

Bombs and Poetry

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FREEMAN DYSON was born in England and educated at the universities of Cambridge and Birmingham. During World War II he worked as a civilian scientist at the headquarters of the Royal Air Force Bomber Command. After the war he went to Cornell University and became Professor of Physics there. Since 1953 he has been Professor at the Institute for Advanced Study in Princeton. His professional work has been mostly on technical problems of mathematical physics, but he has written a number of articles on broader issues for a wider public. His autobiography, *Disturbing the Universe*, was published in 1979. He is now writing a book on war and weapons which will be an expanded version of these Tanner Lectures.

INTRODUCTION

I chose the title "Bombs and Poetry" for this series of lectures, because I want to discuss the gravest problem now facing mankind, the problem of nuclear weapons, from a literary rather than a technical point of view. Poetry means more than versification. It means the whole range of human reactions to war and weapons as expressed in literature. The main theme of the lectures will be the interconnectedness of the bombs and the poetry. I will be exploring the historical and cultural context out of which nuclear weapons arose, and at the same time looking for practical ways of dealing with the problem of nuclear weapons in the future. My hope is that an understanding of the cultural context may actually help us to find practical solutions. Basic to my approach is a belief that human cultural patterns are more durable than either the technology of weapons or the political arrangements in which weapons have become embedded.

The three lectures are independent of each other. You may come to any one or two of them without feeling obliged to come to the others. The first lecture, "Fighting for Freedom with the Technologies of Death," is a historical account of our involvement with weapons since 1914, giving special attention to the tactical nuclear weapons which now constitute the most immediate threat to our survival. The second lecture, "The Quest for Concept," examines various alternative doctrines or policies which have grown up around nuclear weapons, and tries to define a doctrine which may offer us some long-range hope of escape from the trap into which reliance on nuclear weapons has brought us. The third lecture, "Tragedy and Comedy in Modern Dress," places the problem of nuclear weapons into a wider context, as the contemporary manifestation of a human predicament which is as old as the Iliad

and the Odyssey, the doom of Achilles and the survival of Odysseus. Each of the three lectures is arranged like an old-fashioned sermon, with historical examples at the beginning and a moral at the end.

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I. FIGHTING FOR FREEDOM WITH THE TECHNOLOGIES OF DEATH

The title of today's talk is borrowed from a recent book written by Steve Heims and published by the M.I.T. Press, *John Von Neumann and Norbert Wiener: From Mathematics to the Technologies of Life and Death*. I will be talking about warfare and technology from a historical point of view. I shall be trying to answer two questions. Why has war always been so damnably attractive? And what can be done about it?

In the impressions of World War I which I absorbed as a child, technology was a malevolent monster broken loose from human control. This view of technology was then widespread, not only among poets and literary intellectuals but also among scientists. The most memorable description of the war which I read as a scientifically-inclined teenager came from the biologist J. B. S. Haldane:

A glimpse of a forgotten battle of 1915. It has a curious suggestion of a rather bad cinema film. Through a blur of dust and fumes there appear, quite suddenly, great black and yellow masses of smoke which seem to be tearing up the surface of the earth and disintegrating the works of man with an almost visible hatred. These form the chief parts of the picture, but somewhere in the middle distance one can see a few irrelevant-looking human figures, and soon there are fewer. It is hard to believe that these are the protagonists in the battle. One would rather choose those huge substantive oily black masses which are so much more conspicuous, and suppose that the men are in reality their servants, and playing an inglorious, subordinate and fatal part in the combat. It is possible, after all, that this view is correct.

Haldane published this vignette in 1924 in a little book with the title *Daedalus, or Science and the Future*, which I found in the school science library at Winchester. It sold well and was widely read in scientific circles. Haldane had been an outstandingly brave and conscientious soldier. His friends in the trenches had given him the nickname Bombo because of his attachment to a noisy experimental trench-mortar which he liked to carry around in the front lines and blast off unexpectedly from time to time. His cold and clinical view of the battles of 1915 extended also to the future: "The prospect of the next world-war has at least this satisfactory element. In the late war the most rabid nationalists were to be found well behind the front line. In the next war no-one will be behind the front line. It will be brought home to all concerned that war is a very dirty business."

The soldiers of all nationalities carried home from World War I memories of pain, death, and physical squalor. The lasting image of war was men sharing a mud-filled ditch with corpse-fed rats. The degradation of the living left in men's minds a deeper revulsion than the sacrifice of the dead. During the years leading up to the outbreak of World War II when my school-friends and I looked ahead to the future, we were not sure whether being killed would be worse than surviving. Wilfred Owen's poem "Mental Cases," in which Owen is describing survivors of the battles of 1717, gave us a picture of what might await us if we were unlucky enough to survive:

Who are these? Why sit they here in twilight?
— These are men whose minds the Dead have ravished.
Memory fingers in their hair of murders,
Multitudinous murders they once witnessed.
Wading sloughs of flesh these helpless wander,
Treading blood from lungs that had loved laughter.
Always they must see these things and hear them,
Batter of guns and shatter of flying muscles,
Carnage incomparable, and human squander,
Rucked too thick for these men's extrication.

Most of us did, unexpectedly, survive. And then, only a few years later, the invention and use of nuclear weapons carried the technology of death a giant step further. The nuclear bombs with their mushroom clouds make Haldane's vision of war, the black explosions attended by doomed and puny human servants, look even more plausible. How could this have happened? How could supposedly sane people, with the stink of the trenches still fresh in their memory, bring themselves to create a new technology of death a thousand times more powerful than the guns of World War I? To answer these questions, I look again at the career of Robert Oppenheimer. Oppenheimer is a good example to illustrate how it happens that people get hooked on weaponry. A rich new source of historical facts has recently become available, throwing a fresh light on Oppenheimer and on the mental climate out of which nuclear weapons grew.

The new source is the volume of *Letters and Recollections* of Robert Oppenheimer edited by Alice Smith and Charles Weiner.* It gives us a far more authentic and many-sided picture of Oppenheimer's personality than we had before. In January 1981 I met Robert's brother Frank at a meeting in Toronto and thanked him for allowing Smith and Weiner to publish Robert's letters to him, which are in many ways the best and the most revealing in the whole collection. "Yes," said Frank. "At one time I had thought of publishing his letters to me in a separate book. But it is much better to have the five or six characters Robert showed to his various friends all together in one place."

In 1932, when Robert was twenty-seven and Frank was nineteen, Robert wrote a letter to Frank on the subject of discipline. "But because I believe that the reward of discipline is greater than its immediate objective, I would not have you think that discipline without objective is possible: in its nature discipline involves the subjection of the soul to some perhaps minor end; and that end

* Cambridge: Harvard University Press, 1980.

must be real, if the discipline is not to be factitious. Therefore," he concluded, "I think that all things which evoke discipline: study, and our duties to men and to the commonwealth, war, and personal hardship, and even the need for subsistence, ought to be greeted by us with profound gratitude; for only through them can we attain to the least detachment; and only so can we know peace." I have pulled these sentences out of their context. It is true, as Frank said, that Robert's letters to him show only one face of a six-faced mountain. But still I believe that these two sentences contain a key to the central core of Robert's nature, to the sudden transformation which changed him eleven years later from bohemian professor to driving force of the bomb project at Los Alamos. Perhaps they also contain a key to the dilemmas we face today in trying to deal wisely with the problems of nuclear weapons and nuclear war.

How could it have happened that a sensitive and intelligent young man in the year 1932 put war on his short list of things for which we should be profoundly grateful? This little word "war" appears in his letter untouched by any trace of irony. Oppenheimer's gratitude for it is as sincere as the gratitude of the poet Rupert Brooke, who greeted the international catastrophe of 1914 with the famous words: "Now God be thanked who has matched us with His Hour." But Brooke died in 1915, and his reputation as a poet was irretrievably smashed in the years of muddy slaughter which followed. The poets whose works survived the war and were read by the literary intellectuals of Oppenheimer's generation were the poets of plain-speaking disillusionment such as Wilfred Owen. It comes as a shock to find Oppenheimer in 1932 writing about war in the manner of Rupert Brooke.

There were of course other voices in the 1920's than Haldane and Owen. I do not know whether Oppenheimer read *The Seven Pillars of Wisdom* by T. E. Lawrence, a man whose many-sided strengths and weaknesses curiously paralleled his own. Lawrence was, like Oppenheimer, a scholar who came to greatness through

war, a charismatic leader, and a gifted writer who was accused with some justice of occasional untruthfulness. *The Seven Pillars* is a marvelously vivid and subtly romanticized history of the Arab revolt against Turkish rule, a revolt which Lawrence orchestrated with an extraordinary mixture of diplomacy, showmanship, and military skill. It begins with a dedicatory poem, with words which perhaps tell us something about the force that drove Robert Oppenheimer to be the man he became in Los Alamos:

I loved you, so I drew these tides of men into my hands,
 And wrote my will across the sky in stars
 To earn you Freedom, the seven pillared worthy house,
 That your eyes might be shining for me
 When we came.

And with words which tell of the bitterness which came to him afterwards:

Men prayed that I set our work, the inviolate house,
 As a memory of you.
 But for fit monument I shattered it, unfinished: and now
 The little things creep out to patch themselves hovels
 In the marred shadow
 Of your gift.

And there was Joe Dallet. Dallet was the first husband of Robert Oppenheimer's wife Kitty. Born into a wealthy family, he rebelled against his background, became a Communist, and organized a steelworkers' union in Pennsylvania. In 1937 he went to Spain to fight on the losing side in the Spanish civil war. Kitty tried to follow him to Spain, but only got as far as Paris when she heard that he had been killed in action. Three years later she married Robert. Robert and Kitty were well suited to each other; they settled down and raised a family and supported each other in sickness and in health, through all Robert's triumphs and tribulations, until his death. But I often felt that it must have been hard for

Robert. at least in the early years, to be living in a silent ménage à trois with the ghost of a dead hero.

The Spanish war certainly captured Robert's imagination and caused him to become politically engaged. It was easy for Robert and his left-wing friends, viewing the war from a distance of six thousand miles through a screen of righteous indignation, to romanticize and oversimplify. They looked on the war as a simple fight for freedom, a heroic struggle of right against wrong. They did not read George Orwell's *Homage to Catalonia*, the best eye-witness record of the war, written by a man who fought in it as a private soldier and faithfully set down on paper the heroism and the sordidness, the tragedy and the folly. Orwell's book sold poorly in England and was not published in the United States. The right wing disliked Orwell because he was a Socialist, and the left wing disliked him because he told the truth. The truth was too complicated to fit into the ideological categories of left and right. To a man who kept his eyes open and was not afraid to say what he saw, the disasters of the war could not be blamed on one side alone. One of the minor side effects of the war in Spain was that it erased from the minds of left-wing intellectuals the hard-earned lessons of World War I. They saw the Loyalist cause in the Spanish war as clean, heroic, and virtuous. They forgot what Haldane and Wilfred Owen could have told them, that the conditions of twentieth-century warfare tend to make heroism irrelevant. In the romanticized view of the Spanish war which Robert Oppenheimer absorbed from his friends in Berkeley in the late 1930's, the legend of Joe Dallet, the rich man's son who fought on the side of the workers and laid down his life for their cause, fitted naturally into place.

Recently I learned from the historian Richard Polenberg at Cornell some facts about Joe Dallet's life and death. Dallet was unlike the majority of the left-wing intellectuals who flocked to Spain to fight for the Republic. Dallet took soldiering seriously. He believed, like Robert, in discipline. He quickly became an

expert on the repair, maintenance, and use of machine guns. He drilled his troops with old-fashioned thoroughness, making sure that they knew how to take care of their weapons and how to use them effectively. In an anarchic situation, his unit was conspicuously well organized. His men caught from him the habit of competence, the pride of a steelworker who knows how to handle machinery. At moments of relaxation, when he sat down with his friends over a bottle of wine, he talked mostly about his beloved machine guns. This was the image of Joe which his friends brought to Kitty in Paris when they came to see her after his death. This was the image which Kitty brought to Robert when she married him.

From Joe's guns it was a short step to Robert's bombs. When Robert accepted in 1942 the job of organizing the bomb laboratory at Los Alamos, it seemed to him natural and appropriate that he should work under the direct command of General Groves of the United States Army. Other leading scientists wanted to keep the laboratory under civilian control. Isadore Rabi was one of those most strongly opposed to working for the Army. Robert wrote to Rabi in February 1943, explaining why he was willing to go with General Groves: "I think if I believed with you that this project was 'the culmination of three centuries of physics,' I should take a different stand. To me it is primarily the development in time of war of a military weapon of some consequence." Rabi did not join the laboratory.

Late in 1944, as the Los Alamos project moved toward success, tensions developed between civilian and military participants. Captain Parsons of the U.S. Navy, serving as associate director under Oppenheimer, complained to him in a written memorandum that some of the civilian scientists were more interested in scientific experiments than in weaponry. Oppenheimer forwarded the memorandum to General Groves, with a covering letter to show which side he himself was on: "I agree completely with all the comments of Captain Parsons' memorandum on the fallacy of

regarding a controlled test as the culmination of the work of this laboratory. The laboratory is operating under a directive to produce weapons; this directive has been and will be rigorously adhered to." So vanished the possibility that there might have been a pause for reflection between the Trinity Test and Hiroshima. Captain Parsons, acting in the best tradition of old-fashioned military leadership, flew with the *Enola Gay* to Japan and armed the Hiroshima bomb himself.

Some of the people who worked under Oppenheimer at Los Alamos asked themselves afterwards, "Why did we not stop when the Germans surrendered?" For many of them, the principal motivation for joining the project at the beginning had been the fear that Hitler might get the bomb first. But that danger had disappeared by May 1945 at the latest. So the primary argument which persuaded British and American scientists to go to Los Alamos had ceased to be valid before the Trinity Test. It would have been possible for them to stop. They might at least have paused to ask the question, whether in the new circumstances it was wise to go ahead to the actual production of weapons. Only one man paused. The one who paused was Joseph Rotblat from Liverpool, who, to his everlasting credit, resigned his position at Los Alamos and left the laboratory on May 9, 1945, the day the war in Europe ended. Twelve years later Rotblat helped Bertrand Russell launch the international Pugwash movement; he has remained one of the leaders of Pugwash ever since. The reason why the others did not pause is to be seen clearly in Oppenheimer's assurance to General Groves, written on October 4, 1944: "The Laboratory is operating under a directive to produce weapons; this directive has been and will be rigorously adhered to." Oppenheimer had accepted on behalf of himself and his colleagues the subordination of personal judgment to military authority.

Fighting for freedom. That was the ideal which pulled young men to die in Spain, to take up armed resistance against Hitler in the mountains of Yugoslavia, and to go to work with Oppen-

They bore not a charmed life. They went into battle
foreseeing
Probable loss, and they lost. The tides of Biscay flow
Over the obstinate bones of many, the winds are sighing
Round prison walls where the rest are doomed like their
ship to rust,
Men of the Basque country, the Mar Cantabrico.

For these I have told of, freedom was flesh and blood,
a mortal
Body, the gun-breech hot to its touch: yet the battle's
height
Raised it to love's meridian and held it awhile immortal;
And its light through time still flashes like a star's
that has turned to ashes,
Long after Nabara's passion was quenched in the sea's
heart.

Day Lewis published this poem in a little volume with the title *Overtures to Death* in 1938. It resonated strongly with the tragic mood of those days, when the Spanish war was slowly drawing to its bitter end and the Second World War was inexorably approaching. I remember, when I was at Winchester in 1938, our chemistry teacher Eric James, who was the best teacher in the school, put aside chemistry for an hour and read "The Nabara" aloud. He is now, by the way, sitting in the House of Lords. I can still hear his passionate voice reading "The Nabara," with the boys listening spellbound. That was perhaps the last occasion on which it was possible to read an epic poem aloud in all sincerity to honor the heroes of a military action. At Hiroshima, the new technology of death made military heroism suddenly old-fashioned and impotent. After Hiroshima, Day Lewis's lofty sentiments no longer resonated. The generation which grew up after Hiroshima found its voice in 1956 in the character of Jimmy Porter, the young man at center stage in John Osborne's play *Look Back in Anger*. Here is Jimmy Porter, griping as usual, and incidentally telling us im-

portant truths about the effect of nuclear weapons on public morality: “I suppose people of our generation aren’t able to die for good causes any longer. We had all that done for us, in the thirties and forties, when we were still kids. There aren’t any good, brave causes left. If the big bang does come, and we all get killed off, it won’t be in aid of the old-fashioned, grand design. It’ll just be for the Brave New nothing-very-much-I-thank you. About as pointless and inglorious as stepping in front of a bus.”

Jimmy Porter brings us back to where Haldane left us in 1924. The two world wars seemed totally different to the people who fought in them and lived through them from day to day, but they begin to look more and more alike as they recede into history. The first war began with the trumpet-blowing of Rupert Brooke and ended with the nightmares of Wilfred Owen. The second war began with the mourning of Day Lewis and ended with the anger of Jimmy Porter. In both wars, the beginning was young men going out to fight for freedom in a mood of noble self-sacrifice, and the end was a technological bloodbath which seemed in retrospect meaningless. In the first war, the idealism of Rupert Brooke perished and the trench-mortars of Haldane survived; in the second war, the idealism of Joe Dallet perished and the nuclear weapons of Robert Oppenheimer survived. In both wars, history proved that those who fight for freedom with the technologies of death end by living in fear of their own technology.

Oppenheimer’s activities as a scholar–soldier did not cease with the end of World War II. After the first Soviet nuclear test in 1949, he took the lead in pushing for a vigorous development of tactical nuclear weapons to be used by the United States Army for the defense of Western Europe. Here is the testimony of his friend Walt Whitman (the chemist, not the poet of that name) as a character witness on Oppenheimer’s behalf during the security hearings of 1954:

I should say that always Dr. Oppenheimer was trying to point out the wide variety of military uses for the bomb, the

small bomb as well as the large bomb. He was doing it in a climate where many folks felt that only strategic bombing was a field for the atomic weapon. I should say that he more than any other man served to educate the military to the potentialities of the atomic weapon for other than strategic bombing purposes; its use possibly in tactical situations or in bombing 500 miles back. He was constantly emphasizing that the bomb would be more available and that one of the greatest problems was going to be its deliverability, meaning that the smaller you could make your bomb in size perhaps you would not have to have a great big strategic bomber to carry it, you could carry it in a medium bomber or you could carry it even in a fighter plane. In my judgment his advice and his arguments for a gamut of atomic weapons, extending even over to the use of the atomic weapon in air defense of the United States, has been more productive than any other one individual.

As a consequence of his interest in tactical nuclear weapons, Oppenheimer traveled to Paris in November 1951 with three other people to talk with General Eisenhower, who was then in command of American forces in Europe. General Eisenhower was quickly persuaded that tactical nuclear weapons would help his armies to carry out their mission of defense. The six thousand NATO tactical warheads now in Europe are an enduring monument to Oppenheimer's powers of persuasion. I once asked him, long after he had lost his security clearance, whether he regretted having fought so hard for tactical nuclear weapons. He said, "No. But to understand what I did then, you would have to see the Air Force war plan as it existed in 1951. That was the Goddamnedest thing I ever saw. Anything, even the war plans we have now, is better than that." The 1951 war plan was, in short, a mindless obliteration of Soviet cities. I could sympathize with Oppenheimer's hatred of the Strategic Air Command mentality, having myself spent two years at the headquarters of the British Bomber Command. I recalled an evening which I spent at the bar of the Bomber Command Officers' Mess, at a time in 1944 when our

bombers were still suffering heavy losses in their nightly attacks on German cities. I listened then to a group of drunken headquarters staff-officers discussing the routes they would order their planes to take to Leningrad and Moscow in the war with Russia which they were looking forward to after this little business in Germany was over. Oppenheimer had heard similar talk in his encounters with the American Air Force. Compared with that, even a nuclearized army seemed to him to be a lesser evil.

Under the circumstances existing in 1951, the idea of tactical nuclear weapons made sense both militarily and politically. The circumstances included a substantial margin of superiority of American over Soviet nuclear forces, both in quantity of weapons and in means of delivery. The circumstances also included a war in Korea, with United States troops fighting hard to defend South Korea against a North Korean invasion supported by the Soviet Union. At that moment of history, Oppenheimer was facing a triple nightmare. He was afraid, first, that the Korean war would spread to Europe; second, that a local invasion of West Berlin or West Germany would be answered by the United States Air Force's 1951 war plan, which meant the nuclear annihilation of Moscow and Leningrad; third, that the surviving Soviet nuclear forces, unable to touch the United States, would take their revenge on Paris and London. It was reasonable to think that the worst part of this nightmare could be avoided if the United States could respond to local invasions with local use of nuclear weapons on the battlefield. Oppenheimer argued in 1951 that the possibility of a restrained and local use of nuclear weapons would strengthen the resolve of Western European governments and enable them to stand firm against Soviet demands. The same arguments for tactical nuclear weapons are still heard today, long after the disappearance of the American superiority which made them realistic.

The military doctrine of the NATO alliance is still based upon the possibility of first use of nuclear weapons by the allied armies to counter a Soviet non-nuclear invasion. How far this doctrine

departs from sanity can be vividly seen in the official U.S. Army field manual FM-101-3 1-1 on nuclear weapons employment. This field manual is an unclassified document, used for the training of United States officers and readily available to foreign intelligence services. It describes how the well-educated staff-officer should make his plans during tactical nuclear operations. Various examples are presented of fictitious nuclear engagements, each of them conducted in a style appropriate to an ROTC Field Day. Here is “an example of a corps commander’s initial guidance to his staff”:

Aggressor has organized the area between our current positions and the BLUE River for a determined defense. The decisive battle during the coming operation will be fought west of the BLUE River. Although we have a limited number of nuclear weapons for this operation, I am willing to expend 30 to 40 percent of our allocation in penetrating the Aggressor main and second defense belts, and advancing to the BLUE River. Corps fires will be used to engage Aggressor nuclear delivery means and those reserve maneuver forces which have the capability of adversely affecting the outcome of the battle. These fires will be delivered as soon as the targets are located.

Once we are across the BLUE River, we must be ready to exploit our crossings and move rapidly through the passes of the SILVER Mountains and seize the communications center of FOXVILLE. Be extremely cautious in planning the employment of nuclear weapons in the SILVER Mountains, as I want no obstacles to our advance created in these critical areas.

Weapons over 50 KT yield will not be allocated to divisions.

The problems of securing adequate intelligence concerning prospective nuclear targets are also discussed: “Delay of nuclear attacks until detailed intelligence is developed may impede the effectiveness of the attack. On the other hand, engagement of a target without some indication of its characteristics may cause an unwarranted waste of combat power.”

So the staff-officer receiving ambiguous reports of major enemy units moving through populated friendly territory must take upon himself the responsibility of deciding whether to risk “an unwarranted waste of combat power.” Fortunately, his task will be made easier by a well-designed system of nuclear bookkeeping. “Suggested forms or methods by which needed information can be kept at various staff agencies are discussed below.” Samples are provided of forms to be filled out from time to time, summarizing the numbers of nuclear weapons of various kinds expended and unexpended. Very little is said about the possible disruption of these arrangements by enemy nuclear bombardment. But at least the well-prepared staff-officer knows what to do in one possible contingency. Section 4.17.c on Nuclear Safety reads in its entirety: “Enemy duds are reported to the next higher headquarters.”

I ought to apologize to the authors of FM-101-31-1 for holding up their work to ridicule. They lack practical experience of nuclear warfare. When experience is lacking, the handbook-writer does the best he can, using a mixture of commonsense and imagination to fill the gaps in his knowledge. The handbook represents a sincere attempt to put Oppenheimer’s philosophy of local nuclear defense into practice. I have taken my quotations from the 1963 edition of FM-101-31-1, the latest edition that I have seen. But when all due allowances are made for the historical context out of which FM-101-31-1 arose, it is still a profoundly disquieting document.

No matter how FM-101-31-1 may have been revised since 1963, it remains true that the doctrines governing the use and deployment of tactical nuclear weapons are basically out of touch with reality. The doctrines are based on the idea that a tactical nuclear operation can be commanded and controlled like an ordinary non-nuclear campaign. This idea may have made sense in the 1950’s, but it certainly makes no sense in the 1980’s. I have seen the results of computer simulations of tactical nuclear wars under modern conditions, with thousands of warheads deployed on

both sides. The computer wars uniformly end in chaos. High-yield weapons are used on a massive scale because nobody knows accurately where the moving targets are. Civilian casualties, if the war is fought in a populated area, are unimaginable. If even the computers are not able to fight a tactical nuclear war without destroying Europe, what hope is there that real soldiers in the fog and flames of a real battlefield could do better?

The doctrines displayed in FM-101-31-1 are doubly dangerous. First, these doctrines deceive our own political leaders, giving them the false impression that tactical nuclear war is a feasible way to defend a country. Second, these doctrines spread around the world and give the military staffs of countries large and small the impression that every army wanting to stay ahead in the modern world should have its own tactical nuclear weapons too. If FM-101-31-1 had been stamped Top Secret it would not have been so harmful. In that case I would not have been talking about it here. But since our military authorities published it unclassified in order to give it a wide distribution, there is no point in trying to keep its existence a secret. The best thing to do in these circumstances is to call attention to its errors and inadequacies, so that people in military intelligence services around the world may not take it too seriously.

Fortunately, leaders of government in the United States and in Europe have come to understand that the purpose of the deployment of tactical nuclear weapons is primarily political rather than military. That is to say, the weapons are deployed as a demonstration of the American political commitment to the NATO alliance, not as a system of military hardware which could actually provide a meaningful defense of Europe. But this separation between political and military purposes of weapons is necessarily hedged about with ambiguities. On the one hand, the political sensitivities of NATO have imposed on the administration of tactical nuclear forces a command structure of unique complexity to ensure that the weapons will not be used irresponsibly. On the other hand,

the troops in the field have to be trained and indoctrinated using manuals like FM-101-31-1 which make the firing of nuclear weapons into a standard operating procedure. The whole apparatus for handling tactical nuclear weapons is schizophrenic, trying in vain to accommodate the incompatible requirements of multinational political control and military credibility.

In my opinion, tactical nuclear weapons deployed in forward positions overseas are fundamentally more dangerous to world peace than strategic weapons deployed in silos and in submarines. Tactical weapons are more dangerous for two major reasons. First, tactical weapons are in places where local wars and revolutions may occur, with unpredictable consequences. Second, tactical weapons are deployed, as strategic weapons are not, with a doctrine which allows United States forces to use them first in case of emergency. Many of the tactical weapons are in fact so vulnerable and so exposed that it would make no sense to deploy them in their present positions if the option of first use were renounced. The combination of local political instability with vulnerable weapons and the option of first use is a recipe for disaster. In many ways, it is a situation reminiscent of the Europe of 1914, when the instability of the Hapsburg Empire was combined with vulnerable frontiers and rigid mobilization schedules. Compared with the immediate danger that a local conflict in an area of tactical weapons deployment might escalate into nuclear chaos, the instabilities of the strategic arms race are remote and theoretical.

The United States has already made one important and unilateral move to mitigate the danger of the tactical weapons. The most absurdly dangerous of them all was the Davy Crockett, a nuclear trench-mortar with a low-yield warhead which was supposed to be carried by small mobile units. FM-101-31-1 says (p. 38), "Allocate some Davy Crockett weapons to the cavalry squadron," A nuclear-armed cavalry squadron is a fine example of military euphemism. In reality it meant that Davy Crocketts were deployed in jeeps which were theoretically free to roam around the

countryside. The Army decided that this was carrying nuclear dispersal too far. It was impossible to guarantee the physical security of the Davy Crocketts if they were allocated to small units as originally intended. Dispersal in small units also increased substantially the risk of unauthorized firing in case of local hostilities or breakdown of communications. So the Army wisely withdrew the Davy Crocketts from service and shipped them home, achieving thereby a real diminution in the risk of war at no political cost.

The same logic which got rid of the Davy Crocketts would dictate a continued withdrawal, unilateral or bilateral, of other tactical weapons, starting with those which because of their short range have to be deployed closest to the front line. Nuclear artillery shells would be a good candidate for the next round of withdrawals. The chief virtue of nuclear artillery was its high accuracy compared with the rockets of twenty years ago. Now the accuracy of rocket guidance is comparable with the accuracy of artillery. Guns are considerably more cumbersome and more vulnerable than rockets. Nuclear guns have to be placed in forward positions to be effective, they are hard to move quickly, and they are in danger of being overrun whenever there is a local breakthrough of enemy forces. If nuclear shells were not already deployed in our armies overseas, nobody would now dream of introducing them. Their military value is marginal, and they increase the risk that small-scale battles may involve us in unintended nuclear hostilities. They could be withdrawn, like the Davy Crocketts, with a substantial net gain to our security.

It is a strange paradox of history that the greatest present danger of nuclear war arises from these tactical weapons which Oppenheimer promoted with such good intentions during his period of political ascendancy. Oppenheimer pushed tactical nuclear weapons because they offered a counterweight to the Strategic Air Command in the interservice rivalries of the Truman administration, and because they offered a counterweight to Soviet tank armies in case of a war in Western Europe. It is clear that

his actions were dominated by short-term considerations. There is no evidence that he ever considered the long-range consequences tactical nuclear weapons would inevitably entail, the massive Soviet response and the permanently increased risk of nuclear war arising by accident or miscalculation.

What are we to learn from this melancholy story? The main lesson, it seems to me, is that if we want to save the world from the horrors of nuclear war we must begin by winning over the soldiers to our side. It is not enough to organize scientists against nuclear war, or physicians against nuclear war, or clergymen against nuclear war, or even musicians against nuclear war. We need captains and generals against nuclear war. We need to persuade the soldiers in all countries, and especially the young men who will be the next generation of military leaders, that they cannot decently fight with nuclear weapons. The elimination of nuclear weapons must be presented to the public as a response to the demands of military honor and self-respect, not as a response to fear.

It is good to make people afraid of nuclear war. But fear is not enough. The generation which grew up after World War I was well indoctrinated in the horrors of trench warfare. Whether or not they read Haldane and Wilfred Owen, they met every day the widows and orphans and crippled survivors of the war. They looked back to the slaughters of Verdun and Passchendaele as we look back to the slaughter of Hiroshima, and they were properly afraid. Pacifist movements flourished in the 1920's and 1930's, and disarmament programs enjoyed wide public support. The fear of a repetition of World War I was real and almost universal. But human beings, for better or for worse, are so constituted that they are not willing to let their lives be ruled for very long by fear, Pride, anger, impatience, and even curiosity are stronger passions than fear. Thousands of men, including one of my uncles, lost their lives in World War I because their curiosity got the better of their fear. They could not resist the urge to stick their heads up

out of the trench to see what was happening. Thousands more, including Joe Dallet, lost their lives in a hopeless cause in Spain because their fear was weaker than their anger. There is a deep force in the human spirit which drives us to fight for our freedoms and hang the consequences. Even the fear of nuclear holocaust is not strong enough to prevail against this force. When the trumpets sound and the cause is perceived to be just, young men of spirit, whether they are revolutionaries like Dallet or scholars like Oppenheimer, will lay aside their fears and their misgivings to join the parade, joyfully submitting themselves to the necessities of military discipline; for as Oppenheimer wrote to his brother, "only through them can we attain to the least detachment; and only so can we know peace."

We cannot defeat with fear alone the forces of misguided patriotism and self-sacrifice. We need above all to have sound and realistic military doctrines, doctrines which make clear that the actual use of nuclear weapons cannot either defend our country or defend our allies, that the actual use of nuclear weapons in a world of great powers armed with thousands of warheads cannot serve any sane military purpose whatever. If our military doctrines and plans once recognize these facts, then our military leaders may be able to agree with those of our allies and our adversaries upon practical measures to make the world safer for all of us. If our soldiers once understand that they cannot defend us with nuclear weapons, they may contribute their great moral and political influence to help us create a world in which non-nuclear defense is possible. In England, Lord Mountbatten and Field Marshal Lord Carver have made a good beginning.

The human situation, sitting naked under the threat of nuclear war, is desperate but not hopeless. One hopeful feature of our situation is the demonstrable idiocy of the military plans and deployments typified by Army Field Manual FM-101-31-1. There is a real hope that the soldiers in various countries may rebel against such idiocies and demand a world in which they can fulfill

their honorable mission of national defense. The scholar–soldier Robert Oppenheimer persuaded General Eisenhower in 1951 that the American army needed tactical nuclear weapons. The world is now waiting for another scholar–soldier, or for a soldier who is not a scholar, to help us move back along the long road from the illusory world of FM-101-31-1 to a world of sanity.

II. THE QUEST FOR CONCEPT

I borrowed my title “The Quest for Concept” from my Princeton colleague George Kennan. He wrote an essay with this title fifteen years ago. I decided that Kennan’s way of looking at things is the best way to come to grips with the problems of nuclear weapons, and so I have adopted Kennan’s title as my own. This does not mean that Kennan is responsible for what I shall say. It means that I have accepted Kennan’s fundamental standpoint, that we shall not succeed in dealing with the political and technical problems of controlling our weapons until we have agreed upon a coherent concept of what the weapons are for.

Kennan wrote his “Quest for Concept” in 1967, when the Vietnam tragedy was still unfolding and no end was in sight. His final sentences express the hope that sustained him through those dark days, a hope that should also sustain us today as we struggle to deal with the enduring problems of nuclear armaments:

It remains my hope that if the Vietnam situation takes a turn that permits us once again to conduct our affairs on the basis of deliberate intention rather than just yielding ourselves to be whip-sawed by the dynamics of a situation beyond our control, we will take up once more the quest for concept as a basis for national policy. And I hope that when we do, what we will try to evolve is concept based on a modest unsparing view of ourselves; on a careful examination of our national interest, devoid of all utopian and universalistic pretensions; and upon a sober, discriminating view of the world beyond our

borders — a view that takes account of the element of relativity in all antagonisms and friendships, that sees in others neither angels nor devils, neither heroes nor blackguards; a concept, finally, which accepts it as our purpose not to abolish all violence and injustice from the workings of international society but to confine those inevitable concomitants of the human predicament to levels of intensity that do not threaten the very existence of civilization.

If concept could be based on these principles, if we could apply to its creation the enormous resources of intelligence and ingenuity and sincerity that do exist in this country, and if we could refine it and popularize it through those traditional processes of rational discussion and debate on the efficacy of which, in reality, our whole political tradition is predicated, then I could see this country some day making, as it has never made to date, a contribution to world stability and to human progress commensurate with its commanding physical power.*

Today I shall try to carry forward into the areas of weapons and strategy the process of rational discussion and debate upon which Kennan rested his hope for the future. We now possess weapons of mass destruction whose capacity for killing and torturing people surpasses all our imaginings. The Soviet government has weapons that are as bad or worse. We have been almost totally unsuccessful in halting the multiplication and proliferation of these weapons. Following Kennan's lead, I want to ask some simple questions. What are these weapons for? What are the concepts which drive the arms race, on our side and on the Soviet side? Since the existing concepts have led us into a situation of mortal danger with no escape in sight, can we find any new concepts which might serve our interests better? Can we find a concept of weaponry which would allow us to protect our national interests without committing us to threaten the wholesale massacre of innocent people? Above all, a concept should be robust; robust

* Published as "In American Foreign Policy: The Quest for Concept," in *Harvard To-day* (Autumn 1967), pp.11–17.

enough to survive mistranslation into various languages, to survive distortion by political pressures and interservice rivalries, to survive drowning in floods of emotion engendered by international crises and catastrophes.

General Sir Archibald Wavell, who commanded British forces in the Middle East in World War II published an anthology of poetry and also a book on generalship. I quote now from his book on generalship. "Whenever in the old days a new design of mountain gun was submitted to the Artillery Committee, that august body had it taken to the top of a tower, some hundred feet high, and thence dropped onto the ground below. If it was still capable of functioning it was given further trial; if not, it was rejected as flimsy." Wavell remarked that he would like to be allowed to use the same method when choosing a general. His suggestion applies equally well to the choice of strategic concepts. Any concept which is to succeed in regulating the use of weapons must be at least as robust as the weapons themselves or the generals who command them. A test of robustness for a concept, roughly equivalent to Wavell's hundred-foot drop for a mountain gun, is the process of verbal mauling which occurs in the public budgetary hearings of the committees of the United States Senate and House of Representatives.

The present nuclear strategy of the United States is based upon a concept which was definitively stated by Secretary of Defense McNamara in 1967. "The cornerstone of our strategic policy continues to be to deter deliberate nuclear attack upon the United States or its allies by maintaining a highly reliable ability to inflict an unacceptable degree of damage upon any single aggressor or combination of aggressors at any time during the course of a strategic nuclear exchange, even after our absorbing a surprise first strike."

A year earlier, McNamara had given a less formal definition of the concept. "Offensive capability or what I will call the capability for assuring the destruction of the Soviet Union is far and away the most important requirement we have to meet."

The concept is called Assured Destruction because of McNamara's choice of words. It is also sometimes called Mutual Assured Destruction, with the implication that the Russians possess the same capability for destroying us as we possess for destroying them and that Soviet strategy should be based on the same concept as our strategy. I will discuss Soviet strategy a little later. One thing that emerges clearly from Soviet doctrines is that the Soviet Union does not accept Mutual Assured Destruction as a strategic goal. The word mutual is therefore misleading. It is better to call our concept Assured Destruction and to let the Russians speak for themselves.

Assured Destruction has at least the virtue of robustness. McNamara never had any difficulty in explaining it to congressional committees. It survived untouched the Vietnam War and the attendant political upheavals which changed so many other aspects of American life and incidentally put an end to McNamara's tenure as Secretary of Defense. It still survives today as the ruling principle of American weapons deployment and of American conduct of arms-control negotiations. The words "assured destruction" are clear and unambiguous, and their meaning survives translation into Russian. The ability to survive translation is an important virtue. Endless trouble and misunderstanding was caused by the word "deterrence," which is a slippery concept in English and is usually translated into Russian as *ustrashenie*. It turns out that the word *ustrashenie* really means "intimidation," and so it was not surprising that discussions with Russians about deterrence proved frustrating to all concerned. There is no such difficulty with Assured Destruction. Assured Destruction means exactly what it says. It means, no matter what you do and no matter what happens to us, we retain the capability to bomb you back into the Stone Age.

I make a sharp distinction between Assured Destruction as a fact and Assured Destruction as a concept. It is a fact that we can assuredly destroy any country in the world, including our own,

any time we feel like it. It is a fact that the Soviet Union can do the same. These are facts with which I have no quarrel. But the concept of Assured Destruction means something else. The concept means that we adopt as the ruling principle of foreign policy the perpetuation of this state of affairs. The concept means that we actively desire and pursue the capability for Assured Destruction, with a priority overriding all other objectives. That is what McNamara said: "Assured Destruction is far and away the most important requirement we have to meet." That is still the concept underlying United States policy today. Assured Destruction must come first; everything else, including our own survival, second. It is this concept of Assured Destruction, making it into the primary objective of our policy, which I wish to challenge. The fact of Assured Destruction is at the moment inescapable. The concept of Assured Destruction as a permanently desirable goal is, to my mind, simply insane.

The new strategic doctrine enunciated by President Carter in Presidential Directive 59 in 1980 does not change this concept. I cannot discuss PD 59 in detail, because I do not know what it says, and I do not even know anybody who has seen the document itself. From Secretary of Defense Brown's description of PD 59 it is clear that it leaves intact the concept of Assured Destruction as the primary purpose of strategic forces. What PD 59 apparently does is to add to assured destruction a number of preliminary stages, so that we can theoretically carry out various "lower-level" nuclear attacks on military and political targets in the Soviet Union while keeping the weapons needed for assured destruction in reserve. It is irrelevant to my argument whether the idea of lower-level nuclear attacks is realistic or illusory. In either case, as Secretary Brown said, the new doctrine describes only an embellishment and not an abandonment of previous concepts.

There are three compelling reasons why we should oppose the concept of Assured Destruction. First, it is immoral. Second, it is in the long run suicidal. Third, it is not shared by the Soviet Union,

and therefore it stands in the way of any satisfactory and permanent arms-control agreement. I think I do not need to spell out why it is immoral to base our policy upon the threat to carry out a massacre of innocent people greater than all the massacres in mankind's bloody history. But it may be worthwhile to remind ourselves that a deep awareness of the immorality of our policy is a major contributory cause of the feelings of malaise and alienation which are widespread among intelligent Americans and of the feelings of distrust with which the United States is regarded by people overseas who might have been our friends. An immoral concept is not only bad in itself but also has a corrosive effect upon our spirits. It deprives us of our self-respect and of the good opinion of mankind, two things more important to our survival than invulnerable missiles.

I also do not need to spell out why the concept of Assured Destruction is ultimately suicidal. The concept rests on the belief that, if we maintain under all circumstances the ability to do unacceptable damage to our enemies, our weapons will never be used. We all know that this idea makes sense so long as quarrels between nations are kept under control by statesmen weighing carefully the consequences of their actions. But who, looking at the historical record of human folly and accident which led us into the international catastrophes of the past, can believe that careful calculation and rational decision will prevail in all the crises of the future? Inevitably, if we maintain Assured Destruction as a permanent policy, there will come a time when folly and accident will surprise us again as they surprised us in 1914. And this time the guns of August will be shooting with thermonuclear warheads,

The third defect of Assured Destruction as a concept is that it is not shared by the Soviet Union. Soviet leaders have told us repeatedly in no uncertain terms that they reject it. They have told us that they consider the deliberate destruction of civilian populations to be a barbarous concept and that their strategic forces will

never be used for that purpose. I am not an expert on Soviet strategic doctrine, but I think there is good reason to believe that they mean what they say. The counterpart to McNamara's statement of our concept of Assured Destruction is the statement made in 1971 by the Soviet Minister of Defense, the late Marshal Grechko. Here is Marshal Grechko speaking: "The Strategic Rocket Forces, which constitute the basis of the military might of our armed forces, are designed to annihilate the means of the enemy's nuclear attack, large groupings of his armies, and his military bases; to destroy his military industries; and to disorganize the political and military administration of the aggressor as well as his rear and transport."

I am not claiming that Marshal Grechko's concept is gentler or more humane than McNamara's, but it is certainly different. Grechko did not design his forces with the primary mission of doing unacceptable damage to our society. Their primary mission is to put our military forces out of action as rapidly and as thoroughly as possible. Unacceptable damage to our population will be a probable consequence of their use, but it is not their main purpose. The technical name for Marshal Grechko's concept is Counterforce. Counterforce means that your ultimate purpose is to ensure the survival of your own society by destroying the enemy's weapons. Your immediate objective is to disarm him, not to destroy him.

There are many cultural and historical reasons why the counterforce concept fits better into the Russian than into the American way of thinking about war. The first and most important fact to remember about Russian generals is that they start out by reading Tolstoy's *War and Peace*. Their whole experience of war and peace in the years since 1914 has confirmed the truth of Tolstoy's vision. War according to Tolstoy is a desperate chaos, largely beyond human understanding and human control. In spite of terrible blunders and terrible losses, the Russian people in the end win by virtue of their superior discipline and powers of endurance.

All this is entirely alien to the American view of thermonuclear war as a brief affair, lasting a few hours or days, with the results predictable in advance by a computer calculation like a baseball score, so many megadeaths on one side and so many megadeaths on the other. Assured destruction makes sense if war is short, calculable, and predictable. Counterforce makes sense if war is long-drawn-out and unpredictable, and the best you can do is to save as many lives as you can and go on fighting with whatever you have left. I happen to believe that the Russian view of war, being based on a longer historical experience, is closer to the truth than ours. That is not to say that their concept of counterforce is free of illusions. Neither assured destruction nor counterforce is to me an acceptable concept. If I had to make a choice between them, I would choose counterforce as less objectionable on moral grounds. But neither assured destruction nor counterforce answers our most urgent need, which is to find a concept which both sides can understand and accept as a basis for arms-control negotiations.

The tragedy of the SALT negotiations, in my opinion, arose out of the basic incompatibility of the American and Soviet strategic concepts. The Soviet concept of counterforce says, "whatever else happens, if you drive us to war, we shall survive." The American concept of assured destruction says, "whatever else happens, if you drive us to war, you shall not survive." It is impossible to find, even theoretically, any arrangement of strategic forces on the two sides which satisfies both these demands simultaneously. That is why no satisfactory treaty can emerge from arms control negotiations so long as the concepts on the two sides remain as they are. The SALT II treaty was better than no treaty at all, but it was a miserable thing, unloved even by its friends, demonstrating the bankruptcy of the strategic concepts that gave it birth. If that is the best that our present concepts can do for us, then let us in God's name look for some better concepts.

When one contemplates the barbarity and insanity of our existing weapons and the plans for their further multiplication, one is

tempted to say that there is no hope of salvation in any concept that does not reject them unconditionally. Perhaps it is true that we would be better off rejecting nuclear weapons unilaterally and unconditionally, irrespective of what other countries may decide to do. But unilateral disarmament is not by itself a sufficient basis for a foreign policy. Unilateral disarmament needs to be supplemented by a concept stating clearly what we are to do after we have disarmed, if we are confronted by hostile powers making unacceptable demands. There is a concept which deals with this question in a morally and intellectually consistent way, namely the concept of nonviolent resistance. Nonviolent resistance is not the same thing as surrender. Morally, nonviolent resistance and surrender are at opposite poles. The concept of nonviolent resistance says simply: "You shall not obey unjust laws, you shall not collaborate with unjust authorities, and you shall not shed any man's blood except your own."

Everybody who thinks seriously about nuclear weapons must sooner or later face in his own conscience the question whether nonviolence is or is not a practical alternative to the path we are now following. Is nonviolence a possible basis for the foreign policy of a great country like the United States? Or is it only a private escape-route available to religious minorities who are protected by a majority willing to fight for their lives? I do not know the answers to these questions. I do not believe that anybody knows the answers.

Gandhi in the 1930's made nonviolent resistance the basis of an effective political campaign against British rule in India. All of us young Englishmen who were against the Establishment and against the Empire acclaimed Gandhi as a hero, and many of us became believers in his concept of nonviolence. Then came Hitler. Hitler presented us with a dilemma. On the one hand, we still believed theoretically in the ethic of nonviolence. On the other hand, we looked at what was happening in Europe and said, "But unfortunately nonviolent resistance will not be effective against

Hitler.” So in the end, almost all of us abandoned our allegiance to nonviolence and went to war against Hitler. It seemed to us at the time that there was no effective alternative to guns and bombs if we wanted to preserve our lives and liberty. Most people today would say that we were right.

Now, forty years later, a book called *Lest Innocent Blood Be Shed* has been written by Philip Hallie, telling the story of a French village which chose the path of nonviolent resistance to Hitler.* It is a remarkable story. It shows that nonviolence could be effective, even against Hitler. The village of Le-Chambon-sur-Lignon collectively sheltered and saved the lives of many hundreds of Jews through the years when the penalty for this crime was deportation or death. The villagers were led by their Protestant pastor André Trocmé, who had been for many years a believer in nonviolence and had prepared them mentally and spiritually for this trial of strength. When the Gestapo raided the village from time to time, Trocmé’s spies usually gave him enough warning so that the refugees could be hidden in the woods. German authorities arrested and executed various people who were known to be leaders in the village, but the resistance continued unbroken. The only way the Germans could have crushed the resistance was by deporting or killing the entire population. Nearby, in the same part of France, there was a famous regiment of SS troops, the Tartar Legion, trained and experienced in operations of extermination and mass brutality. The Tartar Legion could easily have exterminated Le Chambon. But the village survived. Even Trocmé himself, by a series of lucky accidents, survived.

Many years later Trocmé discovered how it happened that the village had survived. The fate of the village was decided in a dialogue between two German soldiers, representing precisely the bright and the dark sides of the German soul. On the one side, Colonel Metzger — an appropriate name meaning in German

* *Lest Innocent Blood Be Shed: The Story of the Village of Le Chambon and How Goodness Happened There* (New York: Harper and Row, 1979).

“Butcher” — commander of the Tartar Legion, killer of civilians, executed after the liberation of France as a war criminal. On the other side, Major Schmebling, Bavarian Catholic and decent German officer of the old school. Both Metzger and Schmebling were present at the trial of Le Forestier, a medical doctor in Le Chambon who was arrested and executed as an example to the villagers. “At his trial,” said Schmebling, when he met Trocmé many years later, “I heard the words of Dr. Le Forestier, who was a Christian and explained to me very clearly why you were all disobeying our orders in Le Chambon. I believed that your doctor was sincere. I am a good Catholic, you understand, and I can grasp these things Well, Colonel Metzger was a hard one, and he kept on insisting that we move in on Le Chambon. But I kept telling him to wait. I told Metzger that this kind of resistance had nothing to do with violence, nothing to do with anything we could destroy with violence. With all my personal and military power I opposed sending his legion into Le Chambon.”

That was how it worked. It was a wonderful illustration of the classic concept of nonviolent resistance. You, the doctor Le Forestier, die for your beliefs, apparently uselessly. But your death reaches out and touches your enemies, so that they begin to behave like human beings. Some of your enemies, like Major Schmebling, are converted into friends. And finally even the most hardened and implacable of your enemies, like the SS colonel, are persuaded to stop their killing. It happened like that, once upon a time, in Le Chambon.

What did it take to make the concept of nonviolent resistance effective? It took a whole village of people, standing together with extraordinary courage and extraordinary discipline. Not all of them shared the religious faith of their leader, but all of them shared his moral convictions and risked their lives every day to make their village a place of refuge for the persecuted. They were united in friendship, loyalty, and respect for one another.

So I come back to the question: what would it take to make the concept of nonviolent resistance into an effective basis for the

policy of a country? It would take a whole country of people standing together with extraordinary courage and extraordinary discipline. Can we find such a country in the world as it is today? Perhaps we can, among countries which are small and homogeneous and possess a long tradition of quiet resistance to oppression. But how about the United States? Can we conceive of nonviolent resistance as an effective concept for the foreign policy of the United States? Reluctantly I have to answer this question in the negative. Nonviolence is a noble concept, and in many domestic situations within the United States, a practical concept, as Martin Luther King and others have demonstrated, But for the guiding concept of American foreign policy, nonviolent resistance lacks the essential quality of robustness. It could never survive the shock of a major international crisis, nor even the sniping of congressional committees going about their political business as usual.

I led you into this digression and spoke about André Trocmé and Le Chambon because I consider that our existing weapons and concepts are morally unacceptable and that every possible alternative road, no matter how radical or impractical, ought to be examined carefully. The digression is now at an end. Reluctantly I have to end the discussion of nonviolence, so far as United States foreign policy is concerned, with the question which Bernard Shaw puts at the end of his play *Saint Joan*:

O God that madest this beautiful earth,
when will it be ready to receive Thy
Saints? How long, O Lord, how long?

I come back to the main road, the Street without Joy of national nuclear policies. I am trying to find a middle way between the concepts of Assured Destruction and nonviolent resistance, between Robert McNamara and André Trocmé. I believe there is such a middle way, and I believe my friend Donald Brennan knew roughly where it lies. Donald Brennan, alas, died two years ago at the age of fifty-four. I quote now from his testimony to the House

Foreign Affairs Committee of the US. Congress on July 17, 1969: "Let us consider two principles. The first principle is that, following any Soviet attack, we should be able to do at least as badly to the Soviets as they had done to us." Donald Brennan liked to call this principle the "Brass Rule," meaning that it is a debased form of the Golden Rule which says you should do unto others what you wish they would do unto you. Note that this principle does not require us to do very badly unto the Soviets if they cannot do very badly unto us.

"The second principle is that we should prefer live Americans to dead Russians, whenever a choice between the two presents itself. The Soviets may be expected to prefer live Russians to dead Americans, and therein resides the basis for an important common interest; we may both prefer live Americans and live Russians." Brennan ends by explaining why his second principle, the preference for live Americans over dead Russians, is controversial. It is controversial because it says that Assured Destruction is not desirable as a way of life. Assured Destruction may be necessary when no alternative is available, but we should not prefer it.

The concept which Donald Brennan advocated is called by the experts in arms control "Parity plus Damage-Limiting." I prefer to call it "Live-and-Let-Live." Perhaps it may be important to use a name for it which the public can understand. Donald Brennan was unfortunately an experts' expert, expressing his strategic concept in technical language which had little public impact. I believe the name "Live-and-Let-Live" accurately describes his concept and does not conceal its profound moral implications. To summarize Brennan's statement once again, his concept says: "We maintain the ability to damage you as badly as you can damage us, but we prefer our own protection to your destruction." I believe that this concept fits, as Assured Destruction does not, George Kennan's requirement that a concept should be modest, unpretentious, and free from apocalyptic overtones.

Live-and-Let-Live is a concept which should rule over all areas of our foreign policy, not only over the technical issues of the strategic arms race. Live-and-Let-Live should have a major impact on the weapons which we and our allies deploy in Western Europe and on the political problems which surround the control and use of these weapons. The tactical nuclear weapons in Western Europe make sense only as a component of an Assured Destruction strategy. If they are ever used, they will bring Assured Destruction immediately to Western Europe and with high probability to the Soviet Union and the United States too. The Live-and-Let-Live concept implies that we no longer regard tactical nuclear weapons as a satisfactory solution to the problem of European security. The ultimate objective of our policy must be to get rid of tactical nuclear weapons altogether. I have no illusion that we can get rid of tactical nuclear weapons quickly or easily. I am saying only that it is an even greater illusion to imagine that we can go on living with them forever.

Two technical factors ought to help us to move toward a Live-and-Let-Live strategy in Europe. First, our professional soldiers recognize the cumbersomeness of the nuclear weapon command structure and the extreme vulnerability of the whole tactical nuclear weapon apparatus to a Soviet preemptive strike. Second, the development of precision-guided munitions — which is the technical name for small, cheap, accurate, non-nuclear missiles capable of destroying tanks and airplanes — offers a realistic substitute for tactical nuclear weapons in the defense of Europe against a Soviet invasion. It is quite wrong to claim, as some enthusiasts for precision-guided munitions have claimed, that these are magic weapons which will solve our military problems in Europe overnight. There are no magic weapons. But there are good as well as bad military technologies. A good military technology is one which leads away from weapons of mass destruction toward weapons which allow people to defend their homeland against invasion without destroying it. The technology of precision-guided muni-

tions is good in this sense. It is reasonable to imagine a hopeful evolution of affairs in Europe, with the technology evolving away from nuclear weapons toward precision-guided non-nuclear weapons, and with the political authorities evolving away from Assured Destruction toward Live-and-Let-Live. Technical and political development must go hand in hand, each helping the other along.

The defense of Western Europe lies at the heart of our fatal involvement with nuclear weapons. Both tactical and strategic nuclear forces grew up in the context of the military confrontation between East and West in Europe. It is important to understand the difference between the Eastern and the Western concepts of nuclear weapons as they relate to the European situation. And it is important to understand the difference between the concepts of first use and first strike. The American doctrine says that we are prepared to use tactical nuclear weapons first if this is necessary to stop a non-nuclear invasion of Western Europe, but we do not contemplate using strategic weapons first in a direct attack on the Soviet Union. That is to say, American doctrine allows first use but forbids first strike. Soviet doctrine says that the Soviet Union will never be the first to introduce nuclear weapons into a non-nuclear war, but that the Soviet Union is prepared to respond to any Western use of tactical nuclear weapons on the battlefield with a strategic attack on the United States and its allies. That is to say, Soviet doctrine forbids first use but allows first strike. There are good and valid geographical reasons why first use seems good to us and bad to them while first strike seems good to them and bad to us. Unfortunately, the general public and the politicians on both sides do not understand the difference. Our people feel threatened when they hear that Russian doctrine allows first strike, and the Russians feel threatened when they hear that our doctrine allows first use.

What hope is there of escape from this web of threats and misunderstandings? A useful first step would be to educate the public so that the public knows the difference between first use and first

strike. After that, it might be possible to discuss strategic doctrines publicly with some degree of rationality. Ultimately, we might be able to negotiate some kind of bargain with the Soviet Union in which we agree to give up the capability for first use while they give up the capability for first strike. A trade-off of first use against first strike capabilities would not only improve the security of both sides but would also, more importantly, diminish the psychological anxieties which drive the arms race. Such a trade-off should certainly be one of the immediate objectives of a Live-and-Let-Live strategy.

George Kennan has been the most thoughtful and consistent opponent of our first use doctrine, and I am delighted to see in a recent issue of *Foreign Affairs* that McNamara has publicly joined him in opposition to First Use. "I would submit," Kennan wrote in 1959, "that the first thing we have to do in order to put ourselves in a position to negotiate hopefully for an abolition of nuclear weapons, or indeed to have any coherent strategy of national defense, is to wean ourselves from this fateful and pernicious principle of first use." Kennan's words are as true now as they were twenty-three years ago. A simple No-First-Use declaration by the United States would be of enormous importance in lessening the risk of the outbreak of nuclear war. Recently a distinguished panel of military experts contemptuously dismissed the idea of a No-First-Use declaration on the ground that "declarations like that get put aside in the first moments of conflict." This shows that the panel did not understand what a No-First-Use declaration is designed to do. The purpose of a No-First-Use declaration is not to constrain the use of weapons in wartime but to constrain the deployment of weapons in peacetime. When Country A signs a No-First-Use declaration, the effect is to force the military authorities in Country A to take into account the possibility that the political authorities in Country A may actually mean what they say. This means that Country A is forced to go to the trouble of hardening and concealing its weapons or withdraw-

ing them from exposed positions where they would be vulnerable to preemptive attack. The effect is to make Country A's deployments more survivable and at the same time less threatening to neighboring countries. The risk of war is reduced by these changes in peacetime deployments, not by any possible direct effect of a No-First-Use declaration in wartime.

Now suppose that two hostile countries A and B both sign a No-First-Use declaration. The effectiveness of the declaration in constraining Country A's deployments does not depend at all upon Country A believing that Country B is sincere. On the contrary, the more Country A mistrusts Country B's intentions, the stronger the effect of the declaration in discouraging Country A from unstable deployments. For the declaration to be effective, it is necessary only that Country A considers Country B not entirely trustworthy and Country A not entirely untrustworthy and vice versa. These conditions are rather well satisfied in the real world in which we are living.

The practical relevance of these considerations is most clearly seen in the contrast between U.S. deployment policies for strategic and tactical weapons. The U.S. strategic forces are deployed under our No-First-Strike policy, with the result that there is strong emphasis on hardening and concealment. Our tactical nuclear weapons in Europe and elsewhere are not subject to No-First-Use constraints, with the result that they are far more exposed and vulnerable. I believe that the tactical weapons are more likely than the strategic weapons to get us into bad trouble, and I believe that a No-First-Use declaration covering the tactical nuclear weapons of the NATO alliance would substantially reduce the danger of nuclear war. Of course, a NATO No-First-Use declaration would imply a drastic change in NATO force-structure and strategy, which just goes to show that the declaration would not be as empty of meaning as the panel of military experts supposed.

But I will not digress further into the complexities of First Use and First Strike. Let me come back to the strategic weapons.

I must try to tell you briefly what Live-and-Let-Live means for our strategic policy. First of all, it means no MX. And it means not just saying no to the Racetrack deployment of MX, but saying no to the MX missile in any shape or form. MX is a big step in the wrong direction from almost every point of view. But the question whether or not we deploy a particular weapon such as the MX is not the crucial issue. The far more important consequence of the Live-and-Let-Live concept is that it allows us, or rather compels us, to reorient our deployment strategies and our negotiating policies so that we are prepared in principle to go all the way to a world from which nuclear weapons have been eliminated entirely. So long as we stay with the concept of Assured Destruction, we cannot even contemplate negotiating the numbers of nuclear weapons all the way down to zero; we cannot even offer to our grandchildren any realistic hope of living in a non-nuclear world. The essence of the Live-and-Let-Live concept is that it releases us from inevitable and permanent dependence upon nuclear weapons. It allows us to work toward a future in which strategic offensive deployments are drastically reduced or altogether prohibited. It allows us to prepare in a realistic way to deal with the problems of international security in a non-nuclear world.

To achieve agreements drastically reducing numbers of offensive weapons, and to provide some assurance against clandestine violations, a deployment of non-nuclear missile defenses is likely to be helpful. In the long run, the transition from a world of Assured Destruction to a world of Live-and-Let-Live must be accompanied by a transfer of emphasis from offensive to defensive weapons. When we are talking about defensive weapons in general and about ballistic missile defense in particular, it is essential to make a sharp distinction between ends and means. Our experts in the arms control community have never maintained this distinction. They are so convinced of the technical superiority of offensive over defensive weapons that they let the means determine the ends, I say that we have no hope of escape from the trap we are

in unless we follow ends which are ethically acceptable. The end must determine the means, and not vice versa. The only acceptable end that I can see, short of a disarmed world, is a non-nuclear and defensively-oriented world. Perhaps we may be lucky enough to jump to the disarmed world without going through the intermediate step of a defensive world. But at least we ought to consider seriously the question whether the defensive world is an end worth striving for. This question must come first. Only afterwards comes the question of means.

Defense is not technically sweet. The primal sin of scientists and politicians alike has been to run after weapons which are technically sweet. Why must arms-controllors fall into the same trap? There is a terrible arrogance in the statement that defense is hopeless and should therefore be forbidden. Nobody can possibly foresee the state of the world ten years ahead, let alone fifty. If a defensively-oriented world is an end worth striving for, and if we pursue it diligently with all the available means, especially with moral and political as well as technical means, we have a good chance of success. The burden is on the opponents of defense to prove that a defensive world is politically impossible. It is not enough for them to say, we didn't solve the decoy discrimination problem.

Opponents of defense often claim that a defensive strategy is unfeasible because defensive weapons don't work. Whether this claim is valid depends on what we mean by the word "work." If we mean by "work" that a weapon should save our lives in the event of a nuclear war, then defensive weapons do not work and offensive weapons do not work either. If we mean by "work" that a weapon should save those targets which are not attacked, then defensive weapons work very well and offensive weapons do too. In the real world the question whether weapons "work" is equally ambiguous and uncertain, whether the weapons are offensive or defensive. We cannot be sure that weapons of any kind will save our skins if worst comes to worst. We cannot be sure that either defensive or offensive weapons will be useless in discouraging

madmen from murdering their neighbors. So there are no compelling technical grounds for choosing an offensive rather than a defensive strategy as a basis for our long-term security. The choice ought to be made on political and moral grounds. Technology is a good servant but a bad master. If we decide on moral grounds that we choose a non-nuclear defense-dominated world as our long-range objective, the political and technological means for reaching the objective will sooner or later be found, whether the means are treaties and doctrines or radars and lasers.

I have described in very brief and inadequate fashion some possible steps by which we might move from a nuclear offensive-dominated world to a non-nuclear defensive-dominated world, from a world of Assured Destruction to a world of Live-and-Let-Live. This great and difficult transition could only be consummated if both the United States and the Soviet Union were to adopt the Live-and-Let-Live concept as the basis of their policies. As we know from Marshal Grechko and others, the Soviet Union at present believes in Counterforce and not in Live-and-Let-Live. That is to say, the Soviet Union in general prefers to be able to destroy our weapons rather than to defend itself against them. It is likely that the Soviet preference for counterforce will last for some time. So long as the Soviet Union stays with the counterforce concept, we shall not achieve a defense-dominated world. But even now, we shall be in a safer and more stable situation if we unilaterally move to a Live-and-Let-Live policy than if we stay with Assured Destruction. For us to adopt unilaterally a Live-and-Let-Live concept does not mean that we let down our strategic guard or that we put our trust in Soviet good will or that we change our opinions of the nature of Soviet society. It merely means that we change the primary objective of our strategic deployment from the Assured Destruction of Soviet society to the Assured Survival of our own.

I would like to end as I began with some words of hope. I shall quote again from the essay of George Kennan which gave

me the theme for this lecture. Kennan is describing the concept which he advocated as a basis for a rational American foreign policy in the years immediately following the Second World War.

We in the Planning Staff were concerned to restore an adequate balance of power in Europe and eventually in Asia. We thought that once such a balance had been restored, we would negotiate a military and political Soviet retirement from Central Europe in return for a similar retirement on our part. We saw no virtue in keeping our military forces nose to nose with those of Russia. We welcomed the prospect of the emergence, between Russia and ourselves, of a Europe that would be neither an extension of Soviet military power nor of our own. We thought all this could be achieved by indirect, political means. It was our hope that if we could make progress along the lines I have described, there would be a good chance that the world would be carried successfully through the crisis of instability flowing from the defeat of Germany and Japan. New vistas might later open up — vistas not visible at that time — for the employment of our great national strength to constructive and hopeful ends.

This concept is still as valid today as it was in 1947. And today it carries with it an even greater promise, the promise of a first decisive step back from our fatal addiction to the technology of death.

III. TRAGEDY AND COMEDY IN MODERN DRESS

I begin with a quick summary of the first two lectures. In the first lecture I described the central tragedy of our century, the history of the two World Wars. I told how in both wars the just cause with which the war began, the fight for freedom, was corrupted and almost obliterated by the growth of the modern technology of killing. The culmination of this history was the development of nuclear weapons in quantities so large as to obliterate any

conceivable just cause in which they might be used. Nevertheless, the cultural patterns of the past persist, and the safeguards regulating the use of these weapons are not proof against technical accidents and human folly. In the second lecture I discussed the concepts underlying our strategic doctrines and reached the conclusion that a concept which I call Live-and-Let-Live offers the best chance of escape from the predicament in which we are now caught. The essence of the Live-and-Let-Live concept is a determination to move as rapidly as possible away from offensive and nuclear weaponry towards defensive and non-nuclear weaponry. The means for bringing about this movement are moral, political, and technical, in that order. Morally, we must arouse the conscience of mankind against weapons of mass murder as we roused mankind against the institution of slavery a hundred and fifty years ago. Politically, we must negotiate international agreements to reduce offensive deployments and strengthen defensive capabilities. Technically, we must push further the development of non-nuclear defensive systems which may enhance the stability of a non-nuclear world.

This third lecture is concerned not with details of weapons but with human psychology and human values. I must apologize for disappointing those of you who may have been expecting me to provide a political program for the cure of the world's ills. I am not a politician and I have no program. I believe there is a chance that we may now be at a historical turning-point, with mankind as a whole beginning to turn decisively against nuclear weapons. If this turning is real, it will find appropriate political forms in which to express itself. If the turning is not real, no political program can succeed in bringing us to nuclear disarmament. So I decided in my last lecture to follow the wishes of Mr. Tanner and talk about humanity and morality rather than about weapons and politics. This has the consequence that I shall be talking today on a more personal level than before. I cannot discuss human values in the abstract but only in terms of particular people and particular

events. I shall talk mostly about American people and American events, because America has been my home for thirty years and I prefer to speak of things which I know from first-hand experience.

Napoleon said that in war the moral factors are to the material factors as ten to one, The same ratio between moral and material factors should hold good in our struggle to abolish nuclear weapons. That is why I said that the moral conviction must come first, the political negotiations second, and the technical means third in moving mankind toward a hopeful future. The first and most difficult step is to convince people that movement is possible, that we are not irremediably doomed, that our lives have a meaning and a purpose, that we can still choose to be masters of our fate.

Polls taken among young people in American schools and colleges in recent years have shown that a consistently large majority believe, on the one hand, that their lives are likely to end in a nuclear war, and on the other hand, that there is no point in worrying about it since it is bound to happen anyway. We are all to some extent affected by this paralysis of the will, this atrophy of the moral sense. We shrug off with silly excuses our burden of responsibility for the impending tragedy. We behave like the characters in a Samuel Beckett play, sitting helplessly in our dustbins while the endgame of history is played out. Or we fritter away our days like John Osborne's Jimmy Porter, waiting for the big bang to come and convinced that nothing can be done about it, accepting the inevitability of a holocaust which is, as Jimmy says, "about as pointless and inglorious as stepping in front of a bus." Why have we become so apathetic and fatalistic? What is wrong with us? The subject of my third lecture will be the restoration of a sense of meaning to the modern world. If we can recover a sense of meaning, then we may also find the moral strength to tackle the institution of nuclear weaponry as resolutely as our ancestors tackled the institution of slavery,

The first step toward dealing effectively with the problem of meaninglessness in modern life is to recognize that it is nothing new. When the difficulties of modern living are discussed in magazines and on television, we often hear statements implying that our generation is unique, that never before in history did people have to cope with such rapid changes in social and moral standards, and so on. If people believe that their difficulties are new and never happened before, then they are deprived of the enormous help which the experience of past generations can provide. They do not take the trouble to learn how their parents and grandparents struggled with similar difficulties. They never acquire the long perspective of history which would let them see the littleness of their own problems in comparison with the problems of the past. If people lack a sense of proportion and a sense of kinship with past generations, then it is not surprising that they become anxious and confused and fall into the mood of self-pity which is one of the most unattractive aspects of the contemporary scene.

The beginning of a cure for this disease is to convince the patient that, as a matter of historical fact, past generations were as troubled as we are by the psychological disorientation associated with rapid change. I could give many examples to prove it, but since time is limited I will give only one. I ask you to consider the Pilgrim Fathers at Plymouth in Massachusetts, three hundred and fifty years ago. We all have a mental image of the society in which the Pilgrims lived after they settled in New England. The village clustered around the church, the hard work in the fields, the shared privations and dangers, the daily prayers, the old-fashioned puritan virtues, the simple faith in divine providence, the ceremony of thanksgiving after harvest. Surely here was a society that was at peace with itself, a community close-knit through personal friendships and religious loyalties. This traditional image of the Pilgrim society is not entirely false. But the reality is stranger and more complicated.

Here is the reality. William Bradford, passenger in the *Mayflower* and historian of the Plymouth colony, is writing in the year 1632, twelve years after the first landing.

Also the people of the Plantation began to grow in their outward estates, by reason of the flowing of many people into the country, especially into the Bay of the Massachusetts. By which means corn and cattle rose to a great price, by which many were much enriched and commodities grew plentiful. And yet in other regards this benefit turned to their hurt, and this accession of strength to their weakness. For now as their stocks increased and the increase vendible, there was no longer any holding them together, but now they must of necessity go to their great lots By which means they were scattered all over the Bay quickly, and the town in which they lived compactly till now was left very thin and in a short time almost desolate.

So you see, suburban sprawl and urban decay were already rampant within twelve years of the beginning. But let me go on with Bradford's account.

To prevent any further scattering from this place and weakening of the same, it was thought best to give out some good farms to special persons that would promise to live at Plymouth, and likely to be helpful to the church or commonwealth, and so tie the lands to Plymouth as farms for the same; and there they might keep their cattle and tillage by some servants and retain their dwellings here. . . . But alas, this remedy proved worse than the disease; for within a few years those that had thus got footing there rent themselves away, partly by force and partly wearing the rest with importunity and pleas of necessity, so as they must either suffer them to go or live in continual opposition and contention. And others still, as they conceived themselves straitened or to want accommodation, broke away under one pretence or other, thinking their own conceived necessity and the example of others a warrant sufficient for them. And this I fear will be the ruin of New England, at least of the churches of God there, and will provoke the Lord's displeasure against them.

So I leave William Bradford, already in 1632 lamenting the breakdown of the old moral standards and the disintegrating effects of rapid economic growth. The remarkable thing is that these people who broke away from the Plymouth community were not yet the rebellious sons and daughters of the Pilgrims. The sons and daughters had not even had time to grow up. These people who broke away were the Pilgrims themselves, corrupted within twelve years of their landing by the temptations of easy money.

I conclude from this example and from many others that the psychological confusion and shifting values of the modern world are not new. Even the speed with which values shift is not new. Except in a few particularly stable and sheltered societies, moral standards have usually been in turmoil, and our psychological reference-points have rarely endured for longer than a single generation.

The next question is now: granted that past generations shared our problems, what can past generations do to help us? The most helpful thing they did was to leave us their literature. Through the writings of the war poets we can share and understand the meaning of the agonies of the two World Wars. Literature ties us together. Through literature we can know our roots. Through literature we become friends and colleagues of our predecessors. Through literature they talk to us of their troubles and confusions and give us courage to deal with our own. William Bradford understood this very well. His purpose in writing his history of the Plymouth colony was, as he says, "that their children may see with what difficulties their fathers wrestled in going through these things in their first beginnings; and how God brought them along, notwithstanding all their weaknesses and infirmities. As also that some use may be made hereof in after times by others in such like weighty employments." Bradford also understood that if his account was to be useful to future generations it must be totally honest. That is the greatness of Bradford. He shows us the Pilgrims as they really were, not a group of pious saints but a bunch

of people like ourselves, mixed-up in their motives and purposes, feuding and quarreling with one another, keeping one eye on heaven and the other eye on the cash-box, and finally, in spite of all their muddles and mistakes, building a new civilization in the wilderness. Proudly Bradford tells how in the eighteenth year of the settlement, standing firm against the murmuring of the rude and ignorant, they hanged three Englishmen for the murder of an Indian.

If we are searching for meaning in a world of shifting standards, literature is one place where we can find it. Meaning is a subtle and elusive quality. It cannot be dished out to patients like a medicine. It is a matter of feeling, not of fact. All of us have periods in our lives when meaning is lost, and other periods when it is found again. It is an inescapable part of the human condition to be constantly borrowing meaning from one another. No man is an island. Or as William Blake said it:

The bird a nest,
The spider a web,
Man friendship.

If we are lucky, we have friends or children or wives or husbands to lend us meaning when we cannot find it for ourselves. But often there come bad times when there are more borrowers than lenders, when a whole society becomes demoralized and finds meaning to be in short supply. Perhaps the present is such a time. In such times, those of us who have a taste for reading can turn to literature and borrow meaning from the past. Literature is the great storehouse where the meanings distilled by all kinds of people out of all kinds of human experience are preserved. From this storehouse we are all free to borrow. Not everybody, of course, reads books. Some cannot read and others prefer television. But there are still enough of us who love literature and know how to find meaning in it, so that we can take care of the needs of the rest by lending out what we have found.

Let me turn now to another writer, closer to us than William Bradford. Some of you in the audience may have had occasion to read a book called *The Siege* by Clara Park of Williamstown, Massachusetts.* Some of you may also have been lucky enough, as I have been, to know Clara Park personally. If I have any wisdom to share with you today, if I have anything to say worth saying on the subject of human values, I owe most of it to her. *The Siege* is the story of the first eight years of the life of Clara Park's autistic daughter. In the book the daughter is called Elly. It is a book about a particular autistic child and her family. And it is also, indirectly, a book about people in general and their search for meaning. We are still quite ignorant of the nature and causes of autism, but we know at least this much. The autistic child is deficient in those mental faculties which enable us to attach meaning to our experiences. We all from time to time have difficulty in grasping the meanings of things which happen to us. The autistic child has the same difficulty in an extreme degree. So the siege by which Clara and her husband and her three older children battered their way into Elly's mind was only an extreme case of the struggle which every teacher must wage to reach the minds of his pupils. The task is the same, to bring a sense of the meaning of life to minds which have lost an awareness of meaning or never possessed it. The story of Clara's siege has many connections with the theme of human response to nuclear weapons. The metaphor of a siege is a good one to describe the struggle we are engaged in. We are trying to surround the sterile official discussions of nuclear strategy with an aroused public concern, to break down the walls of hopelessness and indifference which keep us from feeling the urgency of our danger. Clara is telling us that the search for human values is a two-sided thing. We must be borrowers as well as lenders. The measure of Clara's achievement is that she not

* *The Siege: The First Eight Years of an Autistic Child; With an Epilogue, Fifteen Years Later* (Boston: Little, Brown and Co., 1982). Earlier editions were published in 1967 and 1972.

only planted in Elly's meaningless solitude an understanding of the meaning of human contact and conversation, but also distilled out of Elly's illness insights which gave added meaning to her own life, to the life of her family, and to her work as a teacher.

But I did not come here to praise Clara. It is better to let her speak for herself. She is a scholar and a teacher as well as a wife and a mother. Here is her own summing-up, describing how a teacher is ready to receive as well as to give meaning.

I learn from Elly and I learn from my students; they also teach me about Elly. In the early years, I knew a student who was himself emerging from a dark citadel; he had been to the Menninger Clinic and to other places too, and he knew from inside the ways of thought I had to learn. "Things get too much for her and she just turns down the volume," he told me. I remembered that, because I have seen it so often since, in Elly and in so many others. Human beings fortify themselves in many ways. Numbness, weakness, irony, inattention, silence, suspicion are only a few of the materials out of which the personality constructs its walls. With experience gained in my siege of Elly I mount smaller sieges. Each one is undertaken with hesitation; to try to help anyone is an arrogance. But Elly is there to remind me that to fail to try is a dereliction. Not all my sieges are successful. But where I fail, I have learned that I fail because of my own clumsiness and inadequacy, not because the enterprise is impossible. However formidable the fortifications, they can be breached. I have not found one person, however remote, however hostile, who did not wish for what he seemed to fight. Of all the things that Elly has given, the most precious is this faith, a faith experience has almost transformed into certain knowledge: that inside the strongest citadel he can construct, the human being awaits his besieger.

Clara does not need to tell us, because anybody reading her book knows it already, that outside the first circle of her family and the second circle of her students there is a third circle, the circle of her readers, a great multitude of people, teachers, doctors, parents, friends, and strangers, who all in their different ways can

gather the gift of meaning from her story. And once again the gift works both ways. The book itself gave perspective and illumination and meaning to Clara's private struggle, a struggle which continued for many long years after the book was finished. Clara had always been a natural writer and a lover of literature. She had always believed in the power of written words to redeem the dullness of day-to-day existence. But it was Elly's illness and slow awakening which gave Clara a theme to match her capabilities as a writer. Elly gave Clara the strength of will and the understanding of human suffering which shine through the pages of her book. Through this book Clara reached out and touched the multitude in the third circle. She found herself embarked on a mission like the prophet in Pushkin's poem, who meets an angel at the crossroads and is sent out:

Over land and sea,
To burn the hearts of people with a word.

When Elly was twelve years old, I had the impression that she came close to being a totally alien intelligence, such as we might expect to encounter if we were successful in finding an intelligent life-form in some remote part of the galaxy. Astronomers have often asked themselves how we could hope to communicate with an alien intelligence if we were lucky enough to discover one. Perhaps Elly throws a little light on this question. At twelve years old she still had no sense of her own identity. Like many autistic children in the early stages of learning to speak, she used the pronouns "I" and "you" interchangeably. Her mental world must have been radically different from yours and mine. And yet she could communicate quite well with us through the medium of mathematics. While I was staying at her house, a letter arrived for Elly from one of her friends, another autistic child. Elly opened the letter. It contained nothing but a long list of prime numbers. I could see that the numbers were all the primes between one and a thousand. Elly glanced through the list rapidly, then took a pen-

cil and gleefully crossed out the number 703. She was laughing and singing with joy. I asked her why she didn't like the number 703, since it looked to me like a perfectly good prime. She wrote down in large figures so that everyone could see, $703 = 19 \times 37$." With that there could be no argument. So I knew that even the most alien intelligence has something in common with us. Her prime numbers are the same as ours.

One more public glimpse of Elly was provided by her father, showing her a little later at a crucial stage in her search for meaning. David Park and Philip Youderian published in the *Journal of Autism and Childhood Schizophrenia* an article with the title "Light and Number: Ordering Principles in the World of an Autistic Child." They described a marvelously elaborate and abstract scheme by which Elly at that time attached numbers to her emotions and to the comings and goings of the sun and moon.

The numbers 73 and 137 are there, carrying their burden of magic, and the concept of the days in general belongs to their product $73 \times 137 = 10001$. What does it all mean? It is not hard to share Elly's meanings to some extent. One may react much as she does to sun and cloud, and see the humor of imagining horrible disasters as long as they cannot possibly happen. Some people respond to the individual qualities of numbers and think it splendid that 70003 is a prime. But these are only fragments of adult thought. For Elly they unite into a harmonious whole, capable of profoundly influencing her mood and her reaction to events. In essence, someone from whom the gift of words has been largely withheld has built a world of light and number It is clear if one talks with Elly that many of the actions of the people around her, and most of their interests and concerns, have no meaning at all for her. It is our conjecture that Elly's system of ideas represents her effort to fill the deficiency by establishing her own kind of meaning Elly now talks more than she did when her system was new, though still with great effort and concentration, and she has begun to share with others what she has seen during the day and what has happened at school. Re-

cently, when asked a question about her system, she smiled and said, "I used to care about that last year." Not that it is gone now, but only that there are more and more things to think about now that do not fit into the system.

With these words I will say goodbye to Elly. She has come a long way in the nine years since they were written. It took Elly's parents twenty years to nurture in her a sense of meaning and of human values so that she can now communicate with us as one human being to another. Perhaps in twenty years we can likewise break through our barriers of apathy and denial and face honestly the human implications of our nuclear policies. Elly is now no longer a case-history but a real person, a grown-up person whose privacy needs to be respected. If you want to see for yourselves what she has been doing recently, you can buy one of her paintings, signed with her real name, Jessica Park.

But I have not finished with Clara. Three years ago she published in the *Hudson Review* an article with the title "No Time for Comedy," which speaks more directly than *The Siege* to the concerns of these lectures. I took from her *Hudson Review* article the title and the main message of my talk today. The *Hudson Review* is a writers' magazine, read mostly by people with a professional interest in literature. Clara is saying to her literary colleagues that modern literature in its obsession with gloom and doom has lost touch with reality. She quotes from the Nobel Prize speech of Saul Bellow, my illustrious predecessor as Tanner Lecturer, who stands on her side in this matter: "Essay after essay, book after book . . . maintain . . . the usual things about mass society, dehumanization, and the rest. How weary we are of them. How poorly they represent us. The pictures they offer no more resemble us than we resemble the reconstructed reptiles and other monsters in a museum of paleontology. We are much more limber, versatile, better articulated; there is much more to us; we all feel it."

My message to you is the same. Literature has been, and will be again, the great storehouse of human values. Only at the

moment it seems that a large fraction of our writing is dominated by a fashionable cult of meaninglessness. When literature deliberately cultivates meaninglessness, we can hardly look to it as a source of meaning. Literature then becomes, as psychoanalysis was once said to be, the disease of which it is supposed to be the cure. It is no wonder that ordinary people find it irrelevant to the real problems with which they are confronted.

Perhaps a restoration of our spirit may go hand in hand with a restoration of our literature. When we can write truly about ourselves, we shall also be better able to feel truly and act truly. And this brings me back to Clara Park. In *The Siege* she showed what it means to write truly. In the *Hudson Review* article she is saying that the fundamental malaise of our time is a loss of understanding of the ancient art of comedy. Comedy, not in the modern sense of a comedian who tries to be funny on television, but in the ancient sense of comedy as a serious drama ending in a mood of joy rather than sorrow. *The Siege* itself is, in this ancient sense of the word, a comedy. It is a classic drama of courage and love triumphing over obstacles, written in a style and language appropriate to our times.

Let us hear a little of what Clara has to say about tragedy and comedy:

The Iliad and the Odyssey are the fundamental narratives of Western consciousness, even for those who have not read them: two masks, two modes, two stances; minor chord and major; two primary ways of meeting experience. The Iliad sets the type of tragedy, as Aristotle tells us, where greatness shines amid violence, error, defeat and mortality. The Odyssey celebrates survival among the world's dangers and surprises, and then homecoming, and order restored. It is the very archetype of a prosperous outcome, of Comedy

Tragedy and Comedy: though the words are paired, their order is not reversible. . . . We can imagine Iliad and Odyssey in only one sequence. To turn back from the long voyage home to the fall of the city, from Odysseus in Penelope's arms to

Hector dead and Achilles' death to come, would be to turn experience upside down Historically indeed, but above all emotionally, the *Odyssey* comes last.

Last, as Sophocles at ninety, his proud city collapsing around him, in defeat returned to the bitter legend and brought old Oedipus to the healing grove of Colonus, insisting that though suffering is disproportionate, it is not meaningless but mysteriously confers blessing: last, as Matisse with crippled fingers cut singing color into immense shapes of praise Shakespeare's sequence makes the same statement; what comes last is not the sovereign Nothing of King Lear but the benign vision of *Winter's Tale* and *The Tempest*

Here on stage stand Ferdinand and Miranda, undertaking once more to live happily ever after, — the young, our own, that simple investment in the future we're all capable of, our built-in second chance. For them the tragic past is only a story that grownups remember. Untendentiously, insouciantly, they will go about their business, the business of comedy, making new beginnings of our bad endings, showing us that they were not endings at all, that there are no endings

What is at issue today is whether we have grown too conscious and too clever for comedy's burst of good will. In every age but this the creators of our great fictions have regularly accorded us happy endings to stand beside those others that evoke our terror and our pity. Happy endings still exist, of course. But they have lost their ancient legitimacy They awaken an automatic distrust And so for the first time since the beginning of our literature there is no major artistic mode to affirm the experience of comedy: healing, restoration, winning through It is a grand claim we make when we reject happy endings: that we are very special, that whatever songs previous ages could sing, in our terrible century all success is shallow or illusory, all prosperity a fairy-tale; that the only responses to our world which command adult assent are compulsive ironies and cries of pain; that the world which seems to lie before us like a world of dreams, so various, so beautiful, so new, hath, in short, really neither joy nor love nor light, nor certitude, nor peace, nor help for pain, and we are here as on a darkling plain waiting for Godot.

Clara goes on to say that the essential feature of comedy is not the happy ending but the quality of the characters which enables them to earn a happy ending. Odysseus, the prototype of the comic hero, earned his happy ending by being clever, adaptable, devious, opportunistic, and not too much concerned with his own dignity. When it was necessary to escape from a bad situation in the Cyclops' cave, he was willing to take a ride hanging onto the under-belly of a sheep. Here is Homer's image of the human condition, an image which has helped to keep us sane for three thousand years and can still keep us sane if we do not close our eyes to it: the Cyclops stroking the back of his favorite ram, telling it how grievously Odysseus has injured him and asking it where Odysseus has gone, while Odysseus precariously hangs onto the wool underneath, silently hoping for the best. The art of comedy is to make happy endings credible by showing us how they are earned.

"Was Homer's vision," Clara asks, "so much less searching than our own? There is an ugly arrogance in the insistence that our age, alone among all, is too terrible for comedy. In the city of York, in the years when Shakespeare was writing, only ten percent of the population lived to the age of forty. Aristocrats indeed did better; they had nearly an even chance. We cannot imagine what the words 'the shadow of death' meant to our forefathers. The Thirty Years' War left two of every three in Germany dead. Chaucer's pilgrims rode to Canterbury through a countryside which a generation before had been devastated by the Black Death Any realistic consideration of the life of the past, both in its day-to-day precariousness and its vulnerability to repeated holocaust, will show up our claims to unique misery as uniquely self-centered."

The heroes of comedy are people who do not pity themselves. They take the rough with the smooth. When they are lucky they are not ashamed of it. When they are unlucky they do not despair. Above all, they never give up hope.

There is in the literature of our own century another fine example of tragedy and comedy in action. In December of the

year 1911 the Norwegian explorer Amundsen reached the South Pole. A month later the British explorer Scott arrived at the Pole. After heroic exertions, Scott and his companions died in a blizzard on the way home, only eleven miles from the depot where they would have found supplies and safety. The story of Scott's expedition was written ten years later by Apsley Cherry-Garrard in a book which he called *The Worst Journey in the World*. Cherry-Garrard was one of the survivors who went out in search of Scott and found him dead in his tent. Here is his description of the scene.

Bowers and Wilson were sleeping in their bags. Scott had thrown back the flaps of his bag at the end. His left hand was stretched out over Wilson, his lifelong friend. Beneath the head of his bag, between the bag and the floor-cloth, was the green wallet in which he carried his diary

We never moved them. We took the bamboos of the tent away, and the tent itself covered them. And over them we built the cairn.

I do not know how long we were there, but when all was finished and the chapter of Corinthians had been read, it was midnight of some day. The sun was dipping low above the Pole, the Barrier was almost in shadow. And the sky was blazing — sheets and sheets of iridescent clouds. The cairn and Cross stood dark against a glory of burnished gold.

Cherry-Garrard ends his last-but-one chapter with the text of Scott's message to the public, found among the papers in the tent. After summarizing the causes of the disaster, Scott finishes on a more personal note: "For four days we have been unable to leave the tent — the gale howling about us. We are weak, writing is difficult, but for my own sake I do not regret this journey, which has shown that Englishmen can endure hardships, help one another, and meet death with as great a fortitude as ever in the past. We took risks, we knew we took them; things have come out against us, and therefore we have no cause for complaint, but bow to the will of Providence, determined still to do our best to the

last Had we lived, I should have had a tale to tell of the hardihood, endurance and courage of my companions which would have stirred the heart of every Englishman. These rough notes and our dead bodies must tell the tale.”

Those are the immortal words of the tragic hero Robert Scott. But Cherry-Garrard does not stop there. Immediately after those words he begins a new chapter, his last chapter, with the title “Never Again.” It starts with a quotation from the poet George Herbert:

And now in age I bud again,
After so many deaths I live and write;
I once more smell the dew and rain,
And relish versing. O my onely light,
It cannot be
That I am he
On whom thy tempests fell all night.

Then Cherry-Garrard goes on:

I shall inevitably be asked for a word of mature judgment of the expedition of a kind that was impossible when we were all close up to it, and when I was a subaltern of twenty-four, not incapable of judging my elders, but too young to have found out whether my judgment was worth anything. I now see very plainly that though we achieved a first-rate tragedy, which will never be forgotten just because it was a tragedy, tragedy was not our business. In the broad perspective opened up by ten years’ distance, I see not one journey to the pole, but two, in startling contrast one to another. On the one hand, Amundsen going straight there, getting there first, and returning without the loss of a single man, and without having put any greater strain on himself and his men than was all in the day’s work of polar exploration. Nothing more businesslike could be imagined. On the other hand, our expedition, running appalling risks, performing prodigies of superhuman endurance, achieving immortal renown, commemorated in august cathedral sermons and by public statues, yet reaching the Pole only to find our terrible journey superfluous, and leaving our

best men dead on the ice. To ignore such a contrast would be ridiculous; to write a book without accounting for it a waste of time. . . .

The future explorer . . . will ask, what was the secret of Amundsen's slick success? What is the moral of our troubles and losses? I will take Amundsen's success first. Undoubtedly the very remarkable qualities of the man himself had a good deal to do with it. There is a sort of sagacity that constitutes the specific genius of the explorer: and Amundsen proved his possession of this by his guess that there was terra firma in the Bay of Whales as solid as on Ross Island. Then there is the quality of big leadership which is shown by daring to take a big chance. Amundsen took a very big one indeed when he turned from the route to the Pole explored and ascertained by Scott and Shackleton and determined to find a second pass over the mountains from the Barrier to the plateau. As it happened, he succeeded, and established his route as the best way to the Pole until a better is discovered. But he might easily have failed and perished in the attempt; and the combination of reasoning and daring that nerved him to make it can hardly be overrated. All these things helped him. Yet any rather conservative whaling captain might have refused to make Scott's experiment with motor transport, ponies and man-hauling, and stuck to the dogs; and it was this quite commonplace choice that sent Amundsen so gaily to the Pole and back, with no abnormal strain on men or dogs, and no great hardship either. He never pulled a mile from start to finish.

This is as much as I have time for of Cherry-Garrard's post-mortem examination. You can find another glimpse of Amundsen in John McPhee's recent book *Coming into the Country*.^{*} McPhee's book is about Alaska. He describes how on a wintry day in 1905, with the temperature at sixty below, Amundsen quietly and unobtrusively walked into the post office at Eagle, Alaska, to send a telegram home to Norway announcing that he had completed the first crossing of the Northwest Passage. The last four hundred

^{*} New York: Farrar, Straus and Giroux, 1977.

miles he had traveled alone with his sled and dog-team. No fuss, no cathedral sermons. That was six years before he arrived at the South Pole.

Cherry-Garrard's final verdict on the two South Pole expeditions was simple. "There is a sort of sagacity that constitutes the specific genius of the explorer." Amundsen had it. Scott didn't. The word "sagacity" is carefully chosen. Sagacity is not the same thing as wisdom. Wisdom is the greater virtue, but it is too rare and too solemn for everyday use. Sagacity is by comparison rather cheap, rather slick, rather undignified, but nine times out of ten it is sagacity that will get you out quicker when you are stuck in a bad hole. The shipwrecked mariner in Kipling's *Just-So* story "How the Whale Got His Throat" was "a man of infinite resource and sagacity," and so he naturally knew how to trick the whale into giving him a free ride back to England. Three thousand years earlier, Odysseus showed the same sort of sagacity in dealing with the Cyclops. Sagacity is the essential virtue for the hero of a comedy. It is the art of making the best of a bad job, the art of finding the practical rather than the ideal solution to a problem, the art of lucking out when things look hopeless.

Cherry-Garrard gives Scott his due. It was true, as Cherry-Garrard says, that Scott's life and death made a first-rate tragedy. First-rate in every sense, in the nobility of character of the hero, in the grandeur of the geographical setting, in the epic quality of Scott's prose, and in the tragic flaw of Scott's nature, the pride and stubbornness which led him to demand more of himself and of his companions than was humanly possible. A first-rate tragedy indeed, worthy of all the fine speeches and sermons that have been devoted to it. And yet, Cherry-Garrard, who lived through it, has the last word. Tragedy, he says, was not our business. When all is said and done, Amundsen knew his business as an explorer and Scott didn't. The business of an explorer is not tragedy but survival.

The main thing I am trying to say in this talk is that Cherry-Garrard's words apply to us too. Tragedy is not our business.

Too much preoccupation with tragedy is bad for our mental health. Tragedy is a real and important part of the human condition, but it is not the whole of it. Some people try to make a tragedy out of every aspect of modern life. In the end their mental state comes to resemble the attitude of another famous character of modern fiction:

Eeyore, the old grey Donkey, stood by the side of the stream, and looked at himself in the water.

“Pathetic,” he said. “That’s what it is. Pathetic.”

He turned and walked slowly down the stream for twenty yards, splashed across it, and walked slowly back on the other side. Then he looked at himself in the water again.

“As I thought,” he said. “No better from this side. But nobody minds. Nobody cares. Pathetic, that’s what it is.”*

The Eeyore syndrome is somewhere deep in the heart of each one of us, ready to take over if we give it a chance. Anyone who has to deal with mentally sick people will be familiar with the voice of Eeyore. Those of us who consider ourselves sane often feel like that too. The best antidote that we have against the Eeyore syndrome is comedy, comedy in the new-fashioned sense, making fun of ourselves, and also comedy in the old-fashioned sense, the drama of people like Odysseus and Amundsen who survive by using their wits. Survival is our business, and in that business it is the heroes of comedy who have the most to teach us.

Odysseus and his friends can teach us a trick or two which may come in handy when we are in a tight spot. But the tricks are not important. The important thing which comedy does for us is to show us meanings. Just as the central theme of the *Iliad* is death, the central theme of the *Odyssey* is homecoming. The homecoming of Odysseus gives meaning to his adventures and his sufferings. Homecoming is still in the modern world a powerful symbol and a source of meaning. Millions of Americans come home each year

* A. A. Milne, *Winnie-the-Pooh* (New York: E. P. Dutton and Co., 1926), p. 70.

for Thanksgiving. The homecoming of Jews to Jerusalem gave meaning to their two-thousand-year Odyssey.

Homecoming is the reward for survival, but it is not the end of the story. There is no end, because homecoming means a new beginning. Homecoming means renewal and rebirth, a new generation growing up with new hopes and new ideals. Their achievements will redeem our failures; their survival will give meaning to our bewilderment. This is the lesson of comedy. No matter how drastically the institution of the family is changed, no matter how authoritatively it is declared moribund, the family remains central to our social and mental health. The children find meaning by searching for their roots; the parents find meaning by watching their children grow.

Clara Park's book *The Siege* is a celebration of the remedial power of the family. It is family love and discipline which breaks through the isolation of a sick child and gives meaning to the suffering of the parents. William Bradford's book *Of Plymouth Plantation* is also, in the same classic tradition, a comedy, and it is altogether appropriate that it ends with a family chronicle, a list of the surviving Pilgrims and their descendants unto the third and fourth generations:

Of these hundred persons which came first over in this first ship together, the greater half died in the general mortality, and most of them in two or three months' time. And for those which survived, though some were ancient and past procreation, and others left the place and country, yet of those few remaining are sprung up above 160 persons in this thirty years, and are now living in this present year 1650, besides many of their children which are dead and come not within this account. And of the old stock, of one and other, there are yet living this present year, 1650, near thirty persons. Let the Lord have the praise, who is the High Preserver of men.

Many of us do not share Bradford's religious belief, but we can all share his pride and his hope. Pride for what the old people

have done, hope for what the young people will do. The most important lesson which comedy has to teach us is never to give up hope.

This lesson, not to give up hope, is the essential lesson for people to learn who are trying to save the world from nuclear destruction. There are no compelling technical or political reasons why we and the Russians, and even the French and the Chinese too, should not in time succeed in negotiating our nuclear weapons all the way down to zero. The obstacles are primarily institutional and psychological. Too few of us believe that negotiating down to zero is possible. To achieve this goal, we shall need a worldwide awakening of moral indignation pushing the governments and their military establishments to get rid of these weapons which in the long run endanger everybody and protect nobody. We shall not be finished with nuclear weapons in a year or in a decade. But we might, if we are lucky, be finished with them in a half-century, or in about the same length of time that it took the abolitionists to rid the world of slavery. We should not worry too much about the technical details of weapons and delivery systems. The basic issue before us is very simple. Are we, or are we not, ready to face the uncertainties of a world in which nuclear weapons have been negotiated all the way down to zero? If the answer to this question is yes, then there is hope for us and for our grandchildren. And here I will let Clara Park have the last word: "Hope is not the lucky gift of circumstance or disposition, but a virtue like faith and love, to be practiced whether or not we find it easy or even natural, because it is necessary to our survival as human beings."

