

## INTRODUCTION

Antipersonnel weapons? You want to know about antipersonnel weapons? – said the retired colonel, settling himself in his chair and lighting his pipe – Well, now, that's not a word we often use. Oh, yes, it's a correct term, but it's cumbersome, and besides, we don't want people to get the wrong idea. But I'll tell you about them.

You see, when you're fighting a war, there are various targets you'll want to destroy, or more precisely, to put out of action, or facilities whose use you'll want to deny the enemy. The target can be a bridge, it can be a tank, a fortification, an airfield, or a soldier. And so, we select a term that denotes the target that a munition is meant to destroy. If it's designed to knock out a tank, we call it an 'antitank' munition. If it's meant to damage materiel, and by that I mean automobiles, parked aircraft, radar installations, and the like, then we call it an 'antimateriel' munition. And if it's designed to destroy personnel, we call it 'antipersonnel.'

When I say 'personnel,' by the way, I'm referring to soldiers and their commanders, plus members of any armed militias or volunteer forces. Our job is to destroy the enemy's capacity to wage war, and so we have to go after his armed personnel, whether or not they are engaged in combat at the time.

There's also the problem of the enemy's rear base, his homeland, so to speak, where he's got his agriculture, his industry, his seat of government, and so on, all of which support his military machine. Now since the aim is to bring pressure on the enemy to induce him to come to terms, one way of doing this is to go after his rear base.

Of course, you can't just go in and kill off the enemy population – the colonel continued – That's forbidden under the laws of war. But if you're flying in to attack a legitimate military target, such as a bridge or a goods yard, and someone fires at your plane, then you have to shoot back; and if you know you're likely to encounter antiaircraft fire over a certain place, then it makes sense to go in just before and lay

down a barrage of antipersonnel fire, so that people will keep their heads down when your bombers fly over. That's why it's so useful to saturate parts of the enemy homeland with antipersonnel bombs, or to seed wide areas with antipersonnel mines. If some civilians get hurt in the process, that's just the price you have to pay.

The Americans brought in some useful gadgets along these lines during the Vietnam war. One of them was called the 'Sadeye' – picturesque name, don't you think? Well, this is a long, cigar-shaped device the size of a conventional bomb that is dropped from an airplane and opens in midair, releasing hundreds of little round explosive 'bomblets' embedded with steel balls. The bomblets are aerodynamically designed to scatter in the air so that when they reach the ground, they will be evenly distributed over a large area. The whole thing is called a 'cluster bomb,' referring to the fact that you've got a cluster of little munitions that you eject from a dispenser or container.

Let's take a look at what's happening on the ground. With bomblets going off all over the place, many more exposed personnel are likely to be hit than if you had a single ordinary high explosive bomb that went off at some single point within the same area. And some of the bomblets are set to explode later, when people have come out from under cover to tend to the damage. Moreover, any one fragment from an antipersonnel bomblet is capable of inflicting a serious wound. This comes from the knowledge we've accumulated from our wartime experience and laboratory studies. When a high-velocity steel ball strikes the body, it sets up a motion that destroys tissues far from the actual path of the fragment. The entrance and exit holes may be small, giving little clue to the extent of destruction inside.

You can appreciate the fact that an injury of this sort is hard to diagnose and hard to treat. The patient spends a long time recovering, and you've tied up a lot of enemy medical personnel in the meantime. The wound can easily be infected by bits of clothing or skin which the bomb fragment carries inside. And the effect of such a hail of fragments is terrifying. A weapon can affect enemy morale, you know, in addition to the physical damage.

Let's look at the whole thing from a mathematical point of view – the colonel continued, marking imaginary points in the air with his pipe – You've got six or seven hundred bomblets on the ground, each of them exploding and projecting several hundred steel balls in all directions. A portion of the steel balls will shoot up uselessly in the air or bury themselves in the ground; but because there are so many of them, and because they are distributed uniformly, the probability of hitting exposed personnel is high; and this, combined with the wounding effect of the steel balls, gives what we call a good 'lethal area' for the cluster bomb as a whole. It's an effective way to put a platoon out of action without committing ground troops or lingering over the target.

Now, when these weapons were first used in Vietnam, a lot of well-intentioned but misguided people said that they were 'inhumane,' that they were designed by a superpower to kill off peasants in an under-developed country, that they were useless against steel and concrete.

That's a lot of nonsense, of course. In any war, innocent people are bound to be killed. History bears this out. It's an unfortunate necessity, and no one deplores it more than the military. Anyway, the little fragments from an antipersonnel bomblet don't just injure people; they can also damage light materiel, such as the fuel tank or tires of a truck. It's true that they're too small to perforate armor or concrete; that's how they're designed. By making them small, you get more of them per bomblet, and in that way you increase your lethal area. I often wonder: if people don't want to be hit by an antipersonnel bomb, why do they choose to live near an antiaircraft site?

Most people wouldn't think of it, but an antipersonnel cluster bomb is actually more humane than an ordinary bomb. This is what the lawyers and the diplomats don't realize when they say that certain weapons should be banned. Let's say that preparatory to flying over a city to bomb a target on the other side, you send a fighter plane to drop some cluster bombs. The bomblets explode, antiaircraft crews are forced to take cover, and the bomber can fly over safely. Now suppose you weren't allowed to use cluster bombs. Your fighter planes might drop a regular high explosive bomb, inadvertently hitting a school or a hospital, and that would crush the walls and kill a lot of people, wouldn't it?

And don't think an antipersonnel cluster bomb wouldn't be effective in Baghdad or Tokyo, if it happened to fall without warning on a rush-hour crowd. Imagine the panic that would create.

You know, the Americans were pioneers in trying out new weapons in Vietnam, and the experiences of that war have had a lasting effect on the defense programs of other countries. Look at the Afghanistan war, where the Soviets introduced their own versions of the new American weapons with such deadly effect. Their new small-caliber AK-74 rifle is more lethal than anything the Americans had in Vietnam.

I feel sorry for the Americans. They came in for a lot of grief over Vietnam. It wasn't their fault; they went in to protect an ally and they had to think of the safety of their own men. They were given a job to do and then they couldn't do it; certain targets were out of bounds; Washington kept the Air Force's hands tied. But that's nothing new; you'll always have civilians interfering in military operations. The US armed forces performed honorably under the circumstances.

Now how did I get off on all that? – the colonel demanded – I was telling you that we use different munitions to defeat different targets; and it doesn't take much imagination to realize that a tank is a different target from a human being. What we do is to study the target – what

happens when a missile of a certain shape and velocity enters the flesh, for example; what are the chances of hitting a vital organ, and so on. Then we design our munition so that it will produce the level of damage that we require. We might use a bullet of a special shape, for instance, or we might try other designs in order to maximize the effect.

The flechette is one of the more interesting developments along these lines. French for 'dart,' you know. It's like a small finishing nail, with fins at the blunt end. I have one in my desk; here, have a look at it.

The beauty of the flechette is that it flies through the air with very little wind resistance, so that it's still traveling fast when it hits the target. The problem is that it can easily keep right on through the target and out the other side without causing much damage. One solution is to cause it to tumble or deform within the body, by making the tip out of soft metal or weakening the fins so that they will separate from the shaft and slip off in different directions inside the body. Another solution would be to coat it with a chemical agent, but of course that's prohibited under the laws of war.

The Swedes were interested in flechettes at one point, and they manufactured thousands of them for test purposes. Then they gave up the project, and after that you could see them at the intergovernmental conferences, pushing for a ban on flechettes – for humanitarian reasons, so they said.

Odd chaps, the Swedes. They would come up to you at a conference, reach in their pocket, pull out one of those little things, and ask: 'Would you like a flechette?' Then they looked you in the eye, with that proud look of theirs, and said: 'Swedish steel!'

I attended one of the conferences as a military representative of my country, and it was all I could do to restrain myself. Now I hear there is talk of banning antipersonnel mines – clearly an essential weapon for military purposes. A fine lot of humanitarians, the Swedes are, with their socialist traditions and high suicide rate. They had plenty of bloody battles in their day, if you look at Swedish history.

The Americans tried for years to develop a rifle that would shoot flechettes. They finally had to give it up. Made a nasty wound, but they couldn't get the damn thing to shoot straight, although I've heard talk of starting the project again recently.

They had better luck with their Beehive – another of those poignant names. It's a shell that is fired pointblank or downrange from an artillery piece and breaks open, releasing thousands of flechettes. It'll cut a man to bits, and it's been known literally to nail soldiers to trees.

The Americans used Beehives in Vietnam, and they were used in the Middle East in 1973. A mean weapon, no question of it. It's a pity the production costs are so high.

Why are you looking at me like that? – exclaimed the retired colonel, and he squirmed ever so slightly, while his voice took on a harder tone – War is hell. You don't think we like to fight wars, do you?

We've been entrusted with the task of defending our country. We adhere scrupulously to the laws of war. But once the civilian government has given us the order to fight, it is up to us to use whatever means are necessary to bring the conflict to a speedy end.

The greatest humanitarian in the world is a soldier. I could tell you some memorable stories of the courage and compassion of soldiers who rescued civilians pinned down by enemy fire. And the greatest pacifist is a soldier. He doesn't want war: he knows he'll be the first to suffer, the first to put his life on the line.

Men are greedy, men are vicious, men are cruel. As long as you have human beings on earth, you're going to have wars. History bears this out. And as long as you have wars, you're going to have armies and soldiers and weapons. How can you deny it?

The colonel's vision is of a battlefield where his forces can enjoy the advantages of technology without limit. Yet the logical outcome of never-ending advances in killing power is ever more devastation, ever worse injury to soldiers, ever more destruction to civilian life.

War is a supremely irrational and destructive enterprise. Unable to settle their disputes peacefully, or bent on conquest and control, nation strikes at nation and nations and opposition groups strike at each other, destroying the land and the human works of centuries, killing and maiming great numbers of people, displacing many more and consigning them to a miserable future. Yet the conduct and the preparation of warfare are highly organized; the weapons used are based on the best national technologies; and the people engaged in each component of this vast operation are surrounded by an ethos which values their contribution, and a jargon which allows them to communicate comfortably without focusing on the dreadful effects of their work.

Some people have searched for ways to stop particular wars, to limit the damage caused, or to prevent wars breaking out. These efforts have often been viewed as naive, if not treacherous, since they undermine official attempts to present a war as a noble cause and thereby win support. Efforts by war critics to prevent the use of specific weapons arouse antagonism among members of the armed forces, who see these efforts as attempts to deprive them of the tools needed to carry out the job with which their country has entrusted them.

One of the reactions to war has been the progressive attempt to create a body of international law that would limit the suffering inflicted in armed conflict. Two general rules of special relevance are the

prohibition of use of weapons causing unnecessary suffering or superfluous injury, which is aimed at avoiding unnecessary harm to soldiers, and the prohibition of use of indiscriminate weapons – weapons which are of a nature to strike military objectives and civilians or civilian objects without distinction.

From these general rules, the community of nations has been able to adopt a few agreements banning or restricting the use of specific weapons: the 1899 Hague Declaration on dum-dum bullets, the 1899 and 1907 Hague Regulations banning the use of poisoned weapons, the Geneva Protocol of 1925 banning the use of poisonous gas and bacteriological methods of warfare, and – most recently – the 1980 Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to have Indiscriminate Effects, known as the 'Conventional Weapons Convention,' whose three protocols respectively ban the use of nonmetallic fragmentation weapons and impose restrictions on the use of land mines and incendiary weapons. Yet these achievements, few and far between, can scarcely keep pace with advances in the technology of antipersonnel weapons.

From the early days of human existence, people have used their ingenuity and the technological skills passed down through the generations to devise ever more effective means of attacking their enemies. The dagger, the club, and the spear were weapons for combat close at hand, or as far as a warrior could throw. The bow and arrow took advantage of the elastic properties of bow and string to project a missile further than it could be thrown. The discovery of explosives extended the range still further. Explosives could also be packed in a metal shell and detonated, shattering the shell into fast-moving fragments to kill soldiers and destroy materiel.

In the course of the nineteenth century, with the advent of more powerful rifles, a new and terrible type of wound began appearing on the battlefield. Entrance and exit holes were often small, but the damage inside was as extensive as if it had been caused by a small explosion. The study of the 'explosive wound' gave rise to a new branch of military science, the science of 'wound ballistics,' whose findings would have implications for both defense and offense. World War II gave rise to a new series of laboratory experiments and field studies which placed the new science on a solid empirical footing (Chapter 1).

In the Korean war, US commanders confronted the nightmare of seeing their forces overrun by hordes of enemy soldiers. Rising to the challenge, US weapons laboratories reexamined the design of the army's munitions to see if their casualty-producing efficiency could be improved. The result was a revolution in antipersonnel weapons design (Chapter 2).

Vietnam was a proving ground for the new weapons; they were used profusely, and other new munitions were devised as 'quick-fix' responses to meet the needs of an anti-guerrilla campaign. In the ground war, massive firepower carried the risk of hitting civilians indiscriminately. In the air war, the extensive use of new 'cluster bombs' gave the North Vietnamese public the sense that the war was directed against them. When US forces withdrew from Indochina in 1975, they left a legacy of destruction and unexploded munitions that would affect the population for many years to come (Chapters 3–4).

While the war was going on, the secrecy, compartmentalization, and specialization of weapons design and production meant that few Americans could have a clear picture of what was being done in Vietnam in their country's name. The growing antiwar movement encompassed new research to discover the causes and consequences of the war, and to combat the official deceptions. One part of this research was aimed at revealing the true nature of the war by studying the weapons used, and showing the links between local arms plants and the effects of their products in Vietnam. Chapter 5 explores the multifaceted antipersonnel weapons makers, and tells of attempts by parts of the antiwar movement to stop the production of napalm (in California) and cluster bombs (in Minnesota). The arms production continued, but the innovations of these and other protestors introduced a range of tactics and concerns about corporate responsibility which have had a lasting impact on the conduct of public policy.

Moved by concerns over the Vietnam war, Sweden and other governments proposed introducing bans on the use of antipersonnel cluster bombs, aerially delivered antipersonnel mines, and other types of new antipersonnel weapons. Chapter 6 is an eyewitness account of the two Conferences of Government Experts where – in the formal sessions and in the corridors – the US and its NATO allies successfully blocked the Swedish proposals. It assesses the meager scope of the 1980 convention which resulted from the process, and draws attention to the important role which public opinion must play if tougher weapons bans are to be achieved.

The most striking consequence of the failure to impose tighter controls in 1980 is the problem of land mines. Among the new munitions developed since the Korean war are small antipersonnel mines, often made of plastic or other undetectable materials, which can be sown in huge numbers by hand or from aircraft, artillery, or vehicular dispensers. Today eighty-five and possibly over one hundred million unexploded land mines are believed to lie scattered in over sixty countries. Hundreds of thousands – possibly millions – of civilians have been killed or injured. Productive land is rendered unusable, and

precious resources must be expended on mine clearance and the rehabilitation of victims. The problem grows worse each day as armed forces and armed opposition movements continue to sow vast quantities of mines with wanton disregard for their short-term and long-term effects on civilians.

One response to the problem has been the birth of an international campaign to ban the use, production, stockpiling, and export of anti-personnel mines. With its direct and powerful humanitarian appeal, the campaign has already achieved remarkable results. Eighteen countries have enacted comprehensive or partial moratoria on the export of anti-personnel mines, and a United Nations conference is due to be convened in 1995 to review the 1980 convention and consider how it might be strengthened. But the natural reluctance of armed forces to give up the possibility of using any particular type of weapon makes a total ban unlikely, and other munitions which are less in the limelight – wide-area cluster bombs, fuel-air explosives, or bullets that tumble in the body – risk being forgotten in the discussions (Chapter 7).

This book is about an area of weaponry which has received scant attention in the literature of arms control.<sup>1</sup> The weapons in question include many of the most common, yet most of them are unknown to the public. They account for by far the most casualties in warfare, but little has been done to control them. These weapons depend for their effect on the mechanical destruction of body tissues caused by the impact of a projectile or the force of a blast wave. Their designation as 'conventional' distinguishes them from nuclear, chemical, and biological weapons. They are 'antipersonnel' weapons; weapons (in the words of *The United States Air Force Dictionary*) 'designed to destroy or obstruct personnel'.<sup>2</sup>

The years since World War II have seen a terrific growth in the killing power of antipersonnel weapons. Military commanders now have at their disposal an unprecedented capacity to inflict awesome casualties with a range of weapons that will kill outright or maim for life. Those in charge of military operations can put large numbers of enemy soldiers out of action through the use of remote-control weapons covering large tracts of land with fast-flying lethal fragments. Wishing to avoid casualties among their own forces, they will be tempted to use weapons that can kill thousands of people against targets where only a few soldiers may be present. By doing so, they increase the risk of hitting civilians and exacerbate the problem of unexploded munitions which remain on the surface or buried after an attack.

This book is aimed at bringing antipersonnel weapons into the domain of public discussion so that decision-makers and concerned citizens can find new solutions to the problems these weapons pose. It

seeks to convey an understanding of the fundamentals of antipersonnel weapons design and of the human environment from which these weapons come, in the interest of promoting an informed debate.

It appeals to weapons designers and those who direct their efforts to halt the technological rush to produce an ever-increasing severity of effects on an ever-increasing number of people hit. It appeals to military commanders to impose restrictions on combat which will avoid the widespread injury and loss of life that have characterized recent wars.

It appeals to governments to continue the work of the 1980 Conventional Weapons Convention by adopting progressively stricter bans on weapons which cause unnecessary suffering or have indiscriminate effects.

It appeals to people of good will throughout the world, moved by the horrors of modern warfare, to press the political authorities to prevent wars and to find political solutions to the problems that lead to war. Such solutions will benefit both the civilian populations and the armed forces who, offering their lives in defense of their countries, are increasingly at risk from the new armaments being devised.

#### Notes

1. The only comprehensive work on the subject is the study by the Stockholm International Peace Research Institute (SIPRI), *Anti-personnel Weapons* (1978).
2. Heflin, ed., 1956.

ERIC PROKOSCH

# THE TECHNOLOGY OF KILLING

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A MILITARY AND POLITICAL  
HISTORY OF  
ANTIPERSONNEL WEAPONS

In his timely and valuable book, Eric Prokosch has accomplished an impressive feat. He has turned a subject which is shocking and depressing into an engrossing account of the modern technology of killing.

His exposé of the vast arsenal of killing machines called 'antipersonnel weapons' is written in clear, lively language, backed up by a comprehensive record of historical and technical references. This gives the book great professional value to researchers as well as providing new information and insights for readers concerned about the growing inhumanity of modern warfare.

As an aviator in the US Navy for 35 years, I necessarily had first-hand knowledge of the evolution of antipersonnel weapons. Nevertheless, Mr Prokosch's book greatly expands my understanding, and horror, of these infernal devices and reinforces my support for international sanctions against their use.

Perhaps the most gripping element of this book is the detailed description of the weapons themselves. It is undeniably clear that immense effort and human ingenuity have gone into the design and testing of these weapons, but absolutely no thought or concern has been given to the indiscriminate nature of their effects. In truth, these are anti-human being weapons, military and civilian alike, and it is deeply distressing that so much effort and treasure has been devoted to creating this threat to humankind.

*Admiral Eugene J. Carroll Jr (Ret),  
Center for Defense Information, Washington*

Eric Prokosch holds a Ph.D. in anthropology from Stanford University, and has taught at the University of Wisconsin. He began doing research on antipersonnel weapons in 1966 as part of the US antiwar movement, and has become one of the foremost experts on the subject outside defense circles. He has worked for National Action/Research on the Military Industrial Complex, a project of the American Friends Service Committee, and is now working at the International Secretariat of Amnesty International. He attended the two Government Experts' Conferences on Certain Conventional weapons on behalf of the Friends World Committee for Consultation (Quakers). His articles on antipersonnel weapons have appeared in many newspapers and magazines, including *The New Republic*, *U.S. Catholic*, *International Social Science Journal*, and *International Review of the Red Cross*.

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*A Military and Political History of  
Antipersonnel Weapons*

ERIC PROKOSCH

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Cover photograph: BLU-26 'guava' bomblet casings. Each of these spherical, one-pound antipersonnel bomblets is embedded with three hundred  $\frac{1}{32}$ -inch steel balls. The bomblets are designed to spin so that they will disperse over a wide area when released from an airborne dispenser. Some bomblets have delay fuzes to prolong the effect of the attack. Nearly 285 million 'guava' bomblets are believed to have been dropped on Vietnam, Laos, and Cambodia in the course of the US-Indochina war. (North Vietnamese photo.)

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