense method and would have been many times more effective.

General Eisenhower and Secretary of State John Dulles understood how defense policy and strategy — the method — could be varied to ensure security at acceptable costs. In the 1950's a U.S. strategy of massive retaliation and a NATO strategy of defense with atomic weapons from the onset — "The 1956 NATO Political Directive" — proved adequate to deter for over ten years *relatively* greater Warsaw Pact forces than NATO faces today.

Conversely, the McNamara political decision in 1966 to put NATO into a strategy of conventional flexible response automatically established a requirement to try to match Warsaw Pact conventional "mass" man-for-man and gun-for-gun which continues to require a buildup of NATO forces and higher and higher defense spending.

The most economical way to ensure adequate national security against any threat at any time is to adopt strategies and tactics that exploit the latest and most advanced weapon technologies. This is the only way nations can keep the cost-quantity factors in their defense equations in optimum relationship for any given task and threat.

Today, in 1978, America and the Western powers, collectively and individually, could have had adequate and cost-effective national defense postures able to deter or defeat the Soviet Union or to meet any other threats, if these postures had been allowed to evolve out of a maximum exploitation of atomic, space or other advanced technologies. Instead, politicians and theoreticians pursuing political or arms control goals and ideals have, for over fifteen years, prevented the evolutionary readjustment of strategy to technological innovations in the military. The result has been a steady rise in defense costs accompanied by a decline in overall

defense capabilities vis-a-vis the USSR whose defenses have not suffered from these constraints. This trend can only get worse so long as the military leaders in the free world are obliged to plan on using modern WW III vehicles in the quantities dictated by WW II conventional war strategies, and are precluded by treaty or unilateral decisions from exploiting the most advanced technologies.

Those who have violent objections to the adoption and use of atomic weapons in future wars might consider a point made by General P. M. Gallois, the father of the French nuclear strategy, in his book on nuclear warfare. Gallois points out that the very existence of atomic weapons since 1945 has been a blessing in disguise:

> Conventional explosives were first used in Europe at the battle of Crecy in 1346. This was the beginning of the era of gunpowder and T.N.T. in warfare. Gunpowder's monopoly as the principal means of destruction ended at Hiroshima in 1946, when atomic firepower was added to the traditional chemical explosive.
>
> The six centuries between 1346 and 1946 were characterized by constant wars in the Western world. Between the Treaty of Arras in 1482, that marked the end of the Feudal age, and the U.S. entry into WW II in 1941, there were 278 major wars, one war on the average every 2 years.
>
> Since the introduction of atomic weapons in 1946 — with the deterrent effect they brought to the use of war as a means to pursue policy — there have been only two major wars, and these were both limited geographically and in weaponry — Korea and Viet Nam. Two wars in 32 years is an average of one every 16 years.
>
> Are we absolutely certain that it is desirable to outlaw atomic weapons and return to conventional warfare?

The advent of atomic firepower has undoubtedly raised the threshold between the political objectives of governments and the risks they are willing to incur in pursuing these by military means. The means for calculating losses in an atomic war, or even the probable outcome of such a war, based on historical experience, are very limited. At best they are little more than guess work. This fact is in itself a powerful deterrent. It is also a good reason to keep these weapons around to reduce the likelihood that responsible governments will allow "push to come to shove" in their dealings with one another.

The size and scope of limited wars since 1946 have largely been determined by judgments and decisions on both sides as to how much force could be used without releasing the nuclear genie. The withdrawal of U.S. forces from the Yalu River by Truman; the Soviet backdown in the Cuban missile crisis by Khrushchev; and the more recent acceptance of defeat in Vietnam by Kissinger and Nixon are classic examples.

If we really wish to reduce the levels and frequency of conflicts in the future, instead of raising the threshold of atomic use, logic suggests we should reduce it. Faced with the prospect, if not certainty, of atomic retaliation, Hanoi would not have challenged us in Vietnam, Israel would never have initiated the Six Day War in 1967, nor would Arab forces have initiated the Yom Kippur War of 1975, and Castro would not be risking his forces in Africa today.

In summary, the use of atomic firepower involves many uncertainties and great risks. It assures massive losses in human life within very short time frames. This, almost by definition, makes an atomic war a war of last resort. Only national survival itself logically warrants these risks. This being true, if civilized nations cannot agree to outlaw warfare as a means of resolving their differences, they can make the risks and the costs of resorting to force unacceptable, in all but the gravest of situations, and do this relatively cheaply, and regardless of their size, by making their defense forces wholely dependent on atomic weapons at all levels of conflict.

General wars have been deterred for thirty-two years successfully by virtue of the inability of strategic defense forces to fight in a valid conventional way since 1946. Why not extend this deterrence to lesser wars? The principles and risks involved are all the same. And the prospect of maintaining peace in our time through deterrence of war, that stems, ironically, from the invention of atomic weapons, is outstanding.

Even if an atomic war occurs, especially for limited objectives, there is no valid proof that the high losses that would be sustained quickly are not better for the survival of the societies concerned than the far greater losses sustained over a period of years by the same societies in conventional wars.

It thus appears that increasing reliance on atomic weapons for national security is inevitable for economic reasons. This country is not capable or willing to produce the quantities of modern weapons necessary to the effective pursuit of a classic conventional defense. And, if my reasoning is correct, a greater reliance on atomic weapons is not necessarily a bad thing from the point of view of reducing the likelihood of war or the damages and losses in war should it come about.

FIELD COMMAND, DEFENSE ATOMIC SUPPORT AGENCY
OFFICE OF THE DEPUTY COMMANDER
SANDIA BASE, ALBUQUERQUE, NEW MEXICO

29 May 1967

Mr. Sam Cohen
13241 Riviera Ranch Road
Los Angeles, California 90049

Dear Sam,

I have been thinking about your phone call and the project that you say Don Cotter is about to embark upon. First I would like to make several observations although I am not sure that I understand the extent to which the effort is to focus on tactics, techniques, and methods of employment versus technological possibilities. These two are, of course, inseparable and the fact that we have tried in recent years to separate these by developing new weapons and delivery systems for use in WWII conventional tactics is largely responsible for both our inability to justify more advanced systems and the high cost of Vietnam.

When we first looked at tactical nuclear warfare, in the early 1950's, a few of us realized that the tremendous increase in fire power obtainable with atomic weapons would have a revolutionary impact on concepts, tactics, strategy, doctrine, and organization - in fact on the entire conduct of land-air warfare. Human nature being what it is, it resists changes in "ideas" but welcomes change in hardware. As a result many were willing to buy the increased fire power but few were willing to seriously face up to the other changes or even try to define them. The easy out was simply to add the new weapons to the accepted tactics, organizations, strategies, etc., and draw conclusions as to their usefulness in this context. The result of all this is confusion in peacetime and will be disaster in war.

Now as you know, I have always said that the use of nuclear weapons in war is inevitable. This is not because I favor this, as some seem to think, but rather because all of my studies over the past twenty years have led me to conclude that eventually the strategy, tactics, and weapons used will be optimized to exploit the highest technology of the times. When you marry nuclear age delivery systems with conventional munitions, for whatever reason, you pay an ever increasing price for the results to be achieved until you eventually just can't afford it any more. I explained all this in

an article in Air Force Magazine in March 1959 entitled "Unlimited Forces for Limited War." In retrospect Nostradamus could not have done better. If you don't believe this all you have to do is to look at the cost of Vietnam and then imagine fighting a 30 or 40 division war in Europe, or several Vietnams at the same time. Even America doesn't have this kind of money.

You may be able to eliminate or outlaw wars but if there are wars, and that's our problem, sooner or later these will exploit atomic weapons. Sorry about that, it's an evolutionary "happening" that you can defer but not avoid. This being true the only question that faces us is this: Are we going to adjust our tactics, strategy and forces to optimize their capability to live and fight in a nuclear environment and thus derive the deterrent and war waging advantages of exploiting the latest technology? Or, are we going to hide our head in the sand, claim it will never happen, ignore the need to even study this course of action or make the necessary adjustments; and then leave these changes to every sergeant, lieutenant and private on the field of battle when he is suddenly faced with a nuclear attack? Unfortunately, so far we've been looking to the last solution.

To my knowledge there has not been any serious work done on the nature of tactical nuclear warfare since the mid 1950's. This stems partly from the fact that the initial studies made in the 1950's suggested changes in forces, to include reductions in quantity and changes in roles, that were unacceptable to the services concerned, and; partly and more recently from the political desire to reject nuclear warfare with a resulting attitude that "it won't happen and I mustn't study it because if I did I might contribute to its happening." Whatever the reasons, the fact remains that such work as was done in this area was done a good many years ago. Since then all efforts to consider a nuclear land/air battle have been limited to adding a nuclear weapon to conventional fire power without bothering to change the posture, organization, tactics, doctrine, etc., of the forces. Again this is like putting flame throwers on both sides of the battle of Waterloo without changing anything else. This leads, of course, directly to the answer to your question: "Who is there still in the service that is qualified to work on this problem?"

When it comes to people this is a hard question to answer. I am sure there are some but I don't know where they are at present. The old heads that were beginning to come to grips with this problem, such as Bill Kintner and Rheinhart in the Army, myself, and a few others, were either driven out, muzzled, or have separated for other reasons. No new crop has come along for the reasons that I outlined above. This leaves a void in this country. I should emphasize "in this country" because this has not been true to the same extent in Germany and France where there are some tacticians and theoreticians working on this problem. I would even be willing to bet that unless there is a major change in attitude over here history will

again repeat itself and we will be looking to French and German leaders to tell us how to wage nuclear war before long. What you need are tacticians and theoreticians with a reasonable technical knowledge of nuclear weapons effects and possibilities.

Experts in nuclear systems are plentiful but military tacticians and theoreticians are in short supply these days. Ever since the administration looked to RAND, and to political scientists for strategy, tactics and doctrine, and pressured the military into merely implementing their decisions, training the forces, and conducting the operations, most of those in uniform who had imagination and experience got out and those who remained have kept quiet. This makes it hard to identify the latter. I therefore don't really know who to recommend to you at this time. But I will make a couple of suggestions in the next paragraph.

There was one colonel that worked in AFSC Plans, John Calhoun, that I think could do a good job in this area. Anyone you get is going to have a learning curve but you've got to get people that are intelligent, imaginative, objective, and particularly that are not the type that are going to produce that which they believe their masters (both services and civilians) want to hear rather than that which the facts suggest. I think Calhoun is still in AFSC Plans but I am not certain of this. Another name that I pick mainly because I believe he has the qualifications I outlined, plus the technical knowledge though little or no experience in tactics and doctrine, and that is Lt Col Jasper Welch. He is Joe Angell's deputy out at the Task Force in Los Angeles. He is well known to Cotter and Dr. Foster I am sure.

When it comes to theoreticians and tacticians, I have not been associated with the younger ones during the past few years - if there are any. I have seen a few articles here and there that looked promising though I can't put my finger on them or on their authors right now. This leads me to three suggestions. First, you might run back through the last two or three years of such magazines as the Air University Review, Ordnance Magazine, Army, etc. and look for titles along the lines of the subject matter we are talking about and then look and see who wrote the piece and if it's any good. I found some good planners by this technique back in 1958 and 1959. Second, you might go over and see my good friend, General Andy Goodpaster at the National War College, who worked on these projects with us in the early 50's and would have some flair for who in the Army might be knowledgeable and capable. He probably spotted some promising talent while he was director of the Joint Staff. Lastly, I would take a look through the last five or six years of theses of the graduates of the National War College. Here, they are not writing for publication so they don't have to get clearances and I would not be surprised if you found one or two papers each year on the subject of tactical nuclear warfare and out of these a few might indicate that the author really knew what he was talking about or was at least trying

to come up with something useful. A title search of this type could be done very quickly and then only a few papers actually read to see if the authors were of interest. Sorry, this is about the best I can do for you.

I, of course, have accumulated a great deal of material and put away a good deal of information on this subject over the years, and I have had in the back of my mind writing a book on the subject one of these days. Depending on how involved I am after I get out this may not be too long in coming. I think the Europeans are about ready to beat us to the punch here. Some of these have the theoretical ideas but have been reticent to publish for fear that they will be ridiculed on the grounds that they lack the technical knowledge. As soon as they feel safe on this last score, particularly in France, I forecast a sizeable bibliography of literature that will seek to rewrite some of the principles of war to accommodate the advent of nuclear weapons.

Well, that's how it is. Hope the above views respond to your needs and will be helpful. If, in fact, this is the approach you and Don are going to take there are a few starting points in old papers that I can identify for you. When you get the problem laid down and decide about it let me know and I will see what I can do.

Anne sends her best. Hope you are having fun. Look forward to seeing you soon.

As ever,

Bob

ROBERT C. RICHARDSON, III
Brigadier General, USAF
Deputy Commander

Summary of Remarks
on
Requirements and Concepts for Tactical Nuclear Weapons

By General Robert Richardson

Note: The views expressed in this summary are those of the author. They also represent the rational used by the author and his colleagues in developing the NATO Defense Plans that led to the 1956 Political Directive and the associated conclusion that: "A smaller force can contain (arrest the advance of) a far larger aggressor force, on or near the frontier, if it is organized, deployed, and equipped to use tactical atomic weapons from the onset." While some dispute the validity of this rational and conclusion, none can dispute the historical fact that NATO strategy since 1959 has been based on it. This is a matter of record in the SHAPE submission (SH 330/54) that led to MC 14/2, MC 48, and the 1956 Political Directive.

Introduction.

It appears to me that there are three problems which we have to consider at this seminar.

a. First, what is technically possible in terms of new weapons, and within this category which are available immediately if requirements were established, and which would need additional research and development.

b. Second, we need to determine why requirements for those available, or those requiring further development, have not as yet been established. Is it due to a failure on the part of the User Commands to ask for these, is it due to lack of knowledge of the possibility on the part of the user, or have the users asked for these and been denied them for policy or other reasons?

c. Lastly, we need to consider the more difficult, though likely, possibility that full exploitation of new weapons demands certain changes in battle field tactics and doctrine which have not as yet been forthcoming. In other words, the requirement for new weapons would have to be coupled with the recognition and acceptance of changes in classic methods of waging land-air warfare. It is this last problem that I propose to address my remarks to this afternoon.

Historically the advent of new, more exiotic and more costly weapon systems has had two general impacts on force structures, tactics and doctrines. The first impact one might refer to as the linear effect. This is the case in which the new weapon system is able to do the job of several of its predecessors in the same manner as they did. It results in a net reduction in quantity of the forces, or of the weapons that are replaced. An example of this would be the case where the introduction of a machine gun would permit a small squad to cover, with the new firepower, an area which previously required a sizeable number of

individual efficiency. In the linear case there is no basic change in tactics, doctrine, or strategy but merely the substitution of more efficient and more effective tools for those previously employed. One might say that it is a form of automation of the battle.

The second impact of new weapons is far more subtle, and also more far reaching, in terms of its effect on combat effectiveness, force requirements, and strategy. This occurs when the new weapon system is sufficiently different in characteristics, from those of the weapons it is intended to replace so that its introduction, and effective utilization, requires the development of entirely new doctrines, or tactics, for its employment. For instance, the invention and introduction of large atomic weapons into the strategic order of battle permitted a change from classic wars of attrition, to short duration wars of so-called "massive retaliation". Likewise, instead of limiting the bombing to certain specific industries, which was all that one could handle with hard bombs, it was possible to change the target and hence strategic strategy, so as to take on vast systems like the entire urban complexes of a nation.

Now in this particular case it should be obvious that there is a more or less double, or tandem, action. First, the new weapon has to be invented, then the new tactics to exploit it have to be adopted, tested and accepted. More often than not we run into difficulty in this second area. It is classic that there is

little resistance to the introduction of new weapons, whereas there is a great deal of resistance, particularly in peace time, to the introduction of new tactics, new organizations, and new strategies. This often results in the fact that the latest technological possibilities are never fully exploited - not by virtue of their not being good - but by virtue of the inability of the body military or political to adjust itself in other areas so as to permit their full exploitation.

What I would like to suggest today, is that one of the problems with the acceptance of tactical nuclear weapons has been the inability, and/or unwillingness, of the military to adjust their tactics, concepts, and doctrine so as to obtain full benefit from these. To date the military has generally sought to substitute nuclear firepower for conventional firepower directly and thereby acquire an order of magnitude increase in effects, but without disrupting existing tactics and doctrine. This is very much as if in the old days one had added the machine gun and automatic rifle to the close order formations of the Napoleonic Era without changing those formations or the tactics that they employed. The problem here lies partly in the willingness to make the essential changes; partly in obtaining a general understanding of these and what they might be; and partly in the fact that there has been no opportunity to test such radical changes as could be envisioned in actual combat thus the confidence level in accepting them is relatively low. Nevertheless, in my opinion the full exploitation of tactical nuclear weapons will demand that the military face up to adjusting the tactics, strategy and doctrine of the land battle to their employment.

Now the reason I bring this up at this time is not merely to speculate on these possibilities, but rather because a serious effort was undertaken at one time to do exactly what I suggest. In fact the effort was to a large degree successful in that the NATO strategy since 1956 has been based upon the premise that this was done. Unbelievable as it may seem the strategy is based upon this particular premise yet the actual changes in force posture never took place in practice. This has left some in the rather interesting position of opposing a strategy, and a defense concept in NATO, which in fact was never implemented in practice. Meanwhile the proponents of the present strategy have refused to consider changing to it even though these would be largely verbal since they would merely confirm what exists in fact today. This is probably an oversimplification, but I think that you will see that it is not far from the truth.

What I would like to do now is to review with you, very briefly, the history of the early studies and conclusions on tactical nuclear warfare in the defense of Europe; and to show you how consideration was given to adjusting the forces so as to fully exploit these devices even though at that time they did not in fact exist.

In connection with this I will draw certain specific conclusions with respect to the possible impact of tactical nuclear weapons on the land-air battle, and on its force requirements which I think you will find remain valid today, though again they have not all been fully exploited. I am doing this mainly because I would like to convince you, as I am convinced, that the last problem area, mainly

that of adjusting tactics, doctrine and force structures, to the fullest exploitation of atomic weapons is the key to their ultimate role in national defense. As long as we are faced with a continued desire to merely substitute these for classic weapons on a linear basis we can never hope to obtain full returns from these developments, or even enthusiastic endorsement of their use. This is the message that I hope that I can convey to you today.

NATO Tactical Warfare.

In 1952 the military authorities of the then 13 NATO Nations submitted to the North Atlantic Council a statement of the minimum force requirements they deemed necessary to effectively defend Western Europe. These force requirements were established on the basis of WW II experience, and WW II factors, and on the assumption that - at least in so far as the battle in Europe was concerned - conventional weapons only would be used.

The levels of forces stated as minimal to accomplish the basic NATO goal of defending Europe, at that time, so far exceeded the economic possibilities, or political willingness of the countries concerned to raise them, that it became immediately apparent to all concerned that the task set for NATO was impossible if these force level were in fact the only ones that could do the job.

Nevertheless, the military leadership of 13 nations had pronounced themselves with respect to the minimal nature of these forces. The political and economic authorities had indicated (after the three wise men review) that not

only were the levels unachieveable but it would not be feasible to achieve even 30% of the totals envisioned. This left the NATO governments in an interesting position. Had the deficit been in the order of 10 or 20% one could have argued that the clutter in military planning was such that one could accept the risk. A 300% deficit however could hardly be accepted as a risk. If the DC-28 and Lisbon Forces goals were therefore to be final, it merely meant that the purpose of NATO, to defend Western Europe, was unachieveable.

The result of admitting this could only be the ultimate and early dissolution of NATO since the countries concerned, once they realized that their security could not be effectively provided by the Treaty Organization, would certainly search for other means such as neutrality, etc. The obvious alternative, of course, was for the military to find some other way of defending Western Europe within resources that might be achieveable.

Now at this point we have to be very careful because much of the audience has been badly confused by the public debate over NATO strategy, and presumes that the so-called "other way" that was found was to leap to strategic massive retaliation. This is not at all true. Whether the U. S. had, or had not, a policy of massive retaliation at the time, this policy never was envisioned by SHAPE as a substitute for the ability to hold forward in Europe, within the resources available to SACEUR. The SHAPE problem, therefore, was to find a way of

defending forward in Europe, with resources that might be available at least pending the outcome of the SACEUR effort. We had to prevent the larger Soviet land forces from overrunning and occupying NATO. This is what we had to do.

In order to face up to this problem General Gruenther, then SACEUR following General Eisenhower's departure, introduced what was known as a "Capabilities" planning cycle. This is a planning cycle in which the military is given the job and the ceiling on the resources, and told to figure out how to do the job within the available resources. You note of course that it differs from the classic military requirements planning cycle, used to establish the prior force levels, in the fact that the resources are fixed as well as the job thus making the variable the method; whereas under the classic system, of course, the method is classic and/or optional and the resources become the variable.

The stage was now set for a serious effort to devise new tactics, doctrines and strategies which would fully exploit all the products of technology in the hope that by so doing the job could be accomplished within the means anticipated as available.

One reason this particular effort is interesting is because it was one of the first organized efforts in this respect that gave consideration to tactical nuclear weapons in the land battle. Many of the possible impacts had not been previously developed and as a result those participating in the study were not influenced by subjective considerations with respect to what the acceptance of these weapons might do to their force requirements or pet theories, etc.

Additionally, the incentive to save NATO, from a political point of view, on the one hand, and the fact that it could only be done by major force reductions in the requirements, on the other hand, overcame the classic parochial opposition to any solutions that reduced force requirements.

Two years were devoted to this project and we had a fair amount of assistance from the RAND Corporation. Dr. Igor Ansoff and some of his people worked with us for at least a year, and RAND made several computer runs of alternate air strategies and postures which, as I will show you, led to some interesting conclusions.

Now what was the result of all this, and why is it pertinent to our problem today? I think you will see the answer to this when we examine some of the findings in simplified form.

Tolerable Loss and the Posture of the Forces.

We naturally started the exercise by making the classic mistake of adding the new nuclear weapons to the old forces, doctrines, concepts, and tactics. In essence we added the machine gun to both sides of the battle at Waterloo. Our conclusions were first, that it took more forces to fight a nuclear war because every time a unit was hit whole unit replacements were required, and second, that the battle would be over in a few days or hours at the most. Do those conclusions sound familiar? This approach obviously didn't help us.

The theory of tolerable loss is based upon experience in war which in essence indicates that if one has 100 bases and half of these are totally destroyed, the residual capability is 50%. If on the other hand half of each base, in terms of personnel, equipment and operating capability, is destroyed the residual capability approaches zero. Forces subjected to losses in the order of 50% in their immediate area are so depleted by disaster, command, control, recovery, and psychological problems, that one can hardly expect them to react in direct proportion to their actual mathematical capabilities. The threshold of tolerable loss is, therefore, that point at which a combination of time loss rates, when suffered in an organizational entity, drives the operational capability of the unit to zero regardless of the actual theoretical capability.

One will note in our example, and in the chart, that under this theory we could easily have lost at D+5 instead of winning at D+30 as was postulated by the computers. This is an example of where past experience in military command in war takes over from mathematical analysis and computerized war gaming.

Now the interesting lesson to be deduced from an analysis of tolerable loss is that the introduction of new firepower systems of the magnitude of atomic weapons add a new variable to the planning equation. Normally, an operational plan consists of the interplay between the forces available (resources) and the mission to be accomplished. It is presumed that the "posture" of the forces - this is a word I use to refer to their presentation to enemy attack in terms of

deployment, organization, tactics, etc. - remains essentially constant. As we see, however, in our Napoleonic example the introduction of atomic weapons resulted not in an increase in losses but in shortening the battle, but rather in a decrease in loss per unit of time and in lengthening the battle. This was due entirely to the fact that the 'posture' of the forces was changed from the classic close order formation to skirmish line as a result of the change in military doctrine and concepts introduced by Frederick of Prussia.

The point that I wish to make today is that so far the U. S. and its allies have done little or nothing to readapt the 'posture" of the forces to the realization of tactical atomic warfare. Such efforts as have been made in this regard, such as the findings of the "Beaufre" report in NATO, and the small step made by General Gavin in seeking to create pentomic divisions, have lost or reversed. Under these circumstances we get none of the benefits of atomic weapons and all the liabilities. This is the price that I suggest we pay for our attempt to have our cake and eat it too - that is, to maintain a so-called dual "posture".

If the studies undertaken in NATO in the early 50's are remotely valid one comes to the conclusion that the introduction of atomic weapons in the land-air battle results in changing the principle of mass from one heretofore measured in terms of manpower to one henceforth to be measured in terms of firepower.

This change in the role of mass decouples quantity of manpower from the outcome of the battle. The result is that we rely upon weapons and not bodies to arrest aggression and this in turn permits a small force, deployed or equipped to utilize tactical nuclear weapons, to arrest although not necessarily defeat a much larger aggressor.

Manpower and Firepower.

General Twining stated in a speech in 1956 to the National War College that:

> "In future atomic wars mass will be measured in kilotons and not in terms of manpower."

Speaking to the NWC in 1955, Field Marshal Viscount Montgomery, Deputy SACEUR, stated:

> "We came to the conclusions we could only do that (hold forward in Europe) by using the nuclear weapon and going in for a policy of destruction with that weapon -- the nuclear weapon having a great capability for destruction on an area basis -- and we therefore used as our chief agent the nuclear weapon and we used the forces to support the weapon. Now that is a reversal of previous thinking. In past thinking it was the weapon which disrupted and weakened the enemy and then the forces moved in to complete the business. And I think the difference in the tactical concomitant of nuclear warfare

is a very important matter to put right. You use the nuclear weapon for your offensive punch and not human bodies in the first instance."

The above pronouncements stem from recognition, by students of strategy and tactics, that the area destructive capability inherent in atomic munitions means that firepower and destruction will henceforth be the decisive elements in atomic age war. Atomic destruction will be the end-all of the battle, as such it replaces past emphasis on counter attack and maneuver, by men and materiel, to achieve the ultimate objectives.

Where, in the past, artillery (missiles) and air forces had a supporting role, in the future, firepower, and hence these means of delivering it, will have the dominant role. This was already evident to a degree by the influence of strategic air in WW II. This decisive influence has now extended on down to all means of delivering atomic destruction.

With the advent of atomic weapons, the target's ability absorb attack and survive has been greatly reduced. Conversely, the atomic weapon with its large lethal area, has tremendously increased the ability to destroy. In past wars the probability of destroying a target with any given bomb or shell was, relatively speaking, small since each such target has to be pin-pointed and hit. Random fire, while producing some kills and disruption, was not decisive due to the fact that there was invariably more vacant space in relation to the area destroyed than

space occupied by objectives worth destroying. When the lethal area of one weapon is increased to the extent of providing a greater probability of a kill than of a miss against any given target complex, the dominant role clearly shifts from quantity of forces to the firepower or destructive agent.

The changeover from the case where weapons support the forces, to where forces support the weapons, occurs when the probability of kills by a random shot exceeds the probability of misses. This occurs with the introduction of atomic munitions at any level where same can be used and effectively delivered. In future battles the forces will support the firepower andnot the converse. The objective will be destruction instead of disruption, defeat, and ultimate capture.

The new role of firepower will have far-reaching effects on tactics and on force requirements for war. It appears to confer upon the defense a decided advantage over the offense in a fixed land battle. Conversely, it confers upon the air or missile offense a decided advantage over the defense by reducing the magnitude and frequency of the effort required to accomplish the desired destruction. The classic principles of mass and mobility of forces must be reviewed. It brings into question the importance of manpower in assessing relative military strength. In this latter respect it is a principle which is of current and vital importance in view of the financial demands imposed by new weapons, missiles, and satellites and which may have to be obtained at some expense to the strength of peacetime forces.

On Limited Atomic War.

Very little has been said or written on the use of nuclear weapons in limited wars. This is partly because there is a popular -- though wholly unsubstantiated -- opinion that any use of such weapons will result in a progression to general nuclear war, and partly because those most concerned resist the above conclusions and the resulting fact that very small land forces can effectively contain limited aggression anywhere if atomic weapons are used.

Limited tactical atomic counterforce can lead to a theater level form of stalemate. When two forces face each other across a land front neither can successfully advance against the other until the opponent's atomic firepower has been dealt with. Since this is a factor in granting small forces the capability of defending themselves against invasion by an enemy with far greater manpower, air planners should understand this type of stalemate, particularly with respect to its deterrent prospects against limited war ventures.

In theory when two opposing forces face each other across a front or along a frontier, they can totally destroy each other's combat formations so long as they each have adequate and secure atomic stocks and delivery means. The constraints imposed by geography as to the length of any land front, plus the constraint imposed by mobility limitations on the depth to which invading or defending formations can be deployed and still influence the battle, when considered in relation to the area of primary effects of atomic weapons in the megaton range, make such mutual annihilation a practical proposition.

Thus two conditions will ensure a stalemate or standoff in a limited aggression opposed with atomic firepower. On the one hand mutual suicide of forces is a practical proposition with high yield weapons. On the other hand the advantage conferred on the defense by the use of selective tactical atomic firepower can prevent invasion as long as the atomic fire support of the defender remains adequate and secure. In either case the frontier remains uncrossed. It follows from this that a successful invasion by limited military operations against an atomically defended frontier requires that the defender's atomic means first be destroyed or neutralized.

In a limited war situation, as in total war, the outcome depends on the relative effectiveness and security of atomic stocks and delivery means. Until these can be dealt with, by one side or the other, land forces cannot advance and occupy or conquer territory and the battle front remains frozen along the initial defense positions. This is a new situation which has an important effect on the probability of successful limited war.

If a stalemate will exist on land until the battle for local atomic supremacy can be resolved, the question of local air defense, and the vulnerability of delivery forces, both assume importance as in the case of strategic warfare. The atomic firepower can either be intercepted or destroyed at source. What

are the prospects in both instances and how will they effect the likelihood of a tactical atomic stalemate either as a deterrent to limited aggression or as a deterrent to use of atomic weapons?

Air Defense in Forward Areas.

In a limited war between adjacent forces and territories there is little or no depth available for warning and in which to intercept. The condition in the forward areas is generally fluid and the availability of large fixed warning and control centers cannot be counted upon. Finally, delivery ranges are short, hence missiles, artillery and aircraft with very limited flight time can be used. Under these circumstances the possibilities of defining a wholly effective local air or missile defense against an enemy's tactical atomic delivery capability are remote. It is about on a par with finding a way of preventing enemy artillery fire from penetrating into one's frontline formations. The only effective defense lies in destroying the enemy's atomic capability at source, and this, if and where it can be done, will ensure victory.

Vulnerability of Delivery Means.

If one side could succeed in destroying the other's atomic delivery system at source it would then fall heir to a local atomic monopoly and could invade the territory of the other with impunity and regardless of the strength of the defending forces. These latter would be systematically destroyed without risk

of retaliation. The prospects of doing this, however, in a localized war are poor by virtue of the limited area of active conflict and resulting existence of sanctuaries from which the delivery force can operate.

The atomic delivery means required to support a limited war need not be deployed in the combat zone. Not only can they operate from sanctuary bases effectively but there is also precedent for this. In Korea the air striking power on both sides was based outside the area of limited war. Unlike the land combat formations, air forces and medium range missiles are by no means constrained to be along or near the front. Therefore, these are vulnerable in a limited war only if they are in the war zone, or if the contestants are willing and able to run them down outside the war zone.

The first alternative, to be decisive, would assume that one side would accept defeat before basing outside the theater. The other alternative, to pursue and attack them wherever they may be must mean -- in this age of global range air power -- over the better part of the world. In this case the war would no longer be a limited one.

Thus:

The range of modern air power and missiles allows them to operate effectively from great distances and remote base areas. This permits nations engaged in limited wars to base their atomic delivery arm in areas secure from enemy attack unless the enemy is willing to risk enlarging the war.

Prospects for a Tactical Stalemate.

An atomic stalemate condition has better prospects of occurring in a limited war than in total war. The aggressor has no chance of successfully invading until he deals with the atomic delivery capability of the defender. Both sides can't annihilate the other's forces in the combat zone, but such a policy of "baby" mutual suicide accomplishes nothing in so far as the conquest of the territory is concerned.

Thus a would-be aggressor is deterred from a massive negation attack against forces defending an area by knowing that this would lead to his forces suffering like damage; he is deterred from selective atomic attack by the advantages conferred on the defense in this maneuver; and he is deterred from attacking the only objective which would break the stalemate -- the enemy's delivery force and weapons -- by the need to enlarge the conflict to total war in so doing. In summary:

In a war limited to a specific geographic area there is no prospect of effectively intercepting the delivery effort enroute to its target, and no prospect of destroying it at source -- where the source lies outside the area -- except by enlarging the combat area to include the delivery bases. Since a successful advance by land forces against a defended area requires the prior destruction or neutralization of the delivery means, a stalemate or global war are the inevitable results of a limited war effort.

Importance of Prepared Defenses.

In the above conclusion we referred to a "defended area." By this is meant an area where ready defense forces and their atomic support are available and in or near their combat stations at the onset. The conclusion does not apply to the same extent where the act of aggression is not initially opposed. In this case the mutual atomic capabilities remain the same but the advantages conferred upon the defense by not being exposed while moving, or concentrated while attacking are lost. If the shield forces have to be built up after the onset they are as vulnerable to atomic destruction as are the aggression forces. Considering the relative effectiveness of atomic firepower in this situation, the tables are turned and, the aggressor is in reality defending the periphery of the area he wishes to conquer from invasion by the would-be defenders.

A stalemate condition, and hence effective deterrent, to a local act of aggression will occur only where there are some defending shield forces in position and ready at the onset, though these do not have to have an atomic capability of their own if they are supported by outside delivery forces - at sea or in sanctuary.

Summary

... [illegible] discussion which I have tried to do this afternoon is to point out the importance of obtaining a greater understanding of the role of tactics and doctrine in nuclear war as a prelude to defining weapon requirements.

... [illegible] as we insist on fighting WW III weapons with WW II concepts we will draw erroneous conclusions as to the likely outcome of the battle and reap most of the benefits in terms of either military capability or savings that could be achieved were we ready and willing to readjust our forces to fully exploit the new capabilities.

I consider that much of the problem of selling and exploiting new tactical weapons is tied up in the insistence of change in the strategic tactical and doctrinal areas. The same as a matter of fact can be said for the use of CW and BW, and to a lesser degree for the use of space systems.

The cost savings factor is the evolution of technology and the resulting necessity to pay higher and higher prices for the more sophisticated weapon systems. This tends to cause what might be referred to as a "cost squeeze" which is clearly depicted on this NATO chart.

Over the long pull the results of the cost squeeze are to force, for one reason or another, the reactionary management, by the civil or military, to

adopt the new weapons and exploit these. When this occurs the benefits as well as the liabilities are accepted and we have a new cycle, but until it does occur acceptability of new weapons is limited from both the political and military points of view. The former consists the implications and the latter insists the resulting tendency to reduce quantity in favor of quality.

I have confidence, however, that we are approaching a new agonizing reappraisal. Whether we can go through it in peacetime under the pressures of economic considerations and the times to realize savings it is plowed back to the Great Society, or whether it will be forced upon us as a result of a third party's use of nuclear weapons and the lessons learned thereby is by no means clear. The fact that it will and must come about, however, seems to me self-evident, the only problem is when. Personally, I am convinced that there is one axiom which one can put down in the planning business without fear of being wrong in the long haul and this is: "Strategy, concepts, tactics, and doctrine must inevitably evolute with the products of technology."

(42)

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(3)

WAR AND ATOMIC WEAPONRY

An atomic weapon was first used in war in 1945. In 1980 - 35 years later - we still have no real understanding of the impact of this event on the conduct of war.

Since it took centuries to adjust warfare to the advent of gunpowder our inability to quickly assimilate the atomic development, and readjust forces, concepts, and doctrine accordingly, is not surprising - even in this age of rapid adaptation to technological change. It can also be explained by the constraints which have limited the full and early exploitation of this new weapon system. They include:

Its introduction at the wrong end of the spectrum for evolutionary assimilation. Had the concentrated destructive power it offered been first available in incremental increases over accepted conventional arms the military could have digested the new technology and evolved combat doctrine along with its availability and improved capabilities. Instead, by coming "on scene" at the Hiroshima level, the changes it suggested were so revolutionary that the "system" regurgitated them and did nothing.

The rapid growth of non-military resistance to the exploitation of these weapons. Their destructive power was so awesome, when compared with conventional munitions, that politicians, professors, religious leaders, and others not normally concerned with war-waging techniques, actively opposed the employment, deployment and even development of the new weapons. This trend continues unabated today.

The "resistance to change" factor. Had the above constraints not existed, this human and organizational characteristic would still have limited their full exploitation until their worth had been more extensively tested in war. This is the historical tendency of any military system - or any other system - to resist change in all areas other than materiel (hardware). While we eagerly seek new and better hardware - and spend billions to invent and develop it - we also resist changes in ideas, doctrine, tactics, policies and organization - and spend relatively little money to research these. This is typified by the classic and all too true statement that the military starts each new war with the tactics and forces that were used and succeeded in the last one.

Weapons systems evolute hyperbolically with technological progress while the methods of their employment remain constant between wars (where they are used), or agonizing reappraisals such as the "New Look" of the 1950's. The latter occur in peacetime when the gap between the performance and cost of the average major weapon system and quantity requirements dictated by experience with predecessor systems becomes so great that economic considerations oblige the military to choose between doing the "job" differently with less quantity or admitting they can no longer afford to do the job. I suggest we are again approaching this point.

My conclusion from these opening remarks is that there is nothing surprising about the fact that there is as yet no real understanding of the potential of atomic weapons to provide a highly cost effective defense posture, particularly in the tactical and limited war arenas.

The fact that major doctrine and force structure changes have not been defined, let alone made, during the past 35 years of their availability does not mean that they are not warranted. Quite the contrary, it merely reflects the above constraints plus a lack of research and imagination stimulated by a national willingness to assume risks and waste dollars in pursuit of moral and political aspirations or parochial military habit and tradition.

In brief, the field is wide open for innovations in defense policy, doctrine, and tactics.

We need a Twentieth Century Clauswitz - or a no weapons barred war - to define these. If and when this comes about, the "methods" of waging war

and providing for security will be brought back into proper relationship with the means and their cost. This in turn will allow nations such as ours to meet its defense commitments with both a reasonable and traditional percent of its resources. It will also provide a new and sound baseline for further technological development.

Today's Problem

If we paint in our immediate concern - tactical nuclear weapon development guidance - against the above background, why we have a problem in the first place is apparent. The importance of estimating - even crudely - the Real World of an atomic conflict as a prerequisite to defining weapon requirements is equally apparent. Until we understand the "nature of the game" - even though it is not yet generally accepted - we will continue to design better baseballs for use in tennis games!

To solve this problem, we must first conceive of a real world tactical atomic conflict. We must momentarily forget about theories and policies such as deterrence, arms treaties, controlled war, and other aberrations or constraints that perturb the picture. Only when we clearly see what a "no holds barred" tactical nuclear war environment might look like, adjust the forces and tactics of both sides to best survive and exploit it, and draw some conclusions as to the changes in force structure and principles of war that appear to be required, can we begin to perceive how the "means" should be designed to optimize our capabilities.

As a small effort in this direction, I shall now try to summarize some of the views of those few who have thought about these matters in such a purely theoretical sense.

The New Considerations

Technology, including the nuclear development, has introduced major new considerations into any evaluation of a no limitation conflict. These are new building blocks that will constrain or otherwise impact on any tactical nuclear war scenario. These are in brief:

a. Global accessability. There are no more sanctuaries solely by virtue of geography.

b. The space dimension. Access from and to space has been added to that from and to land or sea.

c. Concentration of destructive power. The atomic development has largely eliminated the "mass" or quantity factor from fire power delivery requirements.

d. Duration of the decisive phase. The ability to prefabricate and stock the maximum destructive power required before the war not only ensures maximum intensity at the onset but also degrades the prior importance of industrial and manpower mobilization. The forces in being and in place may well now be the only decisive consideration.

e. The dominance of firepower over manpower. The larger lethal zone available with nuclear weapons can now exceed the dispersion and concealment capabilities of organized units. This reverses the relative roles of kill versus capture and the definition of "mass" in the classic principle from "quantity of men and machines" to "deliverable kilotons or megatons."

f. The relative capabilities of the defense versus the offense on land. Classically the best defense was an offense and the forces

were equipped, made mobile, and concentrated to permit this. The new development, "c" and "e" above, now suggest this principle may be reversed, at least locally. When firepower and kill capabilities become dominant, force concentration and maneuver must give way to force survivability and force protection.

These are some of the major new factors around which we must define the nature of any tactical atomic war. Each requires extensive development to explain and defend. Enough has been done on these to justify our accepting them as inputs in this effort.

There are other new considerations not as yet clearly understood, and a whole family of secondary ones that cascade out of each of the above. The important point for our purposes, at present, is to accept that technology and atomic weapons ordain major changes in the principles and tactics of warfare, hence we cannot merely add the new weapons to existing force structures, concepts and plans and hope to draw valid conclusions.

Let me illustrate. Current planning for tactical atomic warfare all too often assumes the new weapons are merely more powerful bombs and shells - but otherwise change little or nothing in classic force employment concepts or even requirements. This is no more true than would have been a similar finding with respect to adding automatic fire weapons to Napoleonic wars while retaining the close order formations and tactics of that era.

A major by-product of the increase in firepower provided by automatic weapons and improved cannons, such as the famour French 75 mm of World War I, was the radical change in the method of conducting land war operations.

Close order formations, cavalry charges, short, decisive engagements waged mainly in daylight, and the limitation of destruction to combat forces or their fortifications all gave way to trench and mobile warfare with sustained engagements and increasing incidental damage to non-military people and property. The same dramatic changes must logically follow the introduction of nuclear firepower in this century.

This change in the role of "mass" that results from the introduction of nuclear weapons will decouple quantity of manpower from the outcome of the battle. The result is that in tactical nuclear engagements both sides will rely upon weapons and not bodies to arrest aggression. This in turn will permit a small force, deployed or equipped to utilize tactical nuclear weapons, to arrest - although not necessarily defeat - a much larger aggressor force. This was key to the 1956 NATO strategy since abandoned. Speaking to the NWC in 1955, Field Marshal Viscount Montgomery, Deputy SACEUR, stated:

> "We came to the conclusions we could only do that (hold forward in Europe) by using the nuclear weapon and going in for a policy of destruction with that weapon -- the nuclear weapon having a great capability for destruction on an area basis -- and we therefore used as our chief agent the nuclear weapon and we used the forces to support the weapon. Now that is a reversal of previous thinking. In past thinking it was the weapon which disrupted and weakened the enemy and then the forces moved in to complete the business. And I think the difference in the tactical concomitant of nuclear warfare, is a very important matter to put right. You use the nuclear weapon for your offensive punch and not human bodies in the first instance."

The area destructive capability inherent in atomic munitions means that firepower and destruction will henceforth be the decisive elements in an atomic age war. Atomic destruction will be the end-all of the battle, as

such it replaces past emphasis on counter attack and maneuver, by men and materiel, to achieve the ultimate objectives.

Where, in the past, artillery (missiles) and air forces had a supporting role, in the future, firepower, and hence these means of delivering it, should logically have the dominant role. This was already evident to a degree by the influence of strategic air in World War II. This decisive influence has now extended on down to all means of delivering atomic destruction. The artillery becomes the new queen of the battle.

With the advent of atomic weapons, the target's ability to absorb attack and survive has been greatly reduced. Conversely, the atomic weapon with its large lethal area, has tremendously increased the ability to destroy. In past wars the probability of destroying a target with any given bomb or shell was, relatively speaking, small since each such target has to be pin-pointed and hit. Random fire, while producing some kills and disruption, was not decisive due to the fact that there was invariably more vacant space in relation to the area destroyed than space occupied by objectives worth destroying. When the lethal area of one weapon is increased to the extent of providing a greater probability of a kill than of a miss against any given target complex, the dominant role clearly shifts from quantity of forces to the firepower or destructive agent.

The changeover from the case where weapons support the forces, to where forces support the weapons, occurs when the probability of kills by a random shot exceeds the probability of misses. This occurs with the introduction of atomic munitions, at any level, where same can be used and effectively delivered. The new so-called smart bombs may even start this change process without atomic means. In future battles the forces will support the

firepower and not the converse. The objective will be destruction instead of disruption, defeat, and ultimate capture.

The new role of firepower will have far-reaching effects on tactics and on force requirements for war. It appears to confer upon the defense a decided advantage over the offense in a fixed land battle. Conversely, it confers upon the air or missile offense a decided advantage over the defense by reducing the magnitude and frequency of the effort required to accomplish the desired destruction.

The classic principles of mass and mobility of forces must be reviewed. It brings into question the importance of manpower in assessing relative military strength. In this latter respect it is a principle which is of current and vital importance in view of the financial demands imposed by new weapons, missiles, and satellites and which may have to be obtained at some expense to the strength of peacetime forces.

On Limited Atomic War

Very little has been said or written on the use of nuclear weapons in limited wars. This is partly because there is a popular -- though wholly unsubstantiated -- opinion that any use of such weapons will result in a progression to general nuclear war, and partly because those most concerned resist the above conclusions and the resulting fact that very small land forces can effectively contain limited aggression anywhere if atomic weapons are used from the onset.

Limited tactical atomic counterforce can lead to a theater level form of stalemate. When two forces face each other across a land front neither can successfully advance against the other until the opponent's atomic

firepower has been dealt with. Since this is a factor in granting small forces the capability of defending themselves against invasion by an enemy with far greater manpower, air planners should understand this type of stalemate, particularly with respect to its deterrent prospects against limited war ventures.

In theory where two opposing forces face each other across a front or along a frontier, they can totally destroy each other's combat formations so long as they each have adequate and secure atomic stocks and delivery means. The constraints imposed by geography as to the length of any land front, plus the constraint imposed by mobility limitations on the depth to which invading or defending formations can be deployed and still influence the battle, when considered in relation to the area of primary effects of atomic weapons in the megaton range, make such mutual annihilation a practical proposition.

Thus two conditions will ensure a stalemate or stand off in a limited aggression opposed with atomic firepower. On the one hand mutual suicide of forces is a practical proposition with high yield weapons. On the other hand the advantage conferred on the defense by the use of selective tactical atomic firepower can prevent invasion as long as the atomic fire support of the defender remains adequate and secure. In either case the frontier remains uncrossed. It follows from this that a successful invasion by limited military operations against an atomically defended frontier requires that the defender's atomic means first be destroyed or neutralized.

In a limited war situation, as in total war, the outcome depends on the relative effectiveness and security of atomic stocks and delivery means. Until these can be dealt with, by one side or the other, land forces cannot advance and occupy or conquer territory and the battle front remains frozen along the initial defense positions. This is a new situation which has an important effect on the probability of successful limited wars and localized defensive operations.

If a stalemate will exist on land until the battle for local atomic supremacy can be resolved, the question of local air defense, and the vulnerability of delivery forces, both assume importance as in the case of strategic warfare. The atomic firepower can either be intercepted or destroyed at source. What are the prospects in both instances and how will they effect the likelihood of a tactical atomic stalemate either as a deterrent to limited aggression or as a deterrent to use of atomic weapons?

Firepower Defense in Combat Areas

In a limited war between adjacent forces and territories there is little or no depth available for warning and in which to intercept. The condition in the forward areas is generally fluid and the availability of large fixed warning and control radars cannot be counted upon. Finally, delivery ranges are short, hence missiles, artillery and aircraft with very limited flight time can be used. Under these circumstances the possibilities of defining a wholly effective local air or missile defense against an enemy's tactical atomic delivery capability are remote. It

is about on a par with finding a way of preventing enemy artillery fire from penetrating into one's frontline formations. The only effective defense lies in passive means such as concealment, mobility, and protection or destroying the enemy's atomic capability at source. The latter, if and where it can be done, will ensure victory.

If one side could succeed in destroying the other's atomic delivery system at source, it would then fall heir to a local atomic monopoly and could invade the territory of the other with impunity and regardless of the strength of the defending forces. These latter would be systematically destroyed without risk of retaliation. The prospects of doing this, however, in any one combat zone are poor by virtue of the limited area of active conflict and resulting existence of sanctuaries from which the delivery forces can operate.

The atomic delivery means required to support a limited war need not be deployed in the combat zone. Not only can they operate from sanctuary bases effectively but there is also precedent for this. In Korea the air striking power on both sides was based outside the area of limited war. Firepower in Vietnam comes from carriers, Thailand, and even Guam, none of which are technically in the combat zone. Unlike the land combat formations, air forces and medium range missiles are by no means constrained to be along or near the front. Therefore, these are vulnerable in a limited war <u>only</u> if they are <u>in</u> the war zone, or if the contestants are willing and able to run them down <u>outside</u> the war zone.

The first alternative, to be decisive, would assume that one side would accept defeat before oasing outside the theater. The other alternative, to pursue and attack them wherever they may be must mean -- in this age of global range air and missile forces -- over the better part of the world. In this case the war would no longer be a limited one.

Thus:

The range of modern air and missiles systems allows them to operate effectively from great distances and remote base areas. This permits nations engaged in limited wars to base their atomic delivery arm in areas secure from enemy attack unless the enemy is willing to risk enlarging the war. This fact alone has eroded Allied confidence in U.S. NATO commitments in recent years as forward nations began to realize that the so-called strategic sword, or any other forces like Polaris, would not be used on their behalf so long as the aggression was limited to their territories.

Prospects for a Tactical Stalemate

An atomic stalemate condition has better prospects of occurring in a limited tactical nuclear war than in total war. The aggressor has no chance of successfully invading until he deal with the atomic delivery capability of the defender. Both sides can't annihilate the other's forces in the combat zone, but such a policy of "baby" mutual suicide accomplishes nothing in so far as the conquest of the territory is concerned.

Thus a would-be aggressor is deterred from a massive negation attack against forces defending an area by knowing that this would lead to his forces suffering like damage; he is deterred from selective atomic attack

by the advantages conferred on the defense in this maneuver; and he is deterred from attacking the only objective which would break the stalemate -- the enemy's delivery force and weapons -- by the need to enlarge the conflict to total war in so doing. In summary:

In a war limited to a specific geographic area there is no prospect of effectively intercepting the delivery effort enroute to its target, and no prospect of destroying it at source -- where the source lies outside the area -- except by enlarging the combat area to include the delivery bases. Since a successful advance by land forces against a defended area requires the prior destruction or neutralization of the delivery means, a stalemate or global war are the inevitable results of a limited war effort. Again Vietnam illustrates this in that we can attack from Guam with impunity. If the North Vietnamese could respond in Guam or Thailand, we would not be using B-52's in all probability as being preferable to expanding the war.

Importance of Prepared Defences

In the above conclusion we referred to a "defended area." By this is meant an area where ready defense forces and their atomic support are available and in or near their combat stations at the onset. The conclusion does not apply to the same extent where the act of aggression is not initially opposed. In this case the mutual atomic capabilities remain the same but the advantages conferred upon the defense by not being exposed while moving, or concentrated while attacking are lost. If the shield or area defensive forces have to be built up after the onset, they are as vulnerable

to atomic destruction as are the aggression forces. Considering the relative effectiveness of atomic firepower in this situation, the tables are turned and, the aggressor is in reality defending the periphery of the area he wishes to conquer from invasion by its would-be defenders.

A stalemate condition, and hence effective deterrent, to a local act of aggression will occur only where there are defending forces in position and ready at the onset. Although these do not have to have an atomic capability of their own if they are supported by outside delivery forces - at sea or in sanctuary - the prospects for such outside support are such that weapons in the hands of troops on D-Day are a must from a deterrent if not essential military point of view.

Summary

In the above discussion what I have tried to point outis the importance of obtaining a greater understanding of the role of tactics and doctrine in nuclear war as a prelude to defining weapon requirements.

So long as we insist on using World War III weapons with World War II concepts we will draw erroneous conclusions as to the likely outcomes of the battle and reap none of the benefits in terms of, either military capability or savings that could be achieved were we ready and willing to readjust our forces to fully exploit the new weapon capabilities.

I consider that much of the problem of selling and exploiting new tactical weapons is tied up in the resistence to change in the strategic tactical and doctrinal areas. The same as a matter of fact can be said for the use of space systems.

The one savings factor is the evolution of technology and the resulting necessity to pay higher and higher prices for the more sophisticated weapon systems. This tends to cause what might be referred to as a "cost squeeze," which was greatly aggravated by Vietnam and domestic fiscal demands in the 1960's.

Over the long pull the results of the cost squeeze are to force, for one reason or another, the civil and/or military leadership to adopt the new weapons and exploit these. When this occurs the benefits as well as the liabilities are accepted and we have a new cycle, but until it does occur acceptability of new weapons is limited from both the political and military point of view. The former resist going atomic for arms control reaso and the latter resists the resulting ability to reduce force quantity in favor of quality and change traditional methods of waging war.

I am convinced we are now approaching a new agonizing reappraisal. Defense costs are the driving force. Whether we can go through it in peacetime as the only way to maintain an effective US defense posture at a price level we can afford, or whether it will be forced upon us as a result of lessons learned through a third party's use of nuclear weapons is by no means clear. The fact that it will and must come about seems to me self-evident, the only problem is when. I am convinced that there is one new principle - which I call Richardson's first principle of the atomic age! - which one can put down in the planning business without fear of being wrong in the long haul. This is:

> "Defense policy, strategy, concepts, tactics, and doctrine must inevitably evolute with the products of technology."

NATO NUCLEAR STRATEGY: A LOOK BACK

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IN BRIEF

The current controversy in NATO over theater nuclear weapons is aggravated by lack of understanding of the role of the NATO nuclear component, and against the background of a NATO posture that holds out neither a sustainable conventional defense nor a viable nuclear strategy. Few remember that there once evolved—in 1956—a straightforward NATO strategy for a nuclear defense of Western Europe. It capped a unique planning exercise which looked soberly at the military requirements, the hard constraints on Alliance means and the advantages accruing to a nuclear defense. The failure to translate this strategy into a requisite force posture continues to haunt the Alliance today.

The Atlantic Alliance is being wrenched by one of its recurrent controversies over military hardware and strategy—this time over theater nuclear hardware and strategy. But while such occasional squalls have become almost customary in NATO, there is a deeply disquieting trend: more and more the controversy has spilled from the sanctity of the NATO Ministerial Meetings and the Nuclear Planning Group into the national parliaments, the press and the streets. The issues are rendered virtually unrecognizable by emotion.

But even in circles of NATO military experts the debate tends to take on an eerie cast. Such vague concepts as threshold, coupling, decoupling, counter-deterrent, early use, battlefield support, demonstration use, etc., tumble over one another in wild confusion. The confusion, however, is not so much over terms and concepts; rather it has to do with the absence of a frame of reference—the frame of a commonly recognized, let alone commonly accepted, NATO strategy for waging nuclear combat in Europe.

Ever since the early 1960s, nuclear strategy has been a NATO stepchild—the family member whose presence is tolerated as a necessity but who, it is fervently hoped, will spend as much time as possible hiding in the corner. When it does venture forth from the corner, the argument becomes all the more chaotic because no one is quite sure about where it fits into the household.

The problem is aggravated by a lack of memory of how it evolved. Few people who were not "present at the creation" are aware of the fact that there was once a NATO nuclear strategy—a rather simple, straightforward strategy. And particularly at a time of new and disruptive con-

tı· ersy, it behooves us to look back—to see where and how it all began.

The Early NATO Dilemma

NATO was created in 1949 for one basic purpose: to provide security for its member nations, primarily the vulnerably exposed countries of Western Europe. During the first two years of the Alliance, the military leaders and planners of the then twelve nations—fresh from their World War II experiences—defined the minimum force levels needed to achieve this purpose. Shortly thereafter, the political and economic authorities in the Alliance calculated what resources the member nations might reasonably allocate to their defenses during the 1950s. The two findings clashed head-on at the Alliance's Lisbon Conference in February 1952. The minimum military requirements that were deemed essential outreached the forces considered economically feasible by such a wide gap as to cast doubt upon the viability of the whole fledgling alliance concept.

Faced with the choice between the crumbling of an Alliance structure that had not even taken tangible shape and devising a militarily credible strategy for defending Europe with the force levels deemed achievable at Lisbon, the NATO military authorities, led by General Eisenhower, set in motion a planning cycle that brought forth an answer to the dilemma of requirements versus costs in creating a NATO defense. This answer was the NATO Political Directive in 1956, which called for a nuclear response to any Soviet aggression from the outset.

No one could argue with assurance in 1956 that a NATO strategy of primary reliance on nuclear weapons would actually work. The needed stockpile of tactical nuclear weapons was not yet available, nor had a requisite force posture been designed. Moreover, there was no real operational know-how about nuclear warfare.

Nevertheless, the concept of nuclear reliance did have an incomparable advantage. While all concerned with NATO recognized all too clearly that a conventional war strategy could not be carried out with the NATO forces available or feasible within hard fiscal constraints, no one could argue with equal conviction that a nuclear defense of NATO would *not* work. Subsequently, U.S. technology did come to the aid of the strategy with a mounting stockpile of ever more sophisticated atomic weapons—even though, as we shall see, the needed force posture was never implemented.

How the Strategy Was Put Together

It took the Joint Chiefs of Staff about two years, from 1946 to 1948, to define the original U.S. strategic concept for a war with the USSR. This was the concept that evolved out of the "Pincher" planning studies and called for a strategic air offensive and main effort in the west, and holding operations in the east.

By comparison it took about two weeks for the NATO Standing Group to articulate the initial concept for NATO. Its American members essentially drew up a concept along the JCS model. This approach was readily agreed to in the United States, for in those days few in the Pentagon paid much attention to the NATO organization. Most of those in the U.S. Armed Services then looked upon NATO as another Western Hemisphere Defense Board type of sinecure. It was therefore relatively easy to come up with, and obtain agreement on, NATO papers. The many in the United States said to the few involved in NATO planning: "You're the experts; whatever you say is OK." The Europeans, on the other hand, said: "The Americans are the experts; if they agree, we will." And thus a consensus was quickly hammered together.

Indeed, the initial NATO Strategic Concept represented a classic example of what might be called "closed-cycle guidance." The NATO Standing Group staff wrote the papers, and the U.S. NATO military representative would then send them to the JCS for approval. The Chiefs in turn sent them to the Services for comment. The Services would then ask their own members in the Standing Group to draft the comments. Thus we told ourselves, through our various masters, that our papers were perfect!

Along with the NATO Strategic Concept, a series of Basic Undertakings were written, only the first of which is of current interest. It stated: "Ensure the ability to carry out strategic bombing, including the prompt delivery of atomic bombs. This is primarily a U.S. responsibility, assisted as practical by other nations." When the concept and this undertaking were presented to the NATO Ministers for approval in Paris on December 1, 1949, it triggered a

debate over nuclear weapons. The Danish Minister of Defense refused to approve a document that held a reference to atomic weapons. After much discussion that generated more heat than light, the Defense Ministers finally compromised by using the words, "any and all weapons," rather than, "with atomic weapons," and the planning could go ahead.

Following the approval of the NATO Strategic Concept and Basic Undertakings, the NATO military planners came up with their first force requirements plan. This plan, known as DC-28, was a compilation of force estimates that had been prepared by the Regional Planning Groups established for this purpose before the advent of SHAPE and SACLANT. There were then five such planning groups: the Western Hemisphere Group of the United States and Canada, and one each for Northern Europe, Central Europe, Southern Europe and the Atlantic Ocean area. These groups were given the task of developing defense plans for their areas.

The first overall plan for the defense of Europe envisioned a conventional defense along World War II lines, and called for approximately 9,000 aircraft and 100 divisions to accomplish this. Whatever the plan's validity, it represented the first judgment of what the West's military forces needed in order to cope with the estimated Soviet and East European forces that had never been fully demobilized after the war. The Soviets and their allies were credited at the time with having some 175–200 active divisions.

Our European allies had practically no forces, having hurriedly demobilized after the war. True, there was a Western Union under Field Marshal Montgomery. Somebody asked him what the Russians would need in order to march to the English Channel, and he replied: "Shoes." NATO thus faced two problems: First, that of making something militarily effective out of the small available, heterogeneous, unstandardized and ill-equipped forces that existed in 1949, and second, that of building up those forces to somewhere near the levels deemed essential for a credible defense of Europe.

By mid-1951 there emerged in SHAPE Headquarters the first semblance of a valid organization with which to plan the defense of Europe. We had inherited a plan featuring force goals that were at least twice as large as those that could be provided by the member nations. Nevertheless, they were force goals that had been agreed upon by the chiefs of staff and defense ministers of the countries concerned in 1950, and had been only slightly modified by the newly established SHAPE Headquarters and the Standing Group.

In October of 1951, the Temporary Council Committee (TCC) appointed a three-man Executive Group to set forth valid estimates of the force levels that member nations might realistically provide. This group, then known as the "Three Wise Men," consisted of Averell Harriman of the United States, Sir Edwin Plowden of the United Kingdom and Jean Monnet of France. Their mission was to "reconcile requirements of collective security with the political and economic capabilities of the member nations." Their first report, submitted in December 1951, concluded that a total of 50 divisions with 4,000 aircraft and strong naval forces was the most NATO could aspire to by the end of 1952. These levels were less than half those deemed essential in the military plan that had previously been drawn up.

When the NATO Ministers adopted the goals recommended by the "Wise Men" at Lisbon in February 1952, General Dwight D. Eisenhower, NATO's first Supreme Commander, faced a thorny dilemma. NATO had been created to provide security for the European countries. All the chiefs of staff of the member nations had agreed that certain force levels were the minimum required to accomplish this security. But now the political and economic authorities had concluded that these objective force requirements could not even be approached, let alone reached. The military planners were willing to admit that they could tolerate a disparity of 10 to 15 per cent from their goals, but to fall short by an order of magnitude was entirely another matter.

The dilemma which confronted General Eisenhower was as follows: If the NATO military persisted in their force goals, it could spell the beginning of the end for NATO, because the NATO Chiefs of Staff would report to their leaders: "This Alliance will not be able to defend us. The Wise Men report makes it clear that we cannot raise the necessary forces. Therefore, we must look to neutrality or to some other security concept." The only exit from the dilemma was for the military to draw up a new plan and new force goals which would somehow

be compatible with the "Wise Men's" prescriptions, but which would also be deemed militarily effective, hence credible and acceptable to the NATO chiefs of staff.

A first effort to cope with this problem was the so-called Ridgway Plan of 1952–1953. The Plan's thrust was an effort to add atomic weapons to the projected NATO conventional defense forces in the hope of reducing requirements. What happened, not surprisingly, was that the force requirements went up instead of down. This occurred because under the plan classic NATO conventional formations and force concentrations were retained. Every time a nuclear weapon was fired at them, a whole unit or airbase was wiped out, and therefore entire army units and airwings would have to be brought in as replacements. Obviously this plan did not solve the European security problem, and as such it never really saw the light of day. Indeed, as this writer recalls, the Ridgway Plan never left SHAPE.

Having gone through this abortive exercise, the NATO planners then suggested three possible and previously ignored considerations which might ease the problem. There were three "soft" areas in the earlier NATO defense plans. One was the previous failure to consider the impact of U.S. strategic-nuclear forces on Soviet capabilities in Europe. This failure had been due in part to considerations of U.S. security, and in part because no one had calculated the effects which a concurrent strategic-nuclear campaign might have on NATO force requirements. The early NATO plans had been written as if NATO in Europe would be fighting its own separate war, while the Strategic Air Command was waging a war of its own. No degradation in Soviet capabilities in Europe was credited to the concurrent U.S. strategic effort. It was therefore agreed to look at this factor and its possible implications for force savings in NATO.

Another "soft" area was that of intelligence estimates. In those early years, the NATO intelligence community tended to treat all components of the Warsaw Pact—Russian divisions, Bulgarian divisions, East German divisions, etc.—as militarily equal and as adding up to the total threat to be countered. Yet, every knowledgeable observer knew that the satellite armies could not be counted on by the Soviets as either effective or reliable in the event of a European conflict. They could be downgraded considerably in an honest estimate of Warsaw Pact capabilities, and some NATO force savings could be calculated accordingly.

The last "soft" area, and the key one, was the failure to have seriously considered introducing atomic weapons at the very outset of the land battle in Europe, and to undertake all the doctrinal and tactical changes in the NATO posture this called for. Great potential force savings might be realized if this were done, particularly with respect to build-up requirements after D-Day.

These, then, were the three measures that offered some hope of bringing down force requirements in the direction of meeting the Lisbon force ceilings or goals. It was then decided to draw up a war plan to determine if there was some way that Europe could be defended by taking into account a "tight" intelligence estimate, the U.S. strategic contribution, and the use of tactical nuclear weapons from the outset in the land battle in Europe.

Resistance to Change

The military planners in the formative NATO years used World War II factors for sortie rates, miles of front per division, and so forth. Those factors were equated with World War II equipment and its costs. For instance, P-51s were costed at $50,000 apiece in World War II, but U.S. fighters five or six years later were far more expensive. The 1952 figures for aircraft had risen from $50,000 for each P-51 to $100,000 for each F-80, and to $160,000 per F-86. The result was that every time the strategy was modified to reduce force quantities, the soaring unit costs of forces and weapons would frustrate real overall savings.

Recognizing this progression—which was called the cost-concept-weapon cycle—the U.S. planners in NATO then fixed upon the fact that there are three basic elements in war planning: 1) the military means (forces and weapons), 2) the tactics, concept and strategy adopted and 3) the task to be accomplished (defend Europe, protect sea lines of communication, etc.). These factors interact in the following way: What you have to do (the task) and how you do it (your strategy) determines the means required (the quantity of forces and weapons). This quantity, multiplied by the average unit cost,

has to fit within overall available resources. The calculations are then simple. One conclusion from this is that if one is in difficulty with the size of the forces due to cost or political ceilings, and if one cannot reduce the magnitude of the task—such as that of defending Europe—the only variable left to tinker with is the method: namely, the strategy and the tactics.

Military professionals notoriously do not like to change strategy, tactics or concepts in peacetime. This resistance is rooted in many factors: past experience, administrative efficiency, lack of imagination, fear of the untried, etc. It is easy to understand that particularly in the business of war-waging, where so much hangs potentially in the balance, a certain conservatism tends to rule the roost. It is easy to understand, also, that historically the great innovations in strategy and tactics have emerged not from peacetime staff exercises, but under the duress of the battlefield.

It was therefore apparent that the necessary force savings in NATO based upon a new atomic strategy could not be "sold" unless a planning process could be devised that would oblige the military commanders to accept the proposed concepts and strategies. This was accomplished by adopting a planning methodology known as "long-range capabilities planning."

Capabilities Plans

The fundamental difference among emergency plans, requirements plans and long-range capabilities plans is not generally understood. The term "long-range" is used in order not to confuse those who are familiar with JCS "capability plans," which are in reality only emergency plans. The difference among the three types lies in the principal variables available to the planner: the means, the method and the task.

In the *emergency* plans, the means are fixed: they represent that which is at hand when the emergency starts. The "method" is equally inflexible: once the troops are trained, the tactics and strategy are essentially givens. The only factor really amenable to change is the task. If there are not enough troops available effectively to defend a given area, then the task has to be scaled down—e.g., to the defense of a smaller area.

In *requirements* plans, such as the first NATO plans, the task is fixed. The "method" is also fixed, in that it is one dictated either by past military experience or current political policy. This leaves the "means" as the variable. What does it take to do the assigned job in the accepted or directed method? On this basis, the planners then come up with force requirements to do the assigned task, as they did in the initial NATO plans that could not be met.

In *capabilities* plans, the planners are told they must do the task—e.g., mount a forward defense in Europe—and they must do it within a given level of means: so many dollars or so many forces. They must then decide how they will accomplish the given task within the given limits of means. Placed in this situation, the only variable remaining to the planners is the method. They are forced to change their "religion," their strategy, their tactics, their doctrine—in brief, their method of doing the business.

This, coupled with a building-block approach, was essentially the methodology used by SHAPE in the early 1950s in order to bring about the so-called New Approach, or New Look, which relied on atomic weapons to defend Europe from the outset and forced consideration of those changes in force posture and in requirements which, in turn, made it possible to fulfill a credible defense task within the force and resource limits set at Lisbon.

In 1953 General Gruenther, having replaced then-President Eisenhower as Supreme Allied Commander, Europe, after considering this approach and discussing it with the President and Field Marshal Montgomery, advised the U.S. Joint Chiefs of Staff that he intended to initiate a capabilities planning cycle in NATO. The JCS initially objected to this, for they perceived what the outcome would be. Once military plans determine that any defense task can be accomplished with fewer forces, the road is effectively barred to a return to the earlier force levels previously deemed essential. Fortunately, the survival of NATO loomed as more important than vested interests in classic conventional force levels. A special team was designated to undertake the capabilities plan in the fall of 1953.

In the capabilities planning effort, gauging the real impact of atomic warfare on force requirements and force posture presented the greatest challenge. It had to be determined how the use of atomic weapons might change classic

principles and accepted tactics, doctrine and strategy. Some earlier studies had been conducted on this subject at Heidelberg by an inter-Allied group under French General André Beaufre. The group came up with such exotic solutions as jeeps in checkerboard deployments with fallout-proof covers. This was not the kind of ingredient with which a strategy could be sold in 1954. Numerous other approaches were tried, among them a request for war games to the RAND Corporation. RAND tested various theories of nuclear combat, none of which were very new, but all of which shared a common characteristic: one side or the other invariably lost almost all its combat capability in a few days.

The RAND team under Dr. Igor Anzoff wargamed the use of U.S. tactical air in close-support, counter-air and interdiction against the movement of the front. The team then announced the computerized findings, saying in effect: "If you will use your forces in the way we recommend, you can win. You will have 5 per cent of the forces left in twenty or so days, and the Soviets will be down to zero. Therefore, that is the proper strategy." Field Marshal Montgomery listened to this and to the ensuing debate, and finally declared: "Balderdash, utter balderdash! No force is going to go down to the last 5 per cent and then stand at attention and say, 'We won because there are no other people left on the other side to shoot at!'" This comment led to the theory of Tolerable Loss, and the related recognition of the atomic war posture problem.

The theory of Tolerable Loss states that no force will allow itself to be decimated in a few days or weeks down to 5 per cent or less of its original strength, and then win over an opponent who is then down to zero. At some point in the battle, no matter what inventory of usable equipment and manpower remains on hand, the participants will say: "There is a better way to do this." They will then either head for Spain or just cease fighting due to loss of morale, command and control, or overinvolvement in rescue operations. The side that first crosses the threshold of Tolerable Loss goes to zero combat capability regardless of its residual resources. The side that loses is the side that crosses the threshold first, not necessarily the side that would end up with zero inventory first. An easy way to envision this is as follows: If you have 100 airbases, and 50 are destroyed by atomic attacks, the residual sortie rate is 50 per cent. But, if all 100 bases are hit, but each is only 50 per cent destroyed, your residual sortie rate will approach zero.

Once this was understood, it was recognized where the planning for tactical nuclear war and related force requirements had gone awry. We had fallen into the trap of following the classic conventional war-planning approach of inter-gaming only forces and tasks—the means and the job. We had ignored or treated as a fixed factor the "posture" of our forces and the survival factor—i.e., their presentation to the effects of atomic firepower.

What we had been doing, by analogy, was to replay Napoleon's Battle of Waterloo, leaving all the combat units in close order formation, in the open, in their resplendent uniforms and in the sunshine. We then added to both sides machine guns and drew our conclusions. Obviously every time a burst was fired, an entire platoon or company was lost. We then concluded that we needed entire platoon or company replacements and more forces per mile of front instead of less. This is in effect what the NATO planners had perpetrated when they added the atomic weapon without changing the posture of the forces. They had kept all the aircraft on fixed bases and all the combat and support units concentrated and exposed in classic World War II conventional tactics.

It was then that the realization dawned that the "posture" of the forces had to be changed before the force requirements to wage tactical atomic warfare could be realistically evaluated. Force "posture" was now a *new variable*. The forces had to be deployed in such a manner that they could be presented to nuclear firepower, survive in the resulting atomic environment and thereby raise the Tolerable Loss threshold. When this was done, the findings changed. It was determined that NATO needed less manpower and conventional weapons for an atomic defense, not more.

Based upon these findings, the planners went back to the drawing board in 1954 and defined what they felt was a valid tactical nuclear war-waging strategy and force posture. This was in effect a new tactical doctrine and force employment mode for tactical atomic war. The doctrine was the basis for the NATO atomic war plan of 1954–1956—the so-called New Ap-

proach—that stayed within the Lisbon force goals and the subsequent NATO Political Directive of 1956 that called for a tactical nuclear response to Soviet aggression in Europe from the outset.

Characteristics of the New Strategy

The 1956 NATO strategy had the following characteristics. First of all, NATO was considered a part of a global theater concept: U.S. strategic forces, forces in the Far East, U.S. and allied commands anywhere were harnessed to an overall strategy. Second, the SHAPE mission was the shield role: to defend Europe. There was no notion of marching forward to liberate anyone, satellites or Russians, no offensive task. There was only a defensive task: to keep the Soviets out of Western Europe pending the outcome of the strategic-nuclear battle. In 1956 the goal was to solve the NATO defense problem with minimum forces.

We found that atomic wars had to be of limited duration for the simple reason that if anywhere near the expected nuclear firepower would be expended, then the war would not last very long. In an atomic conflict there will be scant time for holding or build-up phases. That makes the big difference in force requirements. Atomic wars move quickly into the decisive phase from the outset because in nuclear weapons both sides have the destructive power they need before the fight starts. All they have to do after D-Day is to deliver it as quickly and effectively as they can, and the outcome will be determined by this exchange. This contrasts with conventional wars, where both the need arises and the time is available to build munitions and delivery means during the process of the war.

Another important finding was that firepower rather than relative mass had the decisive role at the point of engagement. Mass was henceforth to be measured in kilotons, not force levels, the tactics called for destruction instead of mobility and capture, and the advantage shifted as a result to the defender in a fixed front situation.

The advantage to the defender on land flows from the fact that in an atomic firepower situation the side that has to move, expose itself and concentrate to cross the defense's barrier—that is, the offensive force—is twice as vulnerable as the side that can stay dispersed, hidden and dug in—that is, the defensive force. This being true, a random atomic shot fired into either formation will do much more damage to the offense than to the defense. As a result, mobility, hence conquest, becomes well-nigh impossible, and a local stalemate quickly ensues. Thus, under any strategy of atomic response from the outset, firepower rather than manpower exercises the decisive role. The manpower requirements are limited to those needed to force concentrations on the attacker, identify these (battlefield surveillance) and deliver the nuclear firepower. Maneuver is not called for. Neither are post-D-Day reinforcements, for they would arrive too late, and the port and airfield concentrations they would present on arrival are too vulnerable. Forces in being and deployed will largely decide the outcome, and that is where the savings come in.

In classic conventional battles, the forces required must be equal to or greater than those of the enemy at all points of engagement. These were the force levels NATO could not meet. In an atomic defense, the brunt of needed forces are those to service the firepower, to force the enemy to form a target, and to identify the target. The Lisbon goals were more than sufficient for these requirements. Depending upon how large the yield of weapons NATO was willing to use, it could raise or lower manpower requirements as desired in keeping with the incidental damage the Alliance was willing to accept. If the Alliance had been ready to use enough high-yield weapons to create a prohibitive nuclear barrier to attacking Warsaw Pact forces, few forces would be needed to coerce and identify targets. If it aimed at destroying Soviet military forces on the offensive with minimal collateral damage to the countryside, obviously conventional NATO forces would be needed to compel and identify the targets represented by advancing enemy forces—to pinpoint them and hit them with selective nuclear or conventional firepower as appropriate.

In any event, NATO's 1956 atomic strategy permitted the Alliance to come up with force levels that were both achievable and credible. In atomic warfare you do not have to match the enemy. Field Marshal Montgomery, addressing the U.S. National War College in 1955, explained the SHAPE concept as follows:

We came to the conclusion [that] we could

only do that [hold in Europe] by using the nuclear weapon and going in for a policy of destruction with that weapon—the nuclear weapon having a great capability for destruction on an area basis—and we therefore used as our chief agent the nuclear weapon and we used forces to support this weapon. Now that is a reversal of previous thinking. In past thinking it was the weapon which disrupted and weakened the enemy and then the forces moved in to complete the business. And I think the difference in the tactical concomitant of nuclear warfare is a very important matter to put right. You use the nuclear weapon for your offensive punch and not human bodies in the first instance.

Two Vital Provisos

These, in short, were the salient considerations that went into NATO's 1956 strategy of primary reliance on nuclear weapons. The plan featured one basic finding and two immutable provisos. The finding was that Western Europe could be defended against any size of Soviet forces with a relatively small, nuclear-equipped defense capability. The provisos were that this finding was valid only: *first*, if NATO's tactics and force posture were readjusted for survivability under nuclear conditions so as to optimize the readiness and capability for nuclear combat; and *second*, if all necessary atomic weapons were in the hands of the NATO troops at the outset of battle. In the absence of the fulfillment of these conditions, the 1956 strategy and force concept were not viable.

What happened historically? The NATO governments accepted the 1956 strategy and force plan but never met the provisos of a requisite force posture. The force posture remained conventional and the atomic weapons remained stored in easily targeted depots. Shortly thereafter came the "pause concept"—the notion of an initial conventional defense which would allow the combatants to think twice, and hopefully negotiate, before reaching for their nuclear weapons. This was accompanied by prescriptions for "dual-capable" NATO forces—i.e., troops able to fight either a nuclear or conventional engagement—but it was never spelled out (nor could it be) how this could ever be translated into an effective force posture.

The formal demise of the New Approach strategy of 1956 came with the adoption by NATO of the strategy of Conventional Flexible Response in 1967. Although the strategy purported to describe a "stepladder" of NATO capabilities and tactics—from conventional through tactical-nuclear to strategic-nuclear—this was rather thin camouflage for what Defense Secretary McNamara and his band of systems analysts wanted somehow to extract from an unwilling (and incapable) Alliance: namely, a NATO defense based nearly exclusively on conventional forces and armaments. The nuclear option not only was relegated to the back benches of strategy, but it was in effect consigned to limbo. The sad proof of this is that ever since the early 1960s there has not surfaced a single, comprehensive, agreed-upon NATO doctrine for fighting a nuclear engagement. And given the evolution (or devolution) of the NATO force posture in the interim, one would be more than hard-put to come up with such a doctrine at the present stage.

The Legacy

What has happened to NATO force requirements, capabilities and the balance of power in Europe since the acceptance of Flexible Response? Constant efforts to raise the so-called conventional threshold, by creating forces that could credibly compete with the Warsaw Pact in relative mass and sustaining power, have been frustrated by the ever rising unit costs of forces and weapons, the domestic politics and economics of the NATO member nations, and the Soviet Union's relentless military build-up. This was the prospect which dictated in the first place the strategic choice of the NATO planners in 1956. It remains unaltered today.

The politicians' dream of avoiding the use of nuclear weapons to defend against aggression limited to Europe lingers, but in the real world it becomes more and more obvious that due to the retraction of the American strategic umbrella, NATO is now under even stronger duress to match Soviet conventional "mass" and combat sustaining power, or else will again have to resort to tactical atomic weapons from the outset to stop any major aggression in Europe.

NATO's combat sustaining power is today limited to no more than 90 days, and even substantially less in many categories of supplies and munitions. The Soviets command far greater

conventional sustaining power, yet no one seems to address seriously the question: What happens on the 91st day? If the answer is "go nuclear or lose," this begs the question, "Why not then plan to go nuclear from the outset against major Soviet acts of aggression, instead of at the worst possible time, while losing?"

But can this option still be credible today? To mingle metaphors, NATO has evolved a force posture that is neither conventional fish nor atomic fowl; as a consequence it faces the worst of both possible worlds. It has no sustainable conventional defense, let alone a conventional "deterrent." At the same time, the Alliance is potentially self-deterred from the nuclear option because its own forces, postured primarily for conventional combat and dependent on reinforcements from the United States, are vulnerably exposed to nuclear strikes by the opponent and because the loss of U.S. strategic superiority increases the risk of escalation by the Soviets should a NATO nuclear defense succeed. Under these conditions, the endeavor to maintain a high nuclear threshold, inherent in the strategy of Conventional Flexible Response, is a very costly effort that serves only a political rather than a military purpose. And the Soviets have deliberately sharpened this dilemma by amassing an ever mounting arsenal of theater nuclear weapons of their own.

Against this background, there is an almost poignant quality to the present controversy in the Alliance over the issue of "TNF modernization"—that is, the proposed force of some 572 Pershing-2 MRBMs and ground-launched cruise missiles. In the framework of a posture that is neither fish nor fowl, where does this force of medium-range systems really fit in? It seeks ostensibly to substitute for the loss of U.S. strategic superiority, and stacks up against the mushrooming Soviet capabilities of SS-20 missiles and Backfire bombers as at best a kind of "minimum local counter-deterrent." But is this what Alliance strategy has come down to: to deter the Soviets in the nuclear arena, in which Moscow has a new and growing edge, so that a potential war might be fought strictly in the conventional arena, in which the Soviets have a truly massive advantage?

There is the final question: Assuming that NATO were to muster the decision, could the Alliance still go back to the basic strategic precepts of 1956? Can "Humpty Dumpty be put together again?"

Nothing in human affairs is inexorable. The growing cost of a high nuclear threshold that now provides no real security or deterrent certainly should be an incentive for change. If the political will can be found, there might yet be a way to a viable NATO nuclear strategy and posture. For one thing, the Alliance can take recourse to its still superior technological workshop. One thinks immediately of enhanced radiation warheads, of a theater anti-ballistic missile defense, and of a number of other technological innovations on the shelf or in the laboratory.

But hardware would not be enough. There are still the two provisos that applied to the 1956 strategy and that would apply to any NATO strategy of nuclear defense, now or in the future: the reconfiguration of NATO forces and the need for the atomic weapons to be in the hands of the troops from the outset. And in those respects, unfortunately, the road is littered with formidable political and psychological obstacles that have been allowed to build up over the past twenty-five years.

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NATO TNF POLICY ISSUES IN THE EARLY 1950'S

Robert C. Richardson III

Situation

NATO was formed in 1949. The basic purpose was to provide collective security for its members, especially those in Europe. West European nations had demobilized after WW II. The Soviets and its Eastern European Allies had retained sizable conventional forces.

1949 to 1955 was a period characterized by a search for the strategy and resources to carry out the NATO defensive mission in a credible manner. The first estimate of defense force requirements was made by four (4) Regional Planning Groups, collated by the the Standing Group and submitted to the Military Committee in December 1951. These did not call for any tactical nuclear forces.

With the exception of a Basic Strategic Concept (DC 6), approved by the Defense Ministers in Paris in December 1949, which committed the US to use strategic nuclear weapons, if necessary, to protect its NATO Allies initial collective defense plans did not include any consideration of nuclear weapons. The Soviets then had no tactical atomic weapons and none were then allocated to NATO defenses by the US.

At its Ottawa Meeting in May 1951, the NATO Council established a Temporary Council Committee (TCC)- known as the 3 Wisemen. It consisted of Averell Harriman (US); Sir Edwin Plowden (UK); and Jean Monnet (FR). The mission of the TCC was to determine the level of resources the member nations might conceivably make available for their defenses in the 1950's.

Between the Ottawa and Lisbon meeting, in Feb. 1952, the Regional Group Force estimates were reviewed, collated into the Medium Term Defense Plan (MC 26/2) which, after further refinement, subsequently became the 1957 NATO Force goals (14/2). This plan did not envision the use of TNW's even though discussions had been underway on the US side between SACEUR (Gen. Eisenhower) and the JCS on various aspects of nuclear support for NATO's defenses.

The above events set the stage for NATO's future TNF policies. This resulted from the fact that at the Lisbon Conference in February 1952 the MC 14/2 force requirements clashed with the TTC's resource findings. The gap between what was deemed necessary, by the military, to provide for the security of the NATO nations in Europe and what might realistically be provided, as estimated by the TCC and member nations, was unacceptably large.

Following Lisbon it was clear to NATO planners that either the military found a credible way to defend in Europe with likely to be available resources or the Alliance could never achieve its purpose - to provided credible security for Western Europe. They also realized that when the politicians realized this each country would look for other ways to provide for its security and the Alliance would begin to unravel. General Eisenhower was quoted to me as having said on his return to SHAPE Hqs: "we either solve this problem or we have just witnessed the end of NATO".!

Motivated by the above views SHAPE military planners went to work on the problem. The first step was obviously to examine possible "soft" areas in the early planning to see if the minimum force requirements could not be reduced. Three areas in DC 28-MC14/2 force levels offered prospects for achieving major reductions: (1) The estimates of the Soviet threat then used; (2) The failure to consider feedback effects of any US strategic nuclear operations on the battle in Europe; and (3) Not having considered using TNW's in the defense of Europe.

A first, classic requirements planning, effort to take the above factors into account and rationalize more modest force requirements was completed in the summer of 1953. This was known as the Ridgeway plan. This effort proved to be of no help when it came out with force requirements even greater than those in MC 14/2.

With the failure of the Ridgeway Plan to solve the basic conflict between resources and forces, Gen Gruenther established a special planning Group at SHAPE, in 1953, to have a new look at the problem. This was named the "New Approach Group" . For practical purposes this was the genesis of NATO's TNF policy.

The answer to the first question raised in the Livermore Conference directive: "What caused the event" is, therefor, that the inability of NATO nations to match the Soviet threat at the conventional level obliged NATO leaders to look to atomic weapons as the only credible alternative way of doing this. Given the alternative of likely NATO dissolution unless this problem was solved a shift to an atomic response from the onset of hostilities was the most acceptable solution.

The answer to the second question in the Livermore Conference prospective - "How was the plan structured" -requires a brief explanation of the military planning process per se. While this may seem basic, it is not generally understood- even in the military- and was a vital factor in the establishment and findings of the NATO New Approach Group.

On the Planning Process

In brief, there are broadly speaking three (3) basic categories of military plans:

REQUIREMENTS PLANS

EMERGENCY PLANS

CAPABILITY PLANS.

These are sometimes given other names. For instance Emergency Plans have been confused with Capability Plans. The important point for our purposes is the difference between these with respect to what are the fixed versus the variable elements that the planners have to work with.

First, each of the above categories of plans can, ,themselves, be subdivided into three basic components: (1) The Jobs to be accomplished - these are the assigned defensive or offensive tasks or Missions. (2) The Method by which the jobs are to be accomplished - these are the strategies, tactics, and doctrines, used to accomplish the assigned jobs.; and (3) The Resources available to the planners to use in accomplishing the assigned tasks in the selected method - these are the forces, weapons, or dollars available for these.

In REQUIREMENT PLANS the JOB is essentially a fixed factor. It is a given. (e.g.) Defend forward in Europe; maintain control of the air; protect sea lines of communications; etc..The METHOD of doing the assigned job(s) is also essentially a fixed factor. It is either that successful in the last war; a strategy assigned under national policy, or; one in consonance with pre war Service doctrines and that the troops have been taught to carry out. (e.g.) For example today, in the strategic arena, the mission is to deter and the method (strategy)-defined by policy-is to maintain an adequate ability to retaliate (MAD). The only real variables the planners can play with in a Requirements Plan are ,therefor, the Resources. In other words they can determine the forces and weapon systems and their deployment best suited to doing the assigned jobs by the directed or accepted methods.

In EMERGENCY PLANS the Resources available-men and weapons are fixed - a given. They are obviously those available, deployed, and on hand when the emergency occurs. It is too late to change these at least for the onset of the battle or war. The method of their employment is also essentially a fixed factor for the same reasons as above for requirement plans. This leave the Job as the only real variable. What emergency plans state is what can be done with available forces employed in the established manner if and when an emergency occurs.

In CAPABILITY PLANS the resources and the jobs are given. They are essentially the fixed factors. The planners are told to: "defend forward in Europe in a credible manner" and, do so within specified force and weapon system levels or dollar limits. The variable in this category of plans is the METHOD adopted. In the case of NATO in 1952 the question was: How can we defend forward credibly in Europe with far less forces than the Soviets have and within an established dollar ceiling level for defenses.??

Obviously, military planners resist capability planning. As a result it is rarely directed and hence generally unfamiliar to most generations of planners. The knee jerk reaction has always been: " This makes no sense. I can't do the directed job, in the accepted way, with the limited resources stipulated".

When, on occasion, the situation is such that foresighted leaders direct a Capabilities Study the planners have no choice but to review the ways (methods) they traditionally have used to do the defense business since these are the only variables. After resisting and ridiculing the approach some will jokingly say to their masters: " Well, sir, if we can use space ships or megaton atomic weapons or blow a tidal wave over Russia I guess we could do the job within given dollar or force limits.!!". The answer then is: " Right On, now you get the idea. Go back and look at other methods than the ones we have taken for granted as the only valid ones to date. You can exploit new technologies. You can change accepted policies like MAD, you can challenge current doctrine in light of new technologies or developments, you can even propose the tidal wave if you can show it will do the job."

The SHAPE New Approach, (SHAPE 330/54 which led to MC 48 and MC 70 and the Political Directive of 1956 that established the NATO strategy of tactical nuclear response from the onset) was the result of a CAPABILITY Planning study. It was never meant to be a war plan. It was meant to establish a way to defend forward in Europe that would be credible enough to allay Government concerns that the Atlantic Alliance could not provide for the security of their nations under any circumstances. And, it gave tactical nuclear weapons a role of their own, one other than merely adding them to existing firepower to get more bang for a buck.

The Findings of the New Approach are especially interesting and pertinent to all subsequent TNF policies. In somewhat over simplified terms the study concluded that: given atomic firepower deployed and in the hands of the troops from the onset of hostilities, and provided the forces were posture to fight and survive in an atomic war environment environment, Europe could be credibly defended by forces in being far smaller than those of any potential aggressor.

The history of the NATO New Approach findings, and of what has happened in terms of understanding tactical nuclear warfare since, and applying the lessons learned is the real history of TNF Policy. Without understanding the role that resistance to changing tactics, doctrine, and strategy in peacetime has played in the national survival of most nations faced with new wars, and the losses incurred at the onset of each new war as a result of this resistance, no real benefits are to be derived from mere sequential listings of events and decisions.

In any discussion of NATO TNF Policy the starting point should be to understand and agree upon the basic differences between fighting with and without nuclear weapons. All too many people still think that you merely add atomic firepower to existing conventional force operations and thereby get "more bang for a buck". If the New Approach did one thing it was to disprove this notion.

When atomic firepower is introduced into the land/air battle classic force postures, doctrines for force employments, deployments, dispositions, and element roles and missions all have to be reviewed. This is where the rub has always been. Most military don't want to face up to changes of this magnitude. Many don't understand what they should be. And, politicians involved recoil in horror if and when they discover that commitments to fighting in one environment all but precludes shifting to the other after the onset of hostilities.

In the 1920's and 1930's it was resistance to the implications of airpower on warfare. In the 1950's and 1960's it was resistance to the implications of atomic weapons. Today, while the later still exists, it is resistance to the implications of space capabilities. The inability of large organization and nations to accept inevitable changes in established and accepted ways of doing what they do has normally been responsible for their ultimate defeat or failure.

This tendency has been recognized in the accepted saying: that nations invariably start new wars with the tactics, doctrines, and methods that succeeded in the last one. While this is not the subject of our Livermore Conference on TNF it is a key consideration in all TNF decision making since WW II. Studies made in the USAF showed that there are five basic reasons for this and that these have never successfully been overcome in peacetime.(See TAB A)

The effects of the military tendency to resist change in the traditional ways of doing the defense business, for all practical purposes, invalidated most of the TNF policies that emerged from the New Approach effort as well as all subsequent TNF plans and policies. The New Approach's Basic Finding - that a large Soviet conventional threat could be defended against with a far smaller Allied defense force using atomic weapons - was conditional upon the two (2) caveats underlined above:

> First, that the necessary atomic weapons were available and in the hands of the troops from the onset, and
>
> Second, provided the forces were postured so as to best be able to fight and survive in an atomic situation.

Common sense suggests these two requirement should be self evident. This, however, has not been the case. What one finds when one examines what actually took place as a result of the New Approach findings in 1954 is that the first requirement was understood, extensively debated between SACEUR, the JCS, and US and Allied political authorities,accepted and dealt with in NATO planning and decision making. Since the 1956 Political Directive has had, for all practical (if not public) purposes, the authority to deploy and release atomic weapons under his command.

The second requirement - modifying the posture of the forces - was, however, less well understood. Although initiated in some areas and followed up in ACE with preliminary change proposals in MC 48/12 it was never really pursued by the NATO military leadership. I know that Field Marshal Montgomery understood it as did General Gruenther. I do not believe that General Norstad really did.

One result of the above situation was that the conclusion NATO could defend with less force than the Soviets, given nuclear weapons, was accepted but the requirements to make it valid in real combat situations were only partially met. Instead, since the early 1960's nuclear firepower has been added to existing conventional capabilities to be resorted to only in an emergency if and when conventional means fail. Just how the forces engaged in a retreat are supposed to change from a conventional to a nuclear environment posture, in the middle of the battle, has never been explained.!!

The net effect of failing to opt for either conventional or nuclear warfare from the start and adjust force types, deployments and postures accordingly has been to make the survival of Western Europe solely dependent on deterrence of Soviet aggression. Another obvious outcome of this is to make all moneys requested for improving conventional warfighting capabilities essentially wasted.

In 1966 the essentially incompatible mixture of conventional and nuclear capabilities was formally adopted with acceptance of the strategy of Conventional Flexible Response. This strategy introduced by Mr. McNamara was introduced for anti nuclear political reasons in 1961/2 and was resisted by all NATO members other than the US for five years because it made neither military nor common sense.

General Lemnitzer once told several NATO Chiefs of Staff, in my presence while on a flight to Norway,: " I do not understand this Flexible-Response business. We know that if we are postured to respond conventionally and are hit by atomic weapons we are dead. If we are deployed to survive an atomic attack and are told we can't use atomic weapons we are dead." Obviously Flexible-Response has always left the choice up to the Soviets to choose the form of attack we are least prepared to survive in.!!

Returning to the TNF Conference, the above developments offer two choices. The discussion of NATO TNF policy can focus on the actual historical events and facts relating to it or on its validity in light of the failure to fully define and adopt a survival posture for atomic warfare.

The historical events associated with merely adding atomic weapons to NATO's conventional force inventory, and arguing who can authorize their use, are all documented in the archives and have already been discussed and written about. There is a very complete and excellent history of these that a Dr. Wampler, and other historians with the University of Maryland, have been assembling. It is hard to see what the Livermore Conference could come up with that would add much to this.

What would seem to be far more challenging, interesting, and useful today, would be for the Livermore TNF Analysis to go into the atomic, land-air warfare, force posture issue. This should consider not only the consequences to NATO's security of not having faced up to this requirement after the New Approach effort had identified it but also in connection with today's NATO strategy especially in view of the major force reductions and other changes dictated by Perestroika.

There are essentially two major problems here that have never been resolved to this date. The basic one is the identification of an optimum force posture for sustain co,combat operations in a nuclear environment. This involves essentially re-writing military doctrine if not Clauzwitz. The second one is the compatibility of conventional and atomic defense strategies and force deployments and requirements. If the early NATO TNF studies have any validity a so called Dual capability is at best only a deterrent. It has no military value when faced with a determined attack by an atomic equipped enemy and should be recognized as such.

While there is not as much documentation on this as there is on the issues of authority to use atomic weapons in Europe and the plans to do so, some pertinent studies have been made and training exercises undertaken that question merely adding atomic firepower to existing conventional force plans and postures.

The first such study was, I believe, undertaken by the Beaufre Group in Heidelberg in 1951. This was an inter allied group set up by General Eisenhower to specifically look at this problem. Next was probably the NATO New Approach Group Findings. The SHAPE capability study identified it and some of the likely survival requirements that atomic warfare called for if forces were to survive and fight effectively. These can be found in the Enclosures to the SHAPE 1954 plan that was briefed to all the nations Chiefs of Staff at the time. A paper on Measures to Implement (MC 48/12) was also submitted to the Military Committee in connection with this aspect of the Plan.

Several exercises in the late 1950's and early 1960's also brought out the incompatibility of conventional formations surviving and fighting effectively in an atomic environment. The US Army Exercise Oregon Trail, now on the Conference agenda, was, I believe, one of these. In addition I am told there is a study entitled Sierra 1958 I have not seen, some work done by Dr. Shreffler and his tactical atomic planning Group at Los Alamos in the 1960's and 1970's, and probably other writings of interest. The problem here is not new. It merely has not been adequately explored and acted upon as it should have been considering the security and cost implications involved.

Organization for Planning

Returning to the SHAPE New Approach effort and related TNF activities, General Gruenther, (SACEUR at the time the study was conducted) recognized that the situation in NATO as described called for a CAPABILITIES planning effort. He also recognized that this would require a special planning Group reporting directly to him or his principle Deputies and not subordinated to the various staff elements. This was the only way that the likely resistance to any changes that might emerge could be dealt with objectively.

A Group consisting of six (6) experienced staff planners was selected to organize, conduct, and generally manage the effort. Major staff functional areas and subordinate Commands were directed to support the New Approach Group Study (NAG) as needed or on request. The NAG planning Group consisted of Col. Andrew Goodpaster (USA); Col. Pierre M. Gallois (FAF); Group Captain _____ (RAF); Capt.Picard D'Estelan (Fr.N); Col. Robert C. Richardson (USAF); and Capt. Othello Montorsi (It.AF).

The Task assigned to the NAG was simple and clear. "To undertake a major planning effort to determine if, and how, Allied Forces in Europe of the approximate size and types called for in the 1954 Force Goals approved by the Council (these were within TCC feasibility levels) could credibly defend forward in Europe, and if so what measures should be taken to make this possible".

The feasibility study nature of the effort was important. Since prior plans had shown that the assigned task could not be done with forces of the magnitude specified it was obvious that any contrary findings could only come about as a result of major changes in the factors used by the planners and these would have to be rationalized, justified, and validated..

Once the NAG was established its first action was to determine how best to go about its task. Being experienced planners that understood the likelihood they would come up with major changes in past plans and the inherent resistance to change in all large organizations-and if not in NATO certainly in the staffs of the major NATO nations that would have to approve the NATO proposals - they recommended the effort be initially compartmentalized into a dozen different studies.

This building block approach was deemed essential to the effort and is a standard "trick" in major planning efforts. It insures relatively objective inputs in all key factors - Intelligence, Logistics, Tactics, Weapon systems, Strategic contributions, etc. -to be developed by experts and responsible staffs in these areas without their being influenced by prior knowledge of how they might effect the findings of the plan as a whole.. It was also agreed that senior Staff officers and Major Subordinate Commanders would be briefed on each study area and asked to approve its findings before the NAG had assembled these and drawn conclusions from them.

A a side bar, proof of the importance to the outcome of this building block approach was that when the final conclusions and findings were presented to all of SACEUR's major subordinate Commanders, the then CINC SOUTH stated: "Had I had any idea what you were coming up with I would never have agreed to (One or more of the inputs he had previously approved)!!"

As in the earlier Ridgeway plan, the New Approach Planners recognized that the three major areas where inputs could make a difference were in : Estimates of the Soviet Order of Battle and force effectiveness; Feed back effects anticipated from an assumed concurrent US strategic nuclear offensive against major targets in the USSR; and adoption of tactical nuclear firepower in the land air battle. It was taken for granted we could not fault prior plans unless valid reasons for major changes in one or more of these areas could be found.

The threat was known to be questionable. First, at that time member nations were less than candid with the intelligence they provided to NATO. Second, the national intelligence estimated were discreetly known to be inflated for national budgetary reasons. And, lastly early estimates lumped Soviet and East European divisions and Air Forces as if these were all equally combat ready, trustworthy, and competent.

As previously mentioned, while the US had committed itself to come to the rescue of Europe with "any and all forces necessary", and this presumably meant we would commit SAC forces, no NATO planning had at that time taken into account the likely effects of atomic attacks on, say Moscow, on the Soviet capability to sustain the battle in Europe. The US was then not sharing either targeting knowledge of strategic war planning information with its Allies hence the necessary inputs to this type of planning were simply not available.

Finally, there was the less well understood area of nuclear warfare on the battlefield. Studies to date had merely added atomic firepower to its conventional firepower not as yet realizing that the destructive possibilities of the atomic weapons threatened the survivability of conventional forces deployed and operated in methods WW II methods. This in turn raised the question of what force "postures" might have to be changed if atomic weapons were used. (e.g. can fighters operate while concentrated on air bases vulnerable to one atomic weapon? Or, can armor operate exposed and concentrated as necessary to cross minimum barriers such as rivers, etc..?. Can port facilities survive long enough to receive and unload re-enforcements by sea ?).

At that time the only study available in NATO on the land-air atomic warfare posture problem was the Beaufre Report of 1951. Its findings, while preliminary if not rudimentary, were so dramatic in terms of likely force survival and the probable need to re write Clauzwitz and review many basic principles of land warfare that they were largely ignored in the SHAPE in the SHAPE Capability plan on the grounds that the participants were not given access to accurate nuclear effects information.

In summary while intelligence and SAC operations offered savings any credible solution to the NATO force shortfall in 1953/54 would have to be found in this last building block-tactical nuclear warfare. The story of interest to TNF policy history therefor is HOW this was arrived at and WHAT was concluded- with regards the changes that should be made to effectively fight and defend in an atomic warfare environment. In other words the answers to the 3rd and 4th questions on the Livermore Agenda.

On the Posture Problem

While books could be written on this issue it was clear in the 1953 SHAPE Capability effort that any, other sources having been exhausted, any major changes in the force levels required to defend Europe would have to stem from new findings in the contributions atomic weapons could make to NATO defenses in Europe. It was also clear that this was a new area since the historical experiences in this were far and few between.

Although participants in the study may differ on what brought this possibility to light first, my recollection is that studies made for the New Approach Group by a team from the RAND Corporation inadvertently surfaced the problem.

At Gen.Norstad's request the team had come over to run an evaluation of how the use of ACE air forces could best defend forward. The question was how application of available air to either theater air defense, interdiction, or close support would vary the movement of the front and likely air losses. The RAND team findings were presented to the planners graphically showing that under one condition of atomic attack on air bases the ACE order of battle would go to zero in less than 30 days whereas under another usage that of the Soviets would go to zero first notwithstanding their higher starting inventories. (See CHART TAB B). This made no sense in terms of the time rate of the losses involved as a result of atomic attacks.

There has always been debate on how much losses can be tolerated before organizations of different sizes- from squads to Armies- louse their ability to fight. There are examples of small units suffering near 90 % casualties and still resisting effectively. There are other where a minimal number of casualties resulted in the collapse of the attacker or defender. While somewhat academic in conventional warfare wherein loss rates tend to extend over time this can be a critical factor in atomic combat.

In simple terms in a NATO situation wherein there were 100 fighter bases. If 50% of these were totally destroyed all agreed the residual sortie rate would be 50%. But if 50% of all 100 bases were destroy and the other half left physically intact and able to operate normally the residual rate would not be 50%. The residual forces would be so occupied and effected by rescue and other work with the destroyed portion, and many influenced to seek survival elsewhere, that the residual sortie rate would approximate zero in the near term.

This conclusion leads to the common sense suggestion that residual combat capabilities in an atomic environment will be effected by the proximity and time of destruction taking place. Adequate dispersion to ensure surviving units and weapons are not degraded unduly by single attacks in their proximity requires forces be spread over such areas as to jeopardize classic command

and control capabilities, eliminate classic concentrations like bases or depots or ports, and even seizable force concentrations such as tank formations. The Beaufre Group had come up with similar findings. This raised the question: Without these how do you fight.??

In most planning, past and present, force "posture" has been considered as a relatively fixed factor. While major changes have occurred throughout history they have been either during combat, so infrequently, or so gradually that for practical purposes the tactics, doctrine, and force "posture" at the onset of new wars has been that found effective at the end of the last war. Another impediment to changes in this area has been the long time it takes to make them and their irreversibility once adopted. NATO planning had been no exception to this rule until examples such as the above showed that this made no sense when using atomic weapons.

Early in the New Approach Study it thus became apparent that the introduction of atomic firepower would require changes of the type imposed by the advent of gunpowder. automatic weapons, aircraft, submarines, etc. All of these technological developments led to great changes in force postures -tactics, doctrine, operations. The basic problem was obviously survival. The Chart TAB B showed what happens operating aircraft from concentrations on bases which could be destroyed by one fireball. The greater figures arrived at in the Ridgeway study were easily attributable to the fact that whole units were destroyed by a few atomic weapons that did not even have to be very accurate. Massive replacements were required from the onset. The obvious answer was either figure out how to fight in a far less concentrated way or don't get into an atomic fight. his was not a sophisticated planning solution it was just plain common sense.

In simple terms most military plans play the friendly forces against the enemy forces using existing and time tested organizations, formations, doctrines, and principles. Given the area effects of atomic weapons, accepting these as fixed factors and merely adding the new weapons to the inventory made no sense.

Pursuing this conclusion it also became clear, that given nuclear effects, weapons men and equipment massed on a battle field for a breakthrough, or to prevent one, would be exposed and concentrated hence vastly more vulnerable to destruction than those dispersed, protected, and dug in. From this it seemed logical that since a land offensive required the attacker to get up, concentrate, and advance the advantage would be with a dispersed and protected defender so long as he could use atomic firepower instead of manpower to destroy the aggressor. Simple findings such as this surfaced most of the conclusions set forth on TABS C thru attached. The quotation from Field Marshal Montgomery's 1955 speech to the US National War College (TAB --) illustrates how substantive some of the differences were.

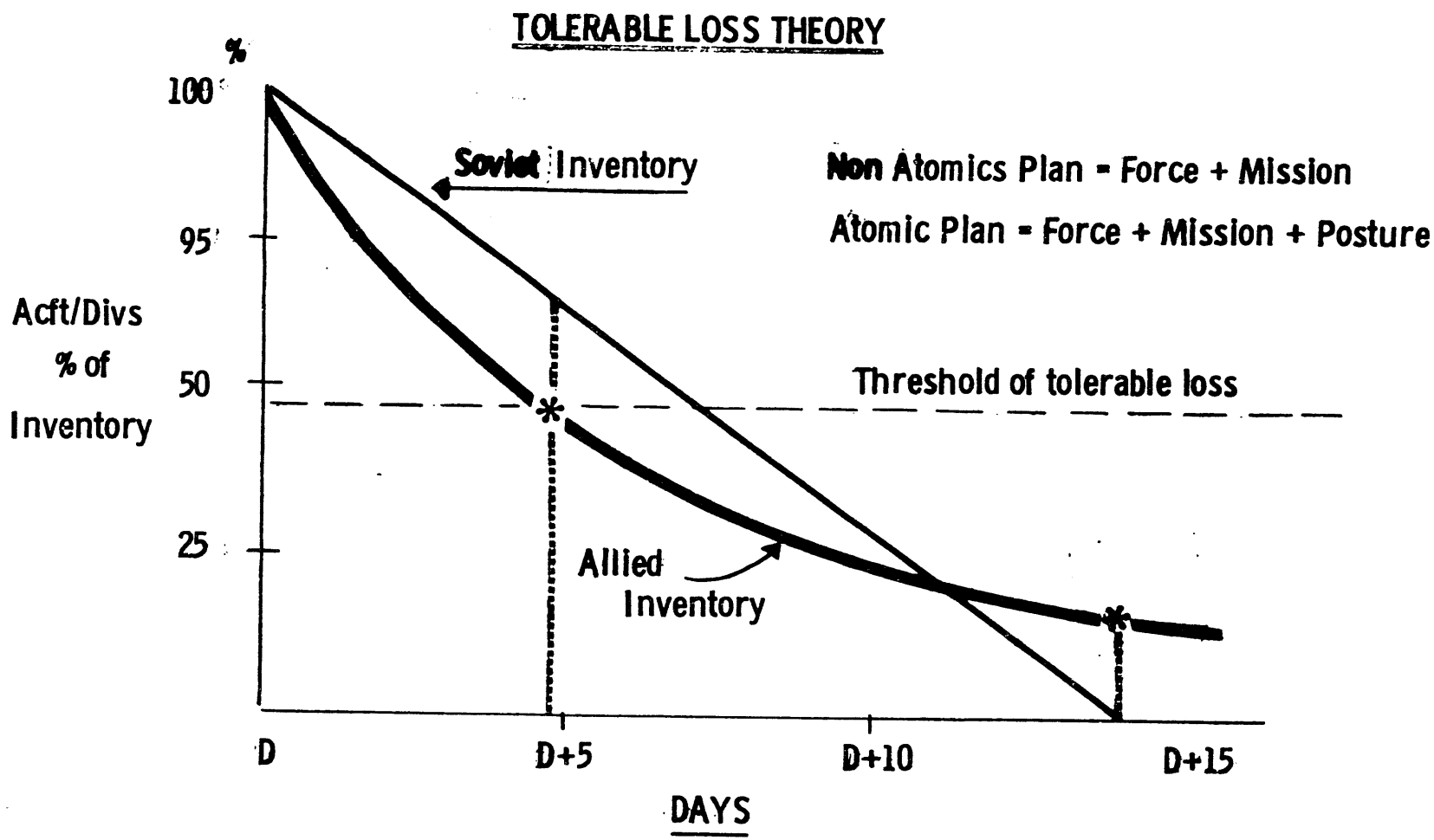
The Bottom Line

Whatever the merits of the specific SHAPE findings in 1953/54 the fact remains that they have not been disproved.

Doctrine has not as yet been re written and adopted to optimize survival on an atomic battlefield except where measures can be introduced that do not fundamentally change the Posture of the forces, hence force requirements, roles, missions, etc as defined for conventional warfare. Until and unless this is done any use of atomic weapons invites disaster, and would lead to changes having to be adopted under fire at all levels and with unprecedented confusion.

So long as NATO's TNF policy has not recognized this, or disproved it, it is at best a policy of deterrence. At worst it is a costly political sharade to the extent that it claims with any confidence a capability to sustain a fight in an atomic environment. Fortunately the problem is not much better on the Soviet side, probably for similar reasons.

Finally, unless and until the issue of the posture of forces to survive and fight in a nuclear environment is objectively resolved any and all defense plans envisioning resort to nuclear weapons, and related TNF policies, are not only risky but the confidence they provide nations and their people are fraudulent. It is high time this issue was seriously addressed. It could and should have been over 30 years ago.


TOLERABLE LOSS THEORY
%
100
95
50
25
Acft/Divs
% of
Inventory
Soviet Inventory
Non Atomics Plan = Force + Mission
Atomic Plan = Force + Mission + Posture
Threshold of tolerable loss
Allied
Inventory
D
D+5
D+10
D+15
DAYS

FIELD MARSHAL VISCOUNT MONTGOMERY, STATES:

"WE CAME TO THE CONCLUSIONS WE COULD ONLY DO THAT(HOLD FORWARD IN EUROPE) BY USING THE NUCLEAR WEAPON AND GOING IN FOR A POLICY OF DESTRUCTION WITH THAT WEAPON -- THE NUCLEAR WEAPON HAVING A GREAT **CAPABILITY** FOR DESTRUCTION ON AN AREA BASIS -- AND WE THEREFORE USED AS OUR CHIEF AGENT THE NUCLEAR WEAPON AND WE USED THE FORCES TO SUPPORT THE WEAPON. NOW THAT IS A REVERSAL OF PREVIOUS THINKING. IN PAST THINKING IT WAS THE WEAPON WHICH DISRUPTED AND WEAKENED THE ENEMY AND THEN THE FORCES MOVED IN TO COMPLETE THE BUSINESS. AND I THINK THE DIFFERENCE IN THE TACTICAL CONCOMITANT OF NUCLEAR WARFARE IS A VERY IMPORTANT MATTER TO PUT RIGHT. YOU USE THE NUCLEAR WEAPON FOR YOUR OFFENSIVE PUNCH AND NOT HUMAN BODIES IN THE FIRST INSTANCE."

PRINCIPLE FINDINGS 330/54

1. SHIELD (NATO) DEFENSIVE - SAC WIN
2. SHORT WAR - FIREPOWER ON HAND
3. NEED NEW POSTURE - FIREPOWER "GREEN"
4. DEFENSE HAS ADVANTAGE OVER OFFENSE
5. SMALL FORCE HOLD LARGE ONE IF:
   - USE "A" FROM ONSET
   - WPS. IN HAND AT ONSET
   - OPTIMUM "A" POSTURE

TYPES OF PLANS

EMERGENCY: THE MEANS, THE METHOD, THE JOB

REQUIREMENTS: THE MEANS, THE METHOD, THE JOB

CAPABILITIES: THE MEANS, THE METHOD, THE JOB

SOFT AREAS IN LISBON GOALS

1. SOVIET & SATELLITE O.B. EQUAL
2. NO SAC IMPACT ON EUR. DEFENSE
3. NO USE OF TACTICAL NUCLEAR WEAPONS

STALEMATE REQUIREMENTS AND PROSPECTS

DETERRENCE TO ATOMIC AGGRESSION OR RETALIATION BY VIRTUE OF A STALEMATE REQUIRES THAT BOTH SIDES HAVE ADEQUATE ATOMIC STOCKS AND MEANS OF DELIVERY WHILE LACKING IN DEFENSES CAPABLE OF PROTECTING THEIR VITAL AREAS FROM DESTRUCTION BY THEIR ENEMY. THE NORMAL EVOLUTION OF WEAPONS SYSTEMS, COUPLED WITH GEOGRAPHIC DIFFERENCES, MAKE IT UNLIKELY THAT THE REQUIRED PARITY WILL PREVAIL AT ANY GIVEN TIME, OR FOR ANY LENGTH OF TIME AS BETWEEN TWO NATIONS, OR IN A MULTILATERAL POWER SITUATION.

PROSPECTS OF LIMITED ATOMIC WARFARE

IN A WAR LIMITED TO A SPECIFIC GEOGRAPHICAL AREA THERE IS LITTLE PROSPECT OF INTERCEPTING THE DELIVERY EFFORT IN ROUTE TO TARGET, AND NO PROSPECT OF DESTROYING IT AT SOURCE - WHERE THE LATTER IS OUTSIDE THE AREA - EXCEPT BY ENLARGING THE COMBAT AREA TO INCLUDE THE SOURCE.

SINCE AN ADVANCE, AND HENSE MANEUVER BY FORCES, REQUIRES PRIOR FIREPOWER SUPREMACY IN ATOMIC WARFARE A LOCAL ATTEMPT AT AGGRESSION CAN BE INDEFINITELY "STOOD OFF" BY A PREPARED DEFENDER. IN THIS CASE THE OBJECTIVE OF LIMITED WAR, CONQUEST OF AN AREA, CAN ONLY BE ACHIEVED AT THE EXPENSE OF EXTENDING THE CONFLICT TO TOTAL WAR.

ADVANTAGE OF THE DEFENDER ON LAND

THE ABILITY TO MANEUVER, AND THEREBY TO ADVANCE, IN A BATTLE, WHEREIN FIREPOWER IS THE DECISIVE ELEMENT, DEPENDS UPON FIRST OBTAINING FIRE SUPREMACY. AS LONG AS BOTH DELIVERY SYSTEMS ARE ADEQUATE AND EFFECTIVE THE DEFENSE ON LAND WILL HAVE A DECIDED ADVANTAGE OVER THE OFFENSE SINCE THE LATTER INVOLVES MANEUVER AND HENSE DETECTION, CONSENTRATION, AND EXPOSURE.

DECISIVE ROLE OF FIREPOWER

THE AREA DESTRUCTIVE CAPABILITY INHERENT IN HIGH YIELD ATOMIC MUNITIONS SUGGEST THAT HENCEFORTH FIREPOWER WILL BE THE DECISIVE ELEMENT IN WAR. IN THE ATOMIC AGE, THE FORCES MUST BE DESIGNED TO SUPPORT THE FIREPOWER, AND NOT THE CONVERSE.

MEASURES TO IMPLEMENT MC 48/2

REQUIRED BY NATO

1. "A" RETALIATION CAP. PLUS WILL TO USE

2. SHIELD TO HOI NLY

3. ADEQUATE FORCE SURVIV

4. SEA LOC'S PROTECTED

5. REORGANIZATION & RECUPERATION

CHANGES IN SHIELD FORCES

ITEM CHANGED	IN NON ATOMIC DEFENSE	IN ATOMIC DEFENSE
1. MASS	MEN PLUS MACHINES	KILOTON/MEGATONS
2. FIREPOWER	SUPPORTING ROLE	DOMINANT ROLE
3. END PRODUCT	CAPTURE/OCCUPATION	KILL/DESTROY
4. FORCES REQUIRED	$\geq$ THAN THE ENEMY	MIN. TO SERVICE FIREPOWER

HIGH FRONTIER

Lt. Gen. Daniel O. Graham, USA (Ret.)
Director

June 11, 1990

Gen. Henry Mohr
20 Grand Circle Drive
St. Ann, Missouri 63074

Dear Henry,

Reference our telephone conversation, I am enclosing some early writings on the tactical nuclear warfare business.

This is a fascinating story and very few people understand it. A few of us tried to get the message across but with little or no luck. People can understand and accept little changes but major fundamental changes tend to be rejected as crazy, can't be true, etc..It takes a real time experience to get them across and we have had no nice little tactical nuclear battle to do this.

SHAPE came close in the 1950's but a combination of anti nuclear political pressures, new people that did not understand the problem, and parochial resistance in all the services not only buried the idea but reversed the progress made. I sight three milestones in the progress era:

The Inter Allied Beaufre Group study set up by Ike at Heidleberg in the late 1940's or 1950.

The SHAPE New Approach Group effort that led to the Political Directive of 1956 --"Tac Nuck Response From the Onset," and

The Army's Oregon Trail Exercise. This scared the Services as to the consequences of adjusting to TNW warfare.

There were probably other studies etc. But the above were the efforts that discovered and buried the findings.

Simple Key Point

Historically the military has adjusted force levels and weapons to new threats. These have more or less been the main variables along with deployments and assigned missions. Everyone knows how to change these.

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There is another variable in the game of war that is rarely considered as a variable for it only changes once or twice a century, and then either in fighting or very slowly over many years of peace. This is the "posture" of the forces.

The Posture is the basic presentation of the O.B. to the threat. Some call it combat doctrine. Organization is an element here. So is survivability in combat. In our case it's largely the latter. "What do you offer the opponent as a target?"

Classic examples of this type of change are: Abandoning cavalry charges; giving up the english square; going to trench warfare; introducing mobile armored formations; operating aircraft from bases; etc.. etc..

In some respects we are talking about re-writing Clauswitz. It is hard to sell. It is resisted in peacetime because it threatens roles, missions, budgets, and past experience. The military leadership won their spurs doing it the old way. If they accept change here every lieuten nt can be as smart as they are!

A change of posture usually occurs in war. The French went into WW I, in 1914, in close order formations. Every lieutenant and sergeant started digging trenches to save his butt from automatic weapons fire. In peace it rarely occurs unless the consequences of not changing are worse than of making the changes. This is what happened in NATO.

In the early 1950's Ike (SHAPE) had a simple problem. The Europeans joined NATO to provide security for their countries. The generals and planners, right out of WWII, had set a minimum force requirement to defend Europe (DC28). The Council had sent three top people: Averell Harriman, Sir Eric Plowden, and Jean Monnet to visit all countries and determine what they could afford for security in the coming decade. These findings met head on at the Lisbon Conference.

The difference was like 300% percent. Now if it had been, say 20% OK. But every child new that you could not defend with a 300% shortfall. So the choice was either see NATO disintegrate as the countries realized it could not provide for their security, OR figure out a way of doing the defense business that was credible to the people.

First, SHAPE tried adding nuclear weapons to the battle, refining the threat intelligence, and giving some credit for a concurrent SAC nuclear effort on Russia. This took a year and was know as the Ridgeway Plan. Guess what. It called for more force than DC28! Why, because every time our conventional posture and bases got hit with a TNW we needed 100% replacement units. Kinda obvious but par for the course.

Given the above, Gruenther set up the New Approach Group. We looked at the TNW land air war situation and after a few false starts adding nucks to conventional firepower and coming up with the same findings as Ridgway, realized that survival in a nuclear environment meant adjusting posture - just like Beaufre had said in their report.

The above led to looking at what changed. How it all affected principals of war, etc. The principals, for instance, remained the same but applied differently. The role of mass instead of applying to men and weapons applied to KT and MT on targets. The defense had the advantage over the offense in a land battle until counter battery fire had eliminated TNW's so as to allow concentration, movement, and exposure. Air bases made no sense. Parking 20 or more multi million aircraft within the area of one fireball was hardly cost effective, etc, etc, etc.

When the NAC approved a TNW response, they also approved a paper SHAPE did on "Measure to Implement." SHAPE started down that road. V/STOL aircraft, abandoning the Rhine General Depot, etc., and the opposition started building up. While much of the above was explained in the Appendices, the plan concluded that given TNW response a smaller force could effectively stop an aggression of any size by creating a stalemate at the front until the firepower battle was settled. And, given the area effects of nucks, hence ability to offset target intelligence with clobberhood, the counter battery fire could escalate to ICBM's if you did not give a damn about incidental damage.

In all fairness, how much of the failure to get the services to understand the lessons learned was ignorance and how much refusal to accept the consequences is debatable. Most leaders just read the conclusions that a small force could defeat a large one, said: "BS, no way, I know better from WW II, and called it nuts. Others thought, "maybe" but it will cause massive cuts in budgets, forces, changes in roles, etc.. No way. Especially since we never tried it in actual war.

By the early 1960s a new factor came in. McNamara et al were so anti nuclear that they feared anything that made sense as a strategy might invite their use. Meanwhile the Army and AF decided they could have their cake and eat it too--classic forces, mass, bases, AND atomic weapons--if they could sell a dual capability. e.g. Flexible Response.

Flexible Response was opposed by every military delegation on the NATO council for four years. Today you would think it had been written in stone on the mount. Every planner understood that in simple common sense terms it was no good in war. As Lemnitzer himself once said , " I don't understand it. If we are postured (concentrated) so as to defend conventionally and are hit with TNW we are dead. If we are postured (dispersed and dug in) so as

to survive and defend atomically and not allowed to use TNW's from the onset we are dead. All the Soviets have to do is pick the form of attack we are not posture to survive in." Any kid can figure that one out.

So you see what we are up against. There are a few who understand this but until a war proves the earlier findings and Clauswitz is re-written, the real liabilities and potential uses and benefits of atomic weapons will never be known and exploited.

If our earlier findings are correct, a small TNW war can be cost effective and no more destructive than a conventional one. The point is that "time/losses" are telescoped. Sure you will lose a lot of people quickly but the outcome will be decided in hours or days, not weeks or months. Total war casualties can be less not more, though more concentrated in time. Forces in being will be decisive. No reserves are needed, they won't get into the game before it is over. Industrial mobilization is meaningless. And so on.

If even half the above findings are valid, you can see how all services would panic at their very proposal. You can see how a little country with good forces in being and TNW can whip a big one. DeGaulle understood this when he took France into nucks. His adviser, Gen. Gallois, was on the New Approach Group.

Having said the above to publicize it, write about it, try to sell it, etc. is a waste of time. People just think you're nuts. If you don't believe me, ask Bob Shreffler of Los Alamos who tried to get a little understanding in NATO when he headed the NATO Nuclear Planning Committee in the 70's. The best we can hope for is a nice little nuclear war between India and Pakistan or in the M.E. then we can say "I told you so!"

So that is the story. I still have the briefing cards and viewgraphs of the SHAPE briefings given all the Chiefs of Staff of NATO on the above. Maybe I will dig them out someday.

Sincerely,

Bob

Robert C. Richardson III

COMMENTS AND VIEWS ON THE PLANNING PROCESS

I. PURPOSE

1. To analyze in retrospect Project Forecast in terms of why it was undertaken, and what has been accomplished as a result, and draw conclusions with respect to the effectiveness of the USAF planning process with appropriate recommendations.

II. SCOPE

2. This outline analysis considers primarily, planning as it effects the maintenance of the aerospace technological base and the selection and acquisition of weapon systems and supporting materiel and facilities.

3. Force structure and force employment (war) planning is dealt with herein only as it effects or reacts to and upon research, development, and weapon system selection and procurement planning.

III. DEFINITION OF PLANNING

4. The term "planning" is often used to cover a wide variety of staff activities. It is frequently confused with policy formulation, programming, the conduct of studies, etc.

5. For purposes of commenting on the USAF planning process, the term "planning" as used herein, refers only to those staff activities directly related to "determining what the USAF goals and objectives (in the area of concern) are, and how to proceed so as to achieve these."

6. In the light of this definition the question we will examine is: "Why was it necessary to have FORECAST to establish the research and development goals and objectives we should pursue?"; and, "Why have we been relatively unsuccessful to date in achieving agreement to pursue these?" These two questions directly challenge the USAF planning process.

IV. THE BASIC PROBLEM

7. In theory the U.S. defense planning process should produce orderly, continuous, and timely guidance to the services and their acquisition agencies with respect to the scope and nature of the technological base to the generated and maintained in the foreseeable future, and with respect to the specific weapon and support systems to be improved, developed and acquired, as the case might be.

8. If, in practice, higher levels of defense planning were able to provide such guidance, service and operational command plans need only concern themselves with measures to achieve the desired weapons or objectives. This, unfortunately, has never been the case as is evidenced by the Forecast effort which can only be described as a one-time, ad hoc, attempt to produce the guidance referred to in paragraph 7, above.

9. What we must now try to determine is why the defense planning process, at all levels, has been unable to produce on a sustained basis the types of guidance produced by Forecast on a one-time basis; and, why guidance produced by a major effort like Forecast still seems to be inadequate in obtaining timely decisions for future research and weapon acquisition programs. These are clearly shortcomings both in the planning system that defines our future courses of action and in the system that justifies those defined.

V. TYPES OF PLANNING

10. There are three different approaches to planning currently employed by the military. An understanding of the difference between these is essential to any assessment of a "planning process." These are generally known as:

all concerned, and generally resorted to only when political or economic pressures become so great on the military that they accept to figure out how to do the job within the resources allotted or obtainable, at the expense of relying on new weapons and untried methods.

17. Forecast was a modified capability planning effort. It started as a requirements effort in that, U.S. Policy and Concepts, the Page briefing, were accepted as fixed inputs, and technology was reviewed to determine what development efforts should be initiated to implement these. This was pure requirements planning. The first findings, however, were screened by the PROM process, at RAND, and reduced in light of economic considerations. This in effect introduced a capabilities judgement.

18. Forecast was not a true capabilities approach--and herein lies a weakness--since the planners did not exercise full latitude in varying the U.S. policy and concepts factors along with the proposed development efforts. These were arbitrarily accepted when in fact policy and concepts are dynamic, hence, must be used to defend future programs but should not be used to preclude developments which serve concepts or policies not necessarily acceptable today.

19. For instance, our peaceful use of space policies seem to have inhibited full study of this media as a means of achieving an optimum defense posture at minimum cost. Likewise, some Forecast conclusions clearly accepted current aspirations to perpetuate the possibility of major non-nuclear war--even though the force levels and types required for major conventional war--with modern high cost equipment have been pretty well demonstrated to be uneconomical.

V. LONG RANGE VS SHORT RANGE PLANNING

20. The USAF planning process has also suffered in recent years from a lack of clear understanding of the differences between long range and relatively short range planning.

21. In short range planning, which has dominated military planning with few exceptions since World War II notwithstanding the titles on some documents, the threat; and weapon technology, are key inputs.

22. In the short term, from two (2) to five (5) years, there is on the one hand very little that we can do in practice to reorient the existing force structure and its programmed weapon systems. To a lesser degree the same applies to existing defense Policies; since these will normally remain in force, at minimum, as long as the individuals who have devised them remain in authority. Our enemies and our allies have the same problem. At best, therefore, planning can only be for minor adjustments and reorientations from a realistic point of view.

23. In the case of long range planning, with which we in AFSC and FORECAST were more particularly concerned, the same constraints do not apply. The fact that the development programs and new weapon systems that we are interested in initiating will not enter into the inventory until 8 to 10 years from now increases dramatically the flexibility we have in varying the concepts for their employment and the policies under which they may be employed.

24. No one can accurately predict what the threat will be ten (10) years hence. We may be able to forecast in broad terms future enemy possibilities, since these are limited by technology on both sides of the

with the assumption that the 1975 defense organization, and order of battle, will still be essentially the same as today, it follows that they question the realism of development forincreasing the Air Force budget above $20 billions. By 1975 there may be no Army, Navy, or Air Force. There certainly may well be no 17 Divisions with their classic conventional armour. Should this be true, total defense resources estimated as available, say $60 billion, could well be recut in any way that logical planning for the national security dictated. This may be a lettle extreme as an example depending on how far out you look. Nevertheless, a major weakness in the USAF planning process today is the prevalent assumption that nothing changes very much but technology and hardware.

VI. ON THE RELATIVE ROLE OF VARIOUS MANAGEMENT LEVELS

32. We cannot properly assess the USAF planning process without considering the assigned roles and responsibilities of the services. By definition, and from a legal point of view, USAF planning must be oriented towards, if not limited to, planning in those areas for which the USAF has an assigned responsibility.

33. Any analysis of USAF, and other service planning, suggests that the planners in some instances have either failed to understand, or to fully accept, the implications of the 1958 reorganization act. Under the terms of the 1958 Act the service role in formulating defense policy, and in determining the requirements to implement it, was greatly reduced at the expense of both the unified and specified commands and the JCS.

34. In theory service planning tracks from JCS plans. In practice, partly due to the fact that the JCS plans provide inadequate guidance, and partly due to the fact that the services continue to have their individual views with respect to what the defense posture and systems should be, the JCS guidance appears to play little or no useful role in the long range service planning process. Here again, we have a weakness. When USAF planning calls for objectives, and development programs that are subsequently rejected by the JCS, or unified commands, the planning process has failed in its purpose.

35. To the extent that there is no valid long range JCS planning guidance, (notwithstanding documents written for this purpose) the resulting vacuum has to be filled by service planning, either through the normal process or through exercises such as Forecast. When this occurs, however, we have to recognize that the process is one of substituting for a failure at higher levels and the results are therefore weakened by the likelihood that when scruitnized in retrospect at the levels, legally, responsibility for decision making in these areas that may be rejected or greatly modified.

36. The only corrective action one can recommend here is to seek to improve the long range planning process in the JCS and unified Commands, as well as in the USAF and air staff. Unless we walk hand-in-hand in this respect we can never hope to achieve real progress in defense planning, and hence, greater stability in our long range development programs.

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a. Emergency Planning

b. Requirements Planning

c. Capabilities Planning

11. A failure to clearly understand how these types of plans differ, and to adopt the proper approach for the purpose indicated, is often at the root of subsequent failures in the process.

12. In simple, summarized terms, it can be said that these are three major factors in the planner s equation:

a. What we do. - Goal or Mission

b. How we do it. - Method or Concept

c. What we do it with. - Materiel or Resource

13. The various planning processes, paragraph 10, are determined by which of these factors are fixed and which are variables. For instance:

a. Emergency Planning: is the process by which the military determines how to use that which they have at any given time. Resources are fixed, de facto. Concepts of employment are fixed by whatever is currently accepted. The only variable is WHAT we can do - with what we have to use in the manner we have trained for. This type of planning is not pertinent to the current discussion, and is only referred to herein for completeness.

b. Requirements Planning: is the normal process by which the military determines what they need to accomplish a predetermined mission at a future date. Both the method of doing the mission and the resources are variables. The only fixed factor is the job or mission, e.g., what does it require to: (1) maintain a superior technical base to that of

the USSR in 1970; (2) carry out a given defense policy in 1970; (3) penetrate and destroy a given target completely in 1970; etc.

c. Capabilities Planning*: is a form of requirements planning in which the resources are specifically limited in quantity, if not fixed in kind. Since the mission remains fixed, the only variables left to the planners are the method selected and associated types of weapons and materiel. In this type of planning the object is to find "the optimum combination of strategy and hardware to do a given job within a given level of resources."

VI. IMPLICATIONS ON USAF PLANNING

14. One clear weakness in the USAF Planning Process stems from the classic tendancy to assume in our long range force, weapon, and development planning a pure requirements approach. In essence the military planner all too often consciously or subconsciously takes the position that:

> "I will state to political authorities what it takes to carry out their policies and national objectives, and they can either provide the resources or accept the risks."

15. This classic requirements approach, frequently accompanied by retention of antiquated, but proven, strategies, concepts, and methods, when coupled with the multiplicity of possible weapons and their high cost, all too often results in plans that call for force and equipment levels which are politically unacceptable and economically unachievable. We then have a failure in the Planning Process.

16. The only logical planning approach in this day and age, in peacetime, is the Capabilities approach. Yet, it is the most resisted by

*Note JCS definition.

Iron Curtain alike. On the other hand, we cannot predict with any accuracy what Soviet defense policies will be, what changes in tactics, concept and doctrine they may introduce, and even whether or not the USSR will still constitute the main threat to the U.S.

25. With respect to U.S. defense policy and concepts, the farther we go out in time the less logical it becomes to assume that today's policies and concepts will remain valid. One criticism that one might make of the Forecast effort is its undue dependence, admittedly for sales purposes, on the assessment of the defense policy and concepts of the current administration. One only has to reflect on what the conclusions of a Forecast-type exercise would have been, had it relied heavily on the U.S. defense policies and concepts prevailing in 1956 to appreciate the fallacy of allowing defense policies of the moment to unduly influence long range development plans.

26. While both the threat, and defense policies, are key inputs to the planning process, they are of vital importance in short term plans but of decreasing, if not highly dubious, importance in long range plans.

27. The real difficulty in coming to grips with the long range planning problem lies in the inability of planners and commanders alike to perceive or rationalize change in areas other than materiel.

28. As we seek to define USAF goals, and analyze the validity of these for purposes of defending programs, the planners all too often fall into the classic trap of marrying up World War II equipment and weapons systems with World War II tactics and concepts.

29. The inability to evolute our strategy, our concepts, our organizational ideas, our methods of employment, our defense policies, etc., in consonance with new developments and new weapon systems leads us into frequently drawing false conclusions with respect to both the military worth and economic achievability of the new developments or systems. This happens, for instance, when the quantity factor is assumed to remain constant as between the current system and the one proposed to substitute for it even though the latter has greatly different characteristics and capabilities. Since cost is a factor influenced by quantity, otherwise useful development programs risk being eliminated at birth by virtue of our inability to conceive of the environment in which the weapons they would produce would be useful in less quantities than that utilized for the same purposes today.

30. The fact that when we completed the Forecast effort we found it desirable to reject out of hand otherwise defensible proposals simply because of their review in the context of FROM showed unreasonable cost implications is in itself evidence of the above weakness in the planning process. It represents an arbitrary readjustment for saleability or an otherwise valid finding. In a perfect planning process this factor (cost implications) would have been integrated with alternative concepts and methods of exploiting all new weaponry, in the time frame, and the decision to reject or retain the development made as part of the normal Forecast process rather than as a feasibility screening exercise.

31. The point I am trying to make is that when the planners start out

37. There is a chicken and egg effect as between JCS and User Command planning on the one hand, and service and AFSC development planning on the other. The AFSC representing the service, in the case of development planning, must condition user and JCS thinking if the JCS and user plans are to be based on full knowledge and understanding of technological possibilities. Conversely, Service and AFSC planning must be fully responsibe to JCS and User Command requirements, since in the last analysis these are the agencies responsible for carrying out the U.S. defense effort, not the services.

38. There has unquestionably been a tendency in this area for the "Tail to Wag the Dog." Most User Commands have limited visibility in their planning by virtue of getting few, if any, inputs from industry or AFSC. As a result, industry, and AFSC, tend to fight for development programs and new weapons on the basis of what the state-of-the-art can produce rather than on the basis of what the user requires to do his job in the time frame.

39. The compartmentalization of planning that tends to result from the above chicken and egg effect is probably one of the weaknesses which has contributed in the past to the necessity of undertaking Forecast-type exercises. When the situation becomes bad enough, the "producers" and "buyers" all get together in one group, on an ad hoc basis, and attempt to arrive at some collective judgement as to what they want. Provided there is true partnership in this effort, we then have fairly sound objectives. This is to some extent what happened in Forecast.

Draft - 2 copies of Richardson talk

Planning

INTRODUCTION

cy for Rinne

-- With reservations, accepted Dr. Hower's invitation.

-- I am not hesitant about discussing Planning techniques in general and NATO in particular in this distinguished company, but

-- When it comes to the other three major topics we're considering, (Arms Control, Space, and Counterinsurgency), I cannot use the introduction adopted by one N. W. C. speaker on Space who once told us "I know nothing about this subject but since I see no one here who knows any more than I do, I will go ahead."

-- Unfortunately, in my case the first part on knowing nothing is all too true. What is more difficult, though, is that the second part is not true, for I suspect most of you know more about Space, Counterinsurgency, and Arms Control than I do.

-- In accepting the invitation to address you, I risk the fate of General Custer who was so eager to demonstrate to Lincoln that he was "on the ball" he used to date his messages "Headquarters in the Saddle." Reading one, the President once remarked, "I fear General Custer has Headquarters where Hindquarters ought to be."

GENERAL COMMENTS

-- Remarks based primarily on prior experience in long-range planning and close observation of the NATO struggle to solve their strategic and force requirement planning effort during the past two years.

-- Will not deal with specific issues, except as examples.

-- Will seek only to suggest what appear to me to be major problem areas and some of the considerations involved in the hope of kicking off debate on these questions in the Panels.

ON PLANNING

-- Since Dr. Hower assigned this title to my presentation, I will take the opportunity to reiterate a few views I have held and add some additional comments.

-- The more I observe the process, both in and out of defense and on the political and military side, the more convinced I am that the art of planning remains in its infancy. If this is not true for short-term planning, it is indisputable with respect to long-range planning.

-- The principal weakness in long-range planning seems to me to be the chronic inability to project hardware and ideas at the same rate.

-- There are only three basic elements to consider, relatively speaking: What you propose to do, how you propose to do it, and what tools are available to do it with.

-- The classic tendency is to give a great deal of attention to the nature of the hardware or tools available in the time-frame under consideration, reasonable attention to any pertinent changes in what we wish to do in terms of the job to be accomplished with this hardware, and then blithely assume that today's methods are forever valid and make little or no attempt to evolute how we do it along with the other two factors.

-- Net result -- a wetting of new hardware with old concepts and strategies and organizational systems.

-- Do not wish to belabor this point, but wish to emphasize, however, the difference between the money and manpower devoted to the materiel half of the problem and that devoted to thinking up ways and means of exploiting this materiel.

-- Example: France, Gallois-Aaron, and Technocrats.

-- My second point relates to the subject discussed by Dr. Hower, that is, the political and military roles in the formulation of defense plans and policies.

-- Much has been said on this subject, usually critical of the influence or lack of influence of one side or the other.

-- While it is hard to generalize, it seems inescapable today that major policy decisions--in both foreign policy and defense--must be jointly developed with suitable inputs from both sides.

-- The military can no longer take over when diplomacy fails, sort the problem out unilaterally, and hand victory or defeat to their political masters at the end.

-- Likewise, political authorities cannot expect to make foreign policy and strategic decisions in peacetime independently of military advice,

while the military merely trains and equips forces while waiting the call to be used if and when these political decisions fail.

-- Today, the military in all countries is both a contributor and a responder to national policy.

-- As a contributor, they must be in a position to provide constant and appropriate advice to civil authorities who, in turn, should accept if not seek this advice rather than argue, as is so often the case, that the soldiers are no more competent than the civilians in this area by virtue of the remoteness of the last military experience in this area.

-- As a responder, the military must be prepared to loyally and effectively carry out the policies laid down by civil authorities after their advice has been given, but whether or not the end product conforms to it.

-- I suggest to you that it is possible for a student of both U. S. and NATO Alliance organization and procedures to point to certain shortcomings in the joyful collaboration between political and military authorities when it comes to participating in the formulation of policy.

-- The pendulum tends to swing too far one way or the other. Some would argue that for the first decade following World War II there was inadequate civil inputs to the formulation of defense policy. The reaction

to this view seemed to swing the pendulum in the other direction for several years, and one heard arguments to the effect that the military were ignored in this area. I suggest that we are coming back into balance through recognition of the capabilities and merits of both sides. This is what is happening, and it is none too soon.

-- My last comment under the subject of over-all planning relates to the tendency I have noted in our highly complex environment to lose sight of the forest while addressing the trees.

-- The more complex and intricate the planning problem, the more important it becomes to start from a broad, simple base which takes in all major considerations and then narrows down towards the field of particular concern.

-- Failure to do this all too often results in the most elaborate planning exercises coming to nought because they started from a parochial foundation or from a generally unsound basis.

-- An example of this in recent years on the military side has been a continued tendency to do defense planning without taking into consideration the constraints which will be imposed on proposed solutions in the time-frame by such nonmilitary factors as forecast economic or public and political attitudes. When one establishes a desirable long-range plan or policy,

it should then be constantly measured not only against technological capability, which we do as a matter of course, but also against economic feasibility and political and psychological acceptability. The last two factors are rarely introduced until too late, yet can be traced in many cases as the basic cause of failure either to sell the plan or policy once formulated or to implement it once sold.

-- An example of the former failure is to my mind the inability to sell the European nations a conventional buildup.

-- An example of the second problem is the Air Force's inability to implement the 143-Wing program once sold in the mid-Fifties.

-- Had more attention been given in the above examples--first, to European attitudes, political and psychological, and in the second case, to economic realities--we might have decided on other courses of action to the benefit of all concerned.

-- The fact that these nonmilitary matters have to be considered merely re-emphasizes the point I made earlier to the effect that major planning has to be a closely coordinated affair between all elements of Government and can no longer be undertaken in a vacuum by parochial interests on either side.

NATO

-- When I left the Council, I gave Mr. Stikker, the Secretary General, at his request a brief "legacy" paper. Drawing upon military planning experience and two years of observing and participating in the highest political direction, I attempted without being unduly critical to comment on some of the major shortcomings as they appeared to me. I propose to tell you a few of these this morning to help stimulate discussion in the NATO Panel.

-- First, I do not share the view that NATO is in grave difficulty. This view, often expressed today, seems to have behind it a hidden assumption which is not valid, and that is that NATO's mission is not only to provide an effective defense and deterrent but also, if not primarily, to act as a catalyst to Atlantic integration.

-- I suggest that there is nothing in the Treaty that calls for the latter mission. If you judge the organization solely on the basis of the former mission, it is logical that, following a period of buildup, we reach a leveling off point and enter into a holding phase. Discuss this.

-- If, on the other hand, your principal interest in the organization is to utilize it as a political lever for inter-Allied solidarity, then the leveling off process comes as a distinct disappointment. Many of the prophets of doom are, in my judgment, motivated by this latter thought. Explain the three-train thesis.

-- My second comment on NATO is to the effect that what is taking place is largely dictated by today's economic, political, and threat environment. The fear of Soviet aggression has unquestionably decreased in the public mind in Europe, if not in fact. Whether due to a change in political attitudes or to the success of the NATO buildup is quite secondary to the fact that with the general public attitude change towards the threat, willingness to make sacrifices or to support politically or economically unpopular actions (such as, suffering balance of payment losses) decreases.

-- It seems to me that we do ourselves a disservice on all sides by trying to blame individual Government policies for trends which would probably occur in varying degrees no matter what the policies were. France's attitude towards independence in foreign and defense matters, the improved economics of European nations (except for Greece and Turkey), our balance of payments problems, and the change in the threat or in the attitude towards the threat would all exist independently of De Gaulle's policies or of ours. These policies may aggravate or expedite the impact of these evolutionary trends, but they cannot be said to be the cause. I mention this because in my view it is difficult enough to adjust to the evolutionary forces that appear to disrupt our political or defense planning goals without aggravating the situation, and particularly receptivity to solutions and compromises, by blaming individuals or Governments for the inevitable. I realize this is politically expedient to explain failure where failure occurs; nevertheless, I consider it unfortunate.

-- I do not propose to discuss NATO's strategy, since this would take an hour in itself. I would like to make, however, at this juncture one other broad comment of an organizational nature which I also made to Mr. Stikker. This relates to the roles of civil and military authorities in crises management. As you know, since Korea and Cuba, there is an increasing tendency on the part of political authorities to interest themselves directly in operational matters. This was particularly apparent to us in NATO during the last two Berlin crises.

-- Now, I have no quarrel with the rights or wrongs of this tendency, but only with the ability to do that which the political authorities aspire to do.

-- It is a basic principle of organization that one should not take on a mission or responsibility that one is unable or ill-equipped to perform. Through no fault of the individuals the very nature of the higher political authorities of NATO, and for that matter of the higher military authorities, makes them inefficient, if not downright incapable, to produce rapid operational decisions. This being true, when they reserve from the responsible supreme Commanders the right to make these decisions and find themselves organizationally and constitutionally unable to produce them in timely fashion when needed, one of two things is bound to happen: (a) Either the military commander finds himself

obliged to make the decisions, if he controls the means, and in defiance of his political authorities but as a lesser evil than failure to accomplish the mission; or (b) the battle is lost for lack of timely decision with both military and civil authorities seeking subsequently to blame each other for the failure.

-- While little can be done, for obvious reasons, with respect to modifying NATO procedures, e. g., freedom from national guidance, much could be done to expedite decision making within the Council and military body. To a military man some of the procedures still enjoyed appear to hang over from 18th century diplomacy. As a first step, I actually suggested that the Secretary General might wish to buy himself an intercom system between his desk and those of the fifteen Ambassadors in the building.

-- Determine whether or not to go into strategy at this point.

ARMS CONTROL

-- In this area I had hoped to do more listening than talking. True, the NATO Council was exposed to weekly briefings by the senior National Representatives at Geneva, and we did consider and debate such questions as observation posts and U.S. and U.K. disarmament proposals under consideration. The few comments that I propose to make stem from passive observation of these actions and views collected at random from the foreign press and European friends. I assure you that what I have to say is intended far more to stimulate argument than to advance the state of the art, if there is one.

-- It seemed to me in listening to debates in NATO that motives behind arms control and disarmament proposals fell into two broad categories. The speaker was either motivated by true, mortal fear of war and its consequences and honestly believed that arms control and disarmament measures were essential to any reduction of tensions and to the resolution of world problems by peaceful means; or the speaker, while not admitting it overtly, was basically concerned with the economics of the arms race and was looking to arms control and disarmament for a possible solution to the problem of spiraling defense costs. The public image, of course, always represents the first purpose. Nevertheless, the second purpose is very clearly in evidence, and I personally feel that were this second purpose not present to a large extent, there would be no possibility of real progress whatsoever on either side.

-- The above categorization of motives immediately suggests, to me at least, that if the measures proposed were clearly identified with one motive or another, they might have a better chance of success. I could cite you several examples in various areas where confusion as to the purpose of major proposals in NATO has resulted in total inability to agree on progress. The MRBM-MLF area is one of these where we find conflict between arguments over how to modernize SHAPE's Strike Forces and methods of solving on the long-term the so-called credibility and nth country problem.

-- In the disarmament field I was rather interested and amused last year to witness a similar type of confusion in the minds at least of some Governments and politicians on the question of the real purpose of observation posts.

-- There were those who at least maintained that this measure should provide warning of attack, and if it did not provide valid warning from a military point of view, it should not be undertaken. On the other hand, there were those who obviously felt that whether it had any military value in terms of warning or not, the measure was a useful political action as a second step in continuing the detent and in maintaining the Geneva dialogue. Generally speaking, however, neither side would admit to its purpose. This produced an amusing and confusing situation.

-- The proponents for military purposes wanted a military model that the NATO military authorities could indorse as effective.

-- The proponents for political purposes did not want the military to come up with a model for fear that it would be too complex to negotiate. They wanted a blanket military blessing to any arrangement that might be found politically acceptable by both sides. The military would naturally not indorse a blank check, and the politicians, at least on an international basis, were unable to agree on a model which was both simple enough to sell the Russians and intricate enough to satisfy a valid military requirement.

-- I mention the above only as an example first, of the need for combined civil and military planning, but mainly to emphasize the importance of trying to agree on just what we wish to accomplish as a prerequisite to developing the details.

-- I would make one other observation in this area. This relates to what I sense to be the European attitude towards arms control and disarmament proposals.

-- I think that in Europe there are far more proponents of measures with economic benefits than there are enthusiasts for arms control for moral or pacifistic reasons. Europe is not as concerned as we are, judging from their writers, about the consequences of total war. Whether they don't

believe it will come about or whether they believe that if it does, most of the stuff will be dumped on us and Russia doesn't change the fact that their fear of it, and hence motivation to prevent it, is certainly less vocal than in American circles.

-- Secondly, with the exception of the small British and French effort, most of the European military means are not aimed at total war actions and certainly not atomic. Such forces as they have they consider minimal for action short of total war and home defense in total war.

-- Take England, for instance--she can't even meet today's requirements in Cyprus, Kenya, and other areas without robbing BAOR, which is now under strength, or the home defenses. The idea, therefore, of further reducing her defense budget or manpower for disarmament purposes seems to her incompatible not only with her immediate lesser needs but also with our arguments that we should all concentrate more on Counterinsurgency and limited aggression.

-- The point I wish to conclude from these remarks is that the European countries probably have no objection if we can achieve arms control measures from the top down that primarily affect U. S. and USSR general atomic conditions. Broadly speaking, however, they do not look with favor on and can be expected to resist an approach to arms control and disarmament from the bottom up.

-- The bottom-up approach which creeps up on the substantive disarmament goal by measures such as disengagement, observation posts, cross-cut budget reductions by agreement or emulation, as the case might be, tends to hit them first where it hurts the most--much as an across-the-board sales tax, though theoretically equitable, hits the poor people first.

-- In brief, I suggest for discussion whether the effort should not be concentrated either on measures that do not directly affect our Allies initially, if there are any we can accept, or on measures which can be blatantly sold for economic worth with minimum security risk. Europe, I believe, has no objection if the two fellows who are going to catch the most do something about it, but they (the Europeans) have no desire to be pawns, sacrificed in the progressive effort of these two fellows to corner their king and queen. If progression up that route should stop short of the goal of eliminating total atomic war, the "in-betweens" are the losers.

SPACE

-- As in the case of arms control and counterinsurgency, I had hoped to do more listening than talking on this subject. In the interest of a balanced diet, however, I will only try for size on those concerned with this Panel a view rather old and possibly simple ideas that seem to me to have retained a great deal of their validity, notwithstanding all that has been written and said on this subject in recent years.

-- I have a feeling that the greatest shortcoming of the Space effort is its total lack of a Clanswitz or a Mahan.

-- Most of that which I have read on the subject focuses on technical possibilities or is limited to press speculation. We do not seem to be able to explain clearly and concisely why a military capability in space is vital to the maintenance of the (use Johnson quote) power position.

-- Classically, we have sold military systems on the basis of the threat. This is a dangerous game, however, for it implies that you have a threat before you can get the money to counter it. This, in turn, implies that you allow the other fellow to take the lead. I have very little brief for this approach in Space from a theoretician's point of view. I would be much happier to see the Russians selling their program on the basis of our capabilities, which would imply that we had a resounding lead in this

area with a new lease on unilateral power of the type we enjoyed between World War II and the mid-Fifties. Were this possible, it would give us 5 or 10 more years to settle issues and negotiate disarmament from a position of strength rather than from the precarious and unsuitable position of power parity.

-- In order to obtain the means and pursue the research required, if we are to seek such a position, we have to show why Space offers the prospect of being of vital importance to national security, and we have to do this by means other than the threat if we are to take the lead from the start.

-- Now I am one who happens to believe in historical precedent which applied to this particular case argues against the prevalent notion that the ballistic missile is essentially the end-of-the-line and that there is nothing in the strategic deterrent area beyond it. This notion, I know, is popular partly because no one has come up with anything that obsoletes the ICBM and partly because many hope that if nothing comes up, defense spending can level off and be reduced when the big missile programs are terminated.

-- I suggest we are not at the end of the world in any area. I have no answers as to what follows the ICBM, but I am inclined to fall back on fundamental principles to evaluate Space and any other new proposals to see

if their characteristics suggest that somewhere and somehow when the technical problems are resolved, the new media or system promises to become dominant and decisive in any power struggle.

-- As a first mall step in this area, I commend you to the writings of a Britisher who, I am told, published a book on the subject of the Relationship between Access and National Power. This book was published about 1536 and, Gentlemen, it makes a damn good case for the eventual dominant role of Space.

-- Explain Halycut's Access Theory.

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