

NUCLEAR WEAPONS AND LIMITED WARFARE
A SKETCHBOOK HISTORY

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Explosion of the bulky, cumbersome first A-bomb over Japan August 5, 1945 was made known to the world the following day in President Truman's announcement: "an American airplane dropped one bomb on Hiroshima, an important Japanese Army base. That bomb had more power than 20,000 tons of TNT. It is an atomic bomb."

The tremendous impact of that event upon men's minds has heightened over time, reversing the pattern of attention accorded other new weapons in history. Among the earliest newspaper comments occurred the main theme of concern: "the atomic bomb means the end of war or the end of the human race."^{***}

Twenty years later neither wars nor the human race have ceased to exist, but the original concern is more justified than ever. Today's thermonuclear weapons megaton yields exceed the power of the Hiroshima bomb as greatly as it had surpassed World War II blockbusters. The prospect of a nuclear war overshadows all other political, economic and military considerations in most men's minds.

During the course of the almost two decade atomic-cum-nuclear age, a combination of technical and tactical inventiveness (the word "progress" might offend) led to proposals for using so-called

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*** Robert Boothby, M.P. in News of the World, London, August 1945.

tactical nuclear weapons* on and near battlefields, a departure from the original strategic role, crudely labelled "city busting."

Evidence suggests that the man-years devoted in this country alone to the study of nuclear weapon employment in limited wars would suffice, directed into suitable channels, to build and staff a magnificent series of schools. A brief sketch of when and how, and a glimpse of why these activities took place, based mainly upon one man's experience,** constitutes the sole aim of this paper.

Years passed after the surrender of Japan before the U.S. military establishment began seriously to study tactical employment of the weapon that had suddenly eliminated any need for the impending invasion of the Empire's home islands. A sweeping if premature conviction of the A-bomb's strategic omnipotence stultified all thoughts of battlefield use. The newly independent Air Force, accepting as permanent its Service monopoly and America's exclusive possession, had no incentive for such study. The Navy and Army lacked delivery means.

Meantime, shrouded in secrecy, the first two test series, Crossroads June-July 1946 and Sandstone April-May 1948, examined devices

* A sharp diversity of viewpoints concerning the size of "tactical" weapons prevails in this connection. England's Institute of Strategic Studies (ADELPHI Paper #4, May 1963) points to the "presumably ½-kiloton Davy Crockett." Newsweek, September 21, 1964, p. 33, assigns that weapon an explosive charge between 20 and 40 tons of TNT, and mentions subkiloton artillery shells. The Deputy Secretary of Defense recently told a VFW Convention that "the typical tactical weapon has several times the yield...(of the Hiroshima weapon)."

** The author spent three years in the Command and General Staff College and two years in the U.S. Army Engineers School (1949-54) developing course material and teaching "tactical application of new weapons." He has been a member of the RAND staff since then. Criticisms, corrections, and additions are urgently sought to help develop a more comprehensive history of "nuclear weapons and limited warfare."

with yields little different* from those that ended WW-II. Published results emphasized, respectively, weapon effects on naval vessels and protective construction for defense, both matters remote from tactical air or ground operations.

The delayed reaction is understandable in the environment then prevailing. Atomic weapons were scarce, expensive; so large and heavy that only the big bombers of that day could deliver them. Security regulations permitted only a handful of ranking officers to know of AEC programs directed toward reducing weapon bulk and weight. That handful, cognizant of the international situation, fixed their attention upon rapid acquisition of higher and higher yields for the presumably small numbers of strategically decisive weapons.

The Army had reentered the traditional lean years that followed all our country's wars. Hurriedly stripped of war-hardened veterans, its few remaining, understrength divisions were manned by young, reluctant, postwar draftees and were inexcusably short of serviceable equipment. Pressure for greater economy by Secretary of Defense Louis Johnson precluded hope of early improvement. America's recently preeminent Army had been summarily junked. Only "the Bomb" and a pitifully few squadrons of (relatively) long range bombers posed any significant obstacle against a Soviet march through Western Europe. Understandably, military plans emphasized the immediate emergency and gave top priority to the newly constituted but still woefully weak** Strategic Air Command and its "Sunday punch" weapon.

Nevertheless, by 1949 there was a glimmer of awakening anxiety in the Command and General Staff College, and the General Staff. Lieutenant General Manton S. Eddy, then College Commandant, assigned a faculty group to study the Army's problems in atomic conflict. By December he had initiated a fruitful partnership with Dr. Ellis Johnson, Director of the then new Operations Research Office under contract with the Army through Johns Hopkins University.

Two objectives guided the College tactical and logistical panels collaborating with ORO staff members: for the entire Army,

* Except that one Sandstone explosion developed 49 KT and one Cross-roads weapon was detonated in the Bikini lagoon under 90 feet of water.

** Still relying chiefly on B-29s; the first intercontinental bombers (B-36) became operational in 1948.

preparing a draft field manual on "tactical use of atomic weapons"* and, for the student body, injecting pertinent instruction on combat employment of the new weapon into the College curriculum. The first objective's title derived from (then) Brigadier General Herbert B. Loper's** blunt instruction to the author: "Show me how to use this weapon in tactical roles, if you can. It is not a tactical weapon."

Simultaneously, with the urging of Army Chief of Staff, General J. Lawton Collins, the Army concentrated on development of atomic-capable artillery. Aimed at providing the Army with its own delivery means, the first operational cannon was the remarkably mobile, mammoth 280-mm gun that fired a gun-barrel type of atomic shell, smaller in girth than the more efficient implosion type.*** (This was more readily adapted to the 16-inch rifles of Navy battleships.) Doubtless the designers of the atomic cannon realized that early obsolescence would overtake this huge piece of ordnance, but saw in it a path toward quick realization of an Army atomic capability.**** There was concurrent progress in naval aviation, also: the A-bomb capable XAJ-1 was contracted for in June 1946; the first carrier qualified jet fighter (Phantom) squadron became operational in 1948, and the heavy P-2V bomber was carrier tested in March 1949.

With the sole exception of the growing, vital Strategic Air Command, security continued to prevent any significant dissemination throughout the Services of information concerning operational use of atomic weapons. The unclassified Smyth Report,***** widely distributed, dealt only with technology and physical science.

* Eventually published as FM-100-31, November 1951. Confidential

** Then Chief, Armed Forces Special Weapons Project, forerunner of the Defense Atomic Support Agency (DASA).

*** Effects of Nuclear Weapons, Samuel Glasstone, Ed., Govt. Printing Office, 1957.

**** Army and Navy missile research, the ponderous ballistic Corporal and the aerodynamic Regulus I (to become shipboard operational in 1954) were as unlikely prospects for tactical operations as the new SAC.

***** Atomic Energy for Military Purposes, H. D. Smyth, Princeton Univ. Press, 1947.

Early improvisations in teaching atomic tactics stemmed from rationalizations like the advice of AFSWP's Admiral Parsons to the C&GS College faculty. He suggested that College lessons could safely assume that atomic bombs had been developed with "at least the safeguards provided in their high explosive forebears;" therefore bomb tactics and logistics could be devised "practically identical to those for the largest HE bomb." This helped, but all effects data remained highly classified.

A year's efforts were required to relax these restrictions. By way of example, the author received permission from AFSWP in early 1950 to study a voluminous, top secret manuscript, "Effects of Atomic Weapons," to guide his preparation of College instructional material. Some six months later that same manuscript,* revised only in technical details, and under the same title was jointly sponsored, by the Atomic Energy Commission and the Department of Defense, for unclassified publication. The log jam of super-security was belatedly giving way. Successive editions have reported, with somewhat reduced time lags, the progress of atomic into nuclear science.

In 1951, a College committee prepared the draft of Field Manual 100-31, Tactical Use of Atomic Weapons, which was issued by the Department of the Army, November 1951. After extensive discussion in high places it was officially classified Confidential. However, much higher classified effects data could be derived, with sufficient accuracy for instruction in combat use of atomic weapons, from the unclassified AEC publication. Around this fact raged the struggle to declassify instruction in atomic weapon tactics for the Services.

The Army's C&GS College had by then added a few classified lessons in atomic weapon operations at the Corps level to apply information given previously in a short series of classified lectures. An excellent five-day course** at Sandia Base under AFSWP began weekly presentations in atomic technology and current and programmed

* Effects of Atomic Weapons, Samuel Glasstone, Ed., Government Printing Office, 1950.

** Discontinued several years later when each Service organized its own quickie course. The Army's version was staged at Ft. Bliss.

weapons to specially "cleared" officers of all services. Illustrative examples of atomic combat, prepared in collaboration with the C&GS were included.

It was about this time, according to one authority, that "brilliant work at the Los Alamos Scientific Laboratory (made it) possible for the military to begin to think of the atomic bomb in terms of a battlefield weapon---suitable for use by troops in the field, by aircraft supporting these forces, and by navies."*

Nevertheless, for another year or so most of the "thinking" Dean referred to was, perforce, confined to closely held classified manuals and specially arranged instruction for select students. However, a 280-mm atomic cannon was displayed in President Eisenhower's first inaugural parade. Twelve months later the Navy's first angled-deck carrier "Antietam" became operational. In 1952, a gradually increasing flow of papers in Service journals were at last allowed to initiate unclassified discussion of the far reaching changes that confronted America's military establishment. (Examples cited in Bibliographic Sources.) But the security mill ground more slowly for commercial publishers. Not until August 1953 could the New York Times report the appearance of "the first book on atomic tactics."** Not until the spring of 1954 were unclassified reference data authorized in Army Service schools.***

Henceforth the "tactical use of atomic weapons" emerged as a lively subject of professional and, to a much lesser extent, public discussion. Yet during these years no mention can be found in unclassified literature, including science fiction, of the possibility of truly tactical, i.e., very low yield, lightweight atomic weapons. Nor should any implication of success be implied in the struggle to train the entire military--rather than a selected and cleared handful

* Report on the Atom, Gordon Dean, Knopf, 1953.

** "Two in Army Write on Atomic Tactics," New York Times, August 17, 1953. Atomic Weapons in Land Combat, Reinhardt and Kintner, Military Service Pub. Co.

*** Atomic Weapons Reference Data, USA Engineer School, March 1954.; Atomic Weapons Reference Data, C&GS College, May 1954- FOUO.

of specialists--in the operational aspects of the newest, most lethal weapon. While tactical instruction thus painfully tried to catch up with progress in weaponry, technology leaped from atomic to thermo-nuclear bombs, creating a seemingly unbridgable chasm. For perspective, let us refer to some political-military history.

Within a year of the first Soviet atomic explosion (August 1949), the Communist Bloc demonstrated the most serious example (to date) of military invasion by proxy--the Korean War. Before the military phase of this war, mistakenly termed a "police action" in Washington, was over, an even more serious mistake became apparent, this one originating in Moscow.

Stalin's militancy plus his acquisition of atomic capability accomplished what American military advice had failed to achieve. The United States hastened, with the usual extravagance inevitable to haste, the reconstruction of America's shattered military strength. George C. Marshall succeeded Louis Johnson as Secretary of Defense. President Truman "considered" employing atomic weapons in Korea, bringing the British prime minister, Laborite Clement Atlee, flying to Washington to dissuade him from an action that many feared would ignite World War III.

While these international events were taking place, the scientific-technological problem of developing a hydrogen bomb that would dwarf the model-T atomic weapon no less than the latter overshadowed its HE predecessors spilled over into political and, allegedly, moral considerations. Just as it had fallen to President "the buck stops here" Truman to decide whether to use the atomic bomb against Japan, so it was he who again cast the die to proceed with the H-bomb development.

Late in 1952, shrouded in secrecy, the first experimental thermo-nuclear device was exploded at Eniwetok.* In the spring of 1954 another detonation gained world-wide notoriety by its unexpectedly high, 15-MT yield* and the misfortune of native islanders and Japanese fishermen subjected to its radioactive fallout. It was only a brief

* Effects of Nuclear Weapons, Samuel Glasstone, Ed., Govt. Printing Office, 1962.

time before deliverable thermonuclear bombs of similar yield would be in inventory, not only in this country but in Russia.*

The impact of events, political, scientific, and military, caused the newly permitted discussion of tactical doctrine and organization for atomic combat to be very nearly as thoroughly ignored as it had previously been verboten. By the time the Korean War sputtered out at Panmunjom, technology had left air/ground tactics relatively further behind than it had been in the late forties. The almost unmentionable thermonuclear weapon and its wholly unmentionable phenomenon of far-ranging, deadly fallout radiation (hitherto obscured by the much lower yields of fission weapons) posed new problems that again far transcended the significance of "atomic" tactics.

The frustrations of this country's introduction to "limited warfare" in Korea were shrugged off as "the wrong war, at the wrong time, in the wrong place." A civilian pointed a different course for strategy with his "massive retaliation" doctrine. Neither enunciator nor enthusiastic hearers among the military recognized this recurrence of the classic error, long attributed to soldiers, of "planning to fight the next war in the image of the last." What might have been an ideal strategy for Korea in 1950 was in 1954 foreseeably if not actually obsolete. Intelligence reports of a Soviet long range bomber buildup and progress in nuclear weapons presaged a day when U.S. cities could also be "at risk," when "nuclear parity" would demonstrate the futility of massive retaliation.

A contemporary, naive plea that "at least the same intensity of national scientific-industrial-economic effort which produced the megaton monster must be mobilized to enable this country to control its own creation"*** was ignored. As warhead weight/yield ratios fell rapidly, the slogan "more bang for a buck" dominated U.S. defense planning.

*The first megaton airburst, indicating existence of a usable weapon was reported by the AEC to have occurred over Russia on November 23, 1955, some six months before the equivalent U.S. achievement early the following summer in the SW Pacific.

***Atomic Weapons in Land Combat, 2d Edition, 1954.

Paradoxically, the Army initially outdistanced the Air Force in ballistic missile development.* The Navy launched larger, angle-deck carriers that based nuclear-delivery jet aircraft. The Strategic Air Command's call for "higher-faster-further" bombers held top priority in the Air Force. Military requirements for limited wars were often casually dismissed under the formula that "whatever will be effective in a big war will more than suffice for little ones."

There was some concern, primarily in research oriented agencies and White House-appointed committees, that deterrence of general war by the existence of thermonuclear weapons might spur Communist ventures into lesser categories of conflict. The asymmetries between ComBloc and Free World army strengths, aggravated by the vast distances U.S. forces would need to travel, emphasized a need to evaluate the potential for nuclear weapons in limited warfare. In this connection, The RAND Corporation's Sierra Project, a continuing study of limited wars, won a gradually increasing acceptance from 1956 on within the Air Force, for which it had been prepared. The Operations Research Office performed a similar service for the Army. A spate of books and articles by eminent political scientists presented limited war problems to the reading public.

Early studies of nuclear weapon employment in limited conflicts assumed that both contestants would be strongly disinclined to escalate to a total war. This assumption was made more plausible by eschewing Europe as a hypothetical field of battle, leaving that continent to strategic deterrence and (then) relatively impotent NATO ground forces whose supposed function was sloganized as a "trip-wire." Thus numerous paper conflicts, waged throughout the Middle and Far East where U.S. and Soviet vital interests were less deeply involved, often dealt with unilateral (U.S.) use of nuclears but occasionally hazarded the far knottier problems of two-way exchange.

* Four years later, the first, third, and fourth successful satellite launchings were powered by the Jupiter-C missile, the second by a Navy "Vanguard."

Both classified and unclassified publications on "tactical" (or "limited") nuclear warfare thus far contained an implicit confidence in the numerical superiority and versatility of the U.S. nuclear stockpile and an only mildly tempered conviction of the continuing scarcity of fissionable material.*

There were, however, two indications of increasing sophistication. First, was a growing realization that authority to employ nuclear weapons in "small" wars might be time consuming and difficult for the field commander to obtain. Instances appeared in war games where that delay ran into a number of days, sometimes permitting aggressor troops to reach densely populated (friendly civilians) areas where tactical nuclear strikes were precluded. Under different circumstances the aggressor was able to smash the resistance of indigenous ground forces before U.S. nuclear intervention could take place.** The second "discovery" was the likelihood that limited bilateral nuclear conflicts would end in a highly destructive if relatively localized stalemate, the aggressor probably punished less than the friendly nation the United States sought to rescue from aggression. Sardonic gamesters even introduced a "tenth principle of war", pontificating: "In tactical nuclear conflict it is much easier to annihilate our friends than our enemies."

The appearance of Sputnik I in October 1957 and its 40-times heavier (circa 7,000 lb.)*** third generation the next spring halted, especially in Administration circles, whatever attention had been devoted to limited war studies. Dealing with the alleged "missile gap" left little time and fewer resources for the minor but potentially still dangerous threats of limited war.

* See "One Bomb per Division," p. 27, Atomic Weapons in Land Combat, 2d Edition, 1954.

** An illustration of the incredulity with which young officers received these findings can be unearthed at a distinguished military school where the student body labelled a lecturer on these studies "that genius who could lose a unilateral atomic war."

*** Aviation Week, March 7, 1960, p. 181.

Air Force and Navy interests centered on developing Minuteman and Polaris missile systems. The Tactical Air Command was accorded only a small share of Air Force manpower and funds. Naval aviation, except for the three Marine Air Wings, still emphasized strategic missions.

The Army, according to the retiring Chief of Staff, General Maxwell D. Taylor, needed billions to "modernize" the equipment of its 15-division, slender battle force.* Yet critics could (and did) point to large sums spent by the Army in the prevailing inter-Service competition for glamour weapons; ponderous surface-to-surface missiles that, however much they contributed as boosters in the Geophysical Year's race to put up the first earth-girdling satellite, seemed incongruous in a ground force order of battle. Yet these projects stemmed less from Service competition than from uncertainty as to the Army's role(s) in all-out megaton warfare. One of the earliest discussions of "atomic tactics"** had voiced a premature warning that proliferation of H-bombs "sounded the death knell of armies and the negation of strategy."

Not too long after Sputnik, another milestone on the path of scientific progress produced a major impact upon possible use of nuclear weapons in battlefield tactics. This was the production of Davy Crockett, small enough (in both weight and yield) to constitute an infantry battalion weapon. There was also some experimentation with other sub-kiloton warheads. At last there were "tactical atomic weapons" that would have satisfied the puristic phraseology of General Loper--plus a whole range of even more effective tactical warheads under development.

* Budget FY 1960 included \$175 million, added by Congress, that the Secretary of Defense declined to spend for this purpose.

** "Don't Wait for the H-bomb," Marine Corps Gazette, January 1952.

Yet the organization and tactical doctrine of neither the Army nor Tactical Air Command were prepared to assimilate technology's startling gifts in 1960. It could scarcely have been otherwise in a bipolar-thermonuclear world where Clemenceau's growl that "war is too important to be left to generals and admirals" was so literally true. When national policy was quite unclear whether "limited nuclear war" could occur--and stay limited (whatever that might mean) small wonder that all Services wrestled with problems not susceptible to pat answers.

For the Army these problems included acquisition of a "dual capability" for either nuclear or HE combat, battlefield defense against missiles, how and to what extent to make ground forces air mobile, provision for a local (theater) strategic deterrent under Army control (the quality weapon argument again), doctrine explaining "controlled, selected, tactical use" of nuclear weapons, and, all the while, reorganization of the Army division for the nth time.

The change of administration in Washington, January 1961, suggests two compelling reasons for ending an outline history of limited nuclear war studies at that point. Caution is essential when dealing, under the guise of "history," with essentially current affairs, especially those involving highly classified information. In addition, a clearly marked trend toward improving U.S. military capabilities to respond promptly to small conflicts has emerged, together with a whole series of tactical (and one strategic) crises: Bay of Pigs, "neutralization" of Laos, threats in Berlin followed by The Wall, missiles in Cuba, degeneration of our position in South Vietnam, Indonesian aggression against Malaya. Contemporary comment on the role of nuclear weapons in limited warfare is hazardous, prophesy would be foolhardy.

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