Friendly Fire: The Inevitable Price

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Regarding the defeat of the Athenians by the Syracusans in the night battle at Epipolae in 413 B.C., the Greek historian Thucydides wrote:

> The Athenians now fell into great disorder and perplexity . . . . seeking for one another, taking all in front of them for enemies, even although they might be some of their now flying friends . . . . They ended by coming into collision with each other in many parts of the field, friends with friends, and citizens with citizens, and not only terrified one another, but even came to blows and could only be parted with difficulty.[1]

Becoming engaged with one's own forces on the battlefield is thus by no means a new problem nor an exclusively American fault. Historians have recorded many such incidents among the Greek and Roman armies of antiquity. Both George Washington and Napoleon had to cope with the problem, and the Confederate general Stonewall Jackson died as the result of being shot by his own troops at Chancellorsville in 1863. One Army Chief of Staff, General Adna R. Chaffee, came under friendly fire as a lieutenant at Brandy Station in the Civil War and again 40 years later as commander of US forces in the China Relief Expedition. One World War I German artillery unit, the 49th Artillery Regiment, fired short so often it was wryly known as the "48½." Even the vaunted Israelis have been known to fire on their comrades in error.

Although common in every conflict, "friendly fire" has only recently become a household word due to the fulsome attention given by the media to such incidents in the Gulf War. Of a total of 615 battle casualties in the war, 35 US soldiers and Marines were killed and 72 were wounded in 28 friendly fire incidents.[2] Many Americans were shocked to learn that 23 percent of all

our casualties in the Gulf War were from our own weapons. The knowledge that about 77 percent of all combat vehicles lost (seven of ten Abrams tanks and 20 of 25 Bradley infantry fighting vehicles) were destroyed by friendly fire was perhaps even more shocking. The featureless desert terrain; poor weather and reduced visibility; large, complex, fast-moving operations; and very lethal sophisticated weapons firing at long ranges all contributed to these incidents, but in the final analysis the causes as well as the effects were much the same as they had been in 413 B.C.

Almost every American citizen now has a general idea of what is meant by *friendly fire*, but a more precise definition is necessary to a proper understanding of the phenomenon. Friendly fire is often called *fratricide*. Another synonym, which we shall use in this article, is *amicicide*, which means specifically "the killing of friends." It is less known, but more accurate. These terms all refer to the unintentional engagement of one friendly unit by another, whether or not casualties result. Such incidents may for convenience be divided into four main types: air-to-ground, artillery, ground-to-air, and ground. Of course, there are other types, such as ship-to-ship or air-to-air, but they need not concern us here. Although casualties usually result from such encounters, they are not essential to the classification of an incident as friendly fire. However, certain types of incidents should be excluded. Intentional firing on friendly forces (as in cases of homicide, sanctioned executions and disciplinary actions, or protective fires *in extremis*) and true accidents (the explosion of a gun, walking in front of a firing gun, or firing through an enemy tank and hitting a friendly tank on the other side) should not be considered.

Although it seems every combat veteran has a friendly fire anecdote on the tip of his tongue, the problem is very difficult to study in a systematic manner. Until quite recently there were no clear reporting requirements nor any common definition of what actually constitutes a friendly fire incident. The editions of AR 600-10, *The Army Casualty System*, in use during the Vietnam War, for example, provided that friendly fire casualties be classified as "Killed in Action" or "Result of Hostile Action." The 1985 edition of AR 600-10 was the first to provide clear instructions for identification of the inflicting force.[3]

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Friendly fire incidents are not commonly highlighted in official reports or historical accounts. Commanders are frequently reluctant to report such incidents at all. In some cases the causative agent cannot be determined with certainty. In other cases commanders elect not to report such incidents as being caused by friendly fire in order to protect what they believe to be the best interests of the victim and his survivors, to avoid lowering morale in the affected unit, to preserve relationships with supporting units, or, it must be said, to protect their own careers. The public impact of friendly fire incidents in the Gulf War was so great largely because for the first time reports of such incidents were thorough. The limited scope of the conflict and its short duration made the investigation of the circumstances surrounding all casualties a realistic task. The investigators were further aided by certain unique high-technology signs of friendly fire such as the signature left by depleted uranium projectiles used only by our forces. Even so it took some time to make a firm determination in many cases.

As a result of inadequate data no one really knows the magnitude of the problem in earlier warfare. It is simply impossible to determine the number of such incidents in the past with any accuracy. Even the most detailed historical research cannot find all, or even the greater part, of such incidents, and it is even more difficult to determine their causes. There are sound reasons to consider two percent of total casualties as a good working order of magnitude for amicicidal casualties, but as many critics have pointed out, the true number may be much higher.[4] The Gulf War experience was perhaps unique in that amicicide incidents constituted a very high percentage of total casualties. The high proportion was due in part to the fact that the 100-hour ground war provided little time for the combat seasoning which invariably reduces the frequency of friendly fire incidents. The fortunately small number of overall casualties also served to highlight those caused by friendly fire; in most extended conflicts the enemy contributes his share of death and destruction.

The Gulf War was also unusual in that an individual was named and held responsible for a friendly fire incident. Lieutenant Colonel Ralph Hayles, the pilot of an AH-64 Apache helicopter which hit a Bradley infantry fighting vehicle with a Hellfire missile on 17 February 1991, killing two and wounding six, was charged with disobeying an order in connection with the incident and

subsequently retired from the Army.[5] The Hayles incident perhaps has more to do with the nature of oral orders and the personalities of the commanders involved than with the infliction of friendly fire casualties per se; in any event, the public identification and punishment of a soldier responsible for a friendly fire incident is very rare. Only one other case comes to mind, and that one, too, had significant political and diplomatic undertones. On 4 March 1945, six US Eighth Air Force B-24s bombed Zurich, Switzerland. The incident resulted in five civilians killed, 12 hospitalized, and 22 families left homeless; it was attributed to faulty equipment, bad weather over France and haze over Switzerland, navigational errors, and misplaced zeal. The pilot and navigator of the lead plane in the Zurich raid were subsequently tried but acquitted of violating the 96th Article of War.[6]

Air-to-Ground Incidents

Historically, air-to-ground incidents have been the most common and most destructive type of friendly fire engagement. However, only nine of the 28 Gulf War incidents, resulting in 11 killed and 15 wounded, were of the air-to-ground type. In addition to the incident involving Lieutenant Colonel Hayles, two other air-to-ground incidents in the Gulf produced substantial casualties. On 27 February nine British soldiers were killed in two armored vehicles hit by a US Air Force A-10, and on 29 January another A-10 fired a Maverick missile which malfunctioned in flight and hit a Marine light armored vehicle, killing seven and wounding two.

These incidents are certainly not unique. In Vietnam in August 1968 helicopter gunships from Troop D, 1st Squadron, 4th Cavalry (1st Infantry Division), operating at night in the III Corps Tactical Zone, also fired rockets which hit a friendly armored personnel carrier, killing two men and wounding three. The friendly ground forces attempting to adjust the fire of the helicopters caused the aerial rockets to fall short on their own position.[7] Similarly, on 27 October 1983 during the invasion of Grenada, a carrier-based Navy A-7E attacked troops from the 82d Airborne Division. Sixteen soldiers were injured, one of whom later died from wounds. The Navy said the mishap was caused by "misidentification of the target by the A-7, based on information passed by the Air and Naval Gunfire Liaison Company on the ground."[8]

Operation Cobra, the breakout from St. Lô, France, on 24-25 July 1944, involved the most massive close air support effort ever attempted and has been characterized as "a well-planned and successfully executed attack by combined air and ground forces," as indeed it was when viewed in general perspective. But Cobra also resulted in the most disastrous friendly fire experience of all time.[9]

The carefully coordinated Cobra air support plan called for a violent attack by 1500 heavy bombers, 396 medium bombers, and 700 fighter-bombers

on a rectangular target 7000 yards wide and 2500 yards deep immediately to the south of the Périers-St. Lô highway. This was to be the prelude for the main ground attack by the US VII Corps on a narrow front between Périers and St. Lô, and various measures were taken to protect friendly troops during the preparatory air bombardment. Friendly troops were withdrawn 1200 yards from the target area, and the heavy and medium bombers were ordered to bomb no closer to the friendly troops than 1450 yards, the 250-yard gap to be covered by more accurate fighter-bombers. The relatively straight and well-defined Périers-St. Lô highway was designated the NO-BOMB line. Artillery marked the northern limit of the target with red smoke at two-minute intervals, and the ground troops marked their positions after withdrawal with identification panels. Even the white stars on all Allied vehicles were repainted to make them more visible.

Operation Cobra was scheduled to begin on 18 July, but poor weather caused several postponements. The attack was rescheduled for 24 July, and many of the planes were already in the air when poor visibility over the target again caused the cancellation of the mission. However, 484 heavy bombers and 378 medium bombers as well as the first increment of fighter-bombers went on to attack the target. The abortive air attack alerted the Germans to the coming ground attack, and the results of the partial aerial bombardment were generally poor. More significantly, the confused bombing also fell on friendly positions. One fighter-bomber pilot misidentified a landmark and inadvertently bombed an American ammunition dump. When one of the heavy bombers was hit by a packet of chaff, the bombardier in a reflex action hit the bomb release toggles and dropped his bombs on the American airfield at Chippelle, destroying two manned planes on the ground and damaging others. The lead bombardier of another heavy bomber had mechanical difficulty with his bomb release mechanism and prematurely released his bombs on 30th Infantry Division positions 2000 yards north of the Périers-St. Lô highway, the other 15 planes in his group also dropping on his lead. Five medium bombers also released their bombs on troops of the 30th Infantry Division seven miles north of the target.

The effects were disastrous. The 30th Infantry Division suffered 25 men killed and 131 wounded. Most of the casualties were from the 2d Battalion, 120th Infantry Regiment, which had been in the open waiting to lead the attack. Even men in foxholes were buried by near misses or obliterated by direct hits. Confusion reigned as commanders at various echelons attempted to determine whether the ground operation was to continue as planned. It did not; both the full aerial bombardment and the ground attack were rescheduled for the next day.

Although the weather improved on 25 July, short bombing again took a heavy toll and nearly wrecked the offensive. No less than three formations of heavy bombers dropped their loads on friendly positions. In one case a lead

bombardier made a visual release after failing to synchronize his bomb sight, and 12 B-24s thus dropped their bombs within friendly lines. Another group of 11 B-24s dropped their fragmentation bombs on friendly troops when the lead bombardier failed to identify the target properly and released his bombs at the point where the bombs of a previous strike, made in error, were seen to explode. In another instance, a command pilot, believing that the bombing was to be by wing rather than by group, ordered bombs away while his bombardier was still sighting for range. Forty-two medium bombers also failed to identify their targets properly through the thick smoke and dropped their bombs on friendly positions.

Again, the results were calamitous. The leading battalion of the 47th Infantry (9th Infantry Division) and the 30th Infantry Division's 120th Infantry Regiment, 743d Tank Battalion, and 92d Chemical Battalion were particularly hard hit. The quick substitution of less-damaged combat units and grim determination on the part of ground force commanders and their troops permitted the planned assault to take place with only a minimum delay. The severely pummelled 120th Infantry jumped off only 30 minutes behind schedule. The 957th Field Artillery Battalion, which had nearly 30 casualties and lost its entire fire direction center when a B-17 dropped a string of bombs through the command post area, transferred its fire direction functions to one of its batteries and still fired all its planned fire missions for the day.[10]

The 30th Infantry Division alone suffered 662 casualties from friendly bombing on 25 July: 64 killed, 374 wounded, 60 missing, and 164 cases of combat fatigue induced by the stunning effects of the heavy bombardment. Overall the two-day ordeal produced 814 casualties, most of whom were from the 30th Infantry Division. Among them was Lieutenant General Lesley J. McNair, the former commanding general of Army Ground Forces, who was killed instantly while observing the attack with the assault elements of the 2/120th Infantry. Aside from the human errors already mentioned, improper briefing on the bomb line and poor visibility due to dust and smoke that obscured reference points and the Périers-St. Lô road, causing a parallel road three miles to the northeast to be mistaken for the bomb line, contributed to the frightful toll.

Despite the devastation of friendly forces, Operation Cobra proved a resounding success. The massive air attack stunned and demoralized the Germans and severely disrupted their defense, making possible the successful breakthrough of Allied forces and precipitating a general withdrawal of German forces behind the Seine River. However, the concept of close air support by heavy and medium bombardment aircraft was nearly abandoned altogether by the Allies. General Eisenhower swore never to use heavy bombers in close support operations again, but later relented. Bombing errors during Operation Cobra also demonstrated the inadequacies of smoke and

panels as aids for identification. Greater attention was subsequently focused on the development of a highly effective radio marker system and improved air-ground communications. Until such improvements were in place, ground force commanders generally preferred to use fighter-bombers for close air support missions. They were not only more accurate, but boosted ground force morale by visibly delivering their ordnance on enemy positions.

Artillery Incidents

Artillery incidents constitute the second most common and most serious type of friendly fire event. One author, the French general Alexandre Percin, alleged that 75,000 Frenchmen died in World War I from their own artillery fire.[11] Surprisingly, there was only one such incident in the Gulf War: one US soldier was killed on 26 February 1991 when his vehicle was hit by the premature burst of an artillery round.

Perhaps the best-known artillery amicicide incident is that described in C. D. B. Bryan's popular book, *Friendly Fire*, and the television drama based upon it.[12] On 17 February 1970, Company C, 1st Battalion, 6th Infantry (198th Light Infantry Brigade, Americal Division), established a night defensive position on a wooded hilltop near Tu Chanh, South Vietnam. Because of priority missions the supporting artillery, consisting of four 105mm howitzers located on another hilltop some distance away, did not begin registering Company C's defensive fires until the early morning of 18 February. The target areas were correctly plotted 400 meters away from the company perimeter, or about 1300 feet from the nearest friendly soldier. The first registration round (White Phosphorous-Airburst-50 meters) was right on target, but the second round (High Explosive-Impact) exploded directly over the 1st Platoon area after striking a tree. Two men were killed (including acting Sergeant Michael Mullens, one of the principals of Bryan's story), and six were wounded. Later investigation disclosed that the fire direction center of the supporting artillery unit had failed to allow for the height of the trees on the target hill. The first registration round (airburst) had cleared the trees, but the second (impact) had not.[13]

Although well-known, the incident described by Bryan was by no means the most serious artillery amicicide event of the Vietnam War. That designation goes to an incident occurring in late 1967 as the result of a gun crew error in handling powder charges. A US artillery crew firing harassment and interdiction fires at night applied Charge 7 rather than the computed Charge 4. The rounds landed in a US fire base, killing one man and wounding 37. The victim unit initiated counterbattery fire that proved unfortunately accurate, killing 12 men and wounding 40 on the offending fire base. The entire incident lasted 23 minutes, resulting in a total of 90 casualties among friendly troops.[14]

Ground-to-Air Incidents

Incidents of ground-to-air, or antiaircraft, amicicide were especially prominent in World War II but have been rarer in our subsequent conflicts due to almost total US air superiority in Vietnam, Grenada, Panama, and the Gulf War as well as to technological advances in air defense artillery and aircraft IFF (Identification, Friend or Foe) systems. There was only one such incident in the Gulf War and it produced no casualties.

On the very first day of our involvement in World War II, four Navy fliers died when six planes from the carrier USS *Enterprise* attempted to land at Pearl Harbor on the evening of 7 December 1941 and were shot down by friendly antiaircraft gunners.[15] But by far the worst incident of ground-to-air amicicide occurred during the Allied invasion of Sicily in July 1943.[16] On 11 July 1943, Major General George S. Patton, Jr., ordered the reinforcement of the Allied beachhead at Gela, Sicily, by more than 2000 men of the 504th Parachute Infantry Regiment, the 376th Parachute Field Artillery Battalion, and Company C, 307th Airborne Engineer Battalion. The drop by 144 aircraft of the 52d Troop Carrier Wing was scheduled for a drop zone in the Gela-Farello area at 2245 hours on 11 July. Because the weather was good and the approach was over friendly territory, an easy operation was expected. Ground commanders on Sicily were notified to expect the drop, and naval vessels of the invasion fleet off the coast of Sicily were alerted.

The flight of the airborne force from its Tunisian airfields was uneventful except for some light antiaircraft fire from Allied ships north of Malta which caused no damage. Hitting the Sicilian coast the troop carriers turned to the northwest, flying along a two-mile-wide corridor at an altitude of 1000 feet over friendly lines. The lead elements jumped five minutes ahead of schedule, but as the second flight neared the final checkpoint a lone machine gun began firing. Suddenly every Allied antiaircraft gun on shore and on the naval vessels offshore began firing at the slow, vulnerable troop carriers. Control over both Army and Navy antiaircraft gunners vanished. Even the crews of tanks took the hapless troop carriers under fire with their .50-caliber machine guns. Some paratroopers managed to jump before their planes were hit, but they were widely scattered, and some were shot in their chutes and even on the ground. The planes attempting to escape the maelstrom suffered heavily from the antiaircraft fire of the naval vessels off the coast. One pilot who survived stated with justifiable irony, "Evidently the safest place for us tonight while over Sicily would have been over enemy territory."[17]

The operation was a total disaster. By the afternoon of 12 July, Colonel Reuben H. Tucker, the commander of the 504th Regimental Combat Team, could count as effective only 37 officers and 518 men of his 2000-man force. In all, the paratroopers suffered casualties of 81 dead, 132 wounded, and 16 missing. The 52d Troop Carrier Wing reported seven dead, 30 wounded, and 53

missing and a 16-percent loss of aircraft (23 destroyed and 57 badly damaged). Friendly fire had caused 319 casualties and had totally disrupted the operation. A thorough investigation of the incident was quickly ordered by General Eisenhower, but the investigating officers were unable to reach any definite conclusions as to its causes. Lack of training and discipline on the part of both ground and naval antiaircraft crews was probably the primary factor, although some units professed never to have received the warning regarding the drop and thus a portion of the catastrophe must be attributed to a failure in coordination.

Ground Incidents

Incidents of ground amicicide, from which for convenience we exclude artillery incidents, are fairly common but usually do not produce high numbers of casualties per incident. Such events range from sentries firing on individuals to engagement of one unit by another in an all-out firefight. For example, the first US casualty of the North Russia Expedition in 1918 was a soldier of the 3d Battalion, 339th Infantry, shot in the leg by a sentry who fired before the soldier could answer his challenge. A more extreme example is that of the 28 Allied soldiers killed and 55 wounded during the invasion of Kiska in the Aleutians on 15-16 August 1943. There were no Japanese on the island; all the casualties were caused by friendly fire.[18]

The proportion of ground amicicide incidents in the Gulf War was quite high, involving several cases of engagement by friendly armored vehicles. Fifteen of the 28 incidents in the Gulf War, resulting in 23 killed and 57 wounded, were of the ground amicicide type. The most serious single incident occurred on 27 February 1991 when five Abrams tanks and five Bradleys were engaged by other Abrams tanks using thermal sights during a rainstorm. Six US soldiers were killed and 25 were wounded.

Such engagements by friendly armored forces were rare in earlier conflicts, but one World War II incident was similar to those in the Gulf War. At the end of February 1945, the 30th Infantry Division was advancing steadily against stiff German resistance along the Roer River.[19] The flat, open terrain dotted with villages afforded little cover and concealment for a conventional daylight attack, and most of the bounds forward from town to town were therefore made by coordinated night attacks lit by moonlight. On the night of 25-26 February the 117th Infantry attacked successfully and seized the towns of Lich and Oberempt. The next day the 117th consolidated its position and planned a coordinated night attack to seize the villages of Kleintroisdorf and Kirchtroisdorf and the town of Putz farther on. The day was spent in reconnaissance and detailed planning and coordination. The operations order issued at 1800 hours called for the 3/117th to move up from Steinstrass, pass between the 2/117th and 1/117th, and attack on the left at 2230 hours on 26 February to seize Kleintroisdorf. The 1/117th would attack

simultaneously on the right to seize Kirchtroisdorf. Then the 2/117th would be committed through the 3/117th to seize Putz. The attack would be supported by tanks from Companies B and C, 743d Tank Battalion, and by a company of British flail tanks (Troop A, 1st Lothian and Border Yeomanry) to be used for breaching minefields.

The attack jumped off smoothly at 2230 hours, and by midnight the 1/117th and 3/117th had taken Kirchtroisdorf and Kleintroisdorf respectively. Three hours later the 2/117th passed through and took Putz before daylight in a short but stubborn fight. The platoon of four British flail tanks detailed to follow the 1/117th in the attack on the right toward Kirchtroisdorf strayed left into the 3/117th zone. After proceeding several hundred yards the platoon leader realized his mistake and turned his platoon around. As his tanks again approached the 3/117th axis of advance, they were spotted by elements of the 3/117th, which had jumped off ten minutes late. The 3/117th and its accompanying armor (Company B, 743d Tank Battalion; Troop A, 1st Lothian and Border Yeomanry; and one platoon from Company C, 823d Tank Destroyer Battalion) assumed that the tanks were German and took the unlucky flail tanks under fire, destroying the entire platoon. In an otherwise well-planned, well-coordinated, and well-executed attack, one serious case of ground amicicide resulted, this because of chance, a directional error, and reduced visibility.[20]

Causative Factors

What conclusions can be drawn from these examples as to why friendly fire incidents occur? Two sets of factors must be considered: contributory factors and causes. The variety of contributory factors is virtually limitless, but among the more important are these:

- *Difficulties posed by terrain and climate.* Each environment has its own unique problems. Dense jungle conceals the presence of both friendly and enemy forces, and limited vistas make the locating of one's position difficult. Similarly, desert terrain offers few landmarks, while desert climate, including rain and sandstorms, obscures the view of aerial and ground observers, making identification of troops on the ground difficult.
- *Visibility.* Obviously, the ability to identify prospective targets correctly is contingent upon the ability to see them clearly. But, in and of itself, visibility is not a significant variable in the occurrence of friendly fire incidents since almost all modern tactical operations are conducted under conditions of reduced visibility, particularly in darkness. Poor visibility should be taken as a given.
- *Type of operation.* Offensive operations are more conducive to friendly fire incidents because of the rapid movement of friendly forces, heavy supporting fires, and movement through unfamiliar terrain. Patrolling and scouting operations are also particularly vulnerable due to their necessarily

surreptitious nature and the difficulties of coordinating such operations with all adjacent and higher units in a thorough and timely manner.

• *Size and pace of operations.* Friendly fire incidents are much more likely to occur during large, widespread, and fast-moving operations. Modern offensive doctrine invariably calls for rapid thrusts deep into the enemy rear and inevitably results in the mixing of enemy and friendly forces over an extended area.

• *High technology.* Although amicicide certainly occurred in the age of sword and spear, modern weapons of increased lethality and range employed in the indirect fire mode have increased the likelihood of such incidents. In some cases the range of today's weapons exceeds the effective distance at which targets can be definitely identified as friend or foe, and the use of thermal, radar, and laser sights makes the problem even more difficult. The speed of modern high-performance jet aircraft equipped with area weapons such as napalm, cluster bombs, and high-volume-of-fire cannon significantly reduce decision and reaction time for pilots and make the precision delivery of ordnance more difficult. In many respects modern weapons have outstripped the ability of their human users to control them, and the employment of sophisticated camouflage, electronic deception, and other modern defensive technology further compounds the problem.

The direct causes of friendly fire, as opposed to contributory factors, are also numerous, varied, and complex. Mechanical failures, for example, do cause some amicicide incidents but are surprisingly rare given the volume of ordnance on the modern battlefield. Friendly fire incidents are often attributed to misidentification of the target, but misidentification is only a symptom of more complex underlying causes. When one traces the causes of friendly fire incidents to their core, one almost always finds one or more direct human errors. Taken singly or in combination, the most obvious human failures leading to amicicide include these:

• *Carelessness.* Careless errors range from simple mistakes in recording grid coordinates, computing a fire mission, or applying the powder charge, on one hand, to gross criminal negligence on the other.

• *Stress of combat.* No other single factor produces as many incidents of friendly fire as does the stress associated with combat. This is the realm of the often-mentioned fog of war, the general confusion and fear attendant on armed combat. Individual stress can manifest itself in any number of ways to bring about an amicicide incident, from the nervous soldier who fires his rifle before properly identifying his target to the commander who orders his tanks to turn the wrong way in the confusion of an operation.

• *Lack of training.* Another major human cause of many friendly fire incidents is lack of training. This may involve something as basic as a lack of familiarity with the characteristics and operation of weapons or something as

complex as the lack of combat seasoning. The historical evidence suggests that green troops are much more likely to be involved in perpetrating friendly fire incidents than those who have had a period of seasoning on the battlefield. In most cases, this combat seasoning cannot be taught in the classroom, but must be learned the hard way on the battlefield itself.

• *Lack of discipline and fire control.* From the earliest times simple lack of discipline, and especially the lack of fire control, has produced friendly casualties. Despite good training, even the most seasoned troops must be held under strict fire discipline by their NCOs and commissioned officers in order to reduce the possibility of firing on their own comrades.

• *Lack of coordination.* While many of the human factors contributing to amicicide are met at the lowest level, that of the individual soldier, commanders and staff officers can also cause friendly fire incidents by failing to attend fully to the task of planning and coordinating operations. A poor tactical plan may lead to incidents of friendly fire, especially if it is unduly complex or involves the timed convergence of units. The failure to properly inform all concerned parties about one's plans is also a frequent cause. All too often the concern with operational security, or even simple laziness, results in the execution of plans which have not been thoroughly coordinated with higher, adjacent, and supporting units and which have not been passed down in detail to the last rifleman on the front line.

Effects

Friendly fire incidents range from the merely annoying to the deeply tragic. Historically, most such incidents have involved fewer than five casualties (often none) and have not seriously affected operations. Some incidents are even mildly humorous—for example, the case of the IX Tactical Air Command P-47 pilot who strafed the IX TAC forward command post in Normandy in 1944. He was shot down by friendly antiaircraft gunners and got to have an immediate interview with Major General Elwood R. Quesada, the IX TAC commander, whose comments were unfortunately not recorded.[21]

Obviously, friendly fire causes death and suffering as well as some local delays in operations and additional confusion, but by and large the effects of friendly fire incidents on the outcome of battles and campaigns are minimal. Only a few incidents, such as the St. Lô bombing, have involved large numbers of friendly casualties and have had a demonstrably negative influence on combat operations.

The psychological effects of amicicide are perhaps most important. Troops under friendly fire are almost certain to lose confidence in their adjacent and supporting units, and overall cohesion is likely to be reduced as distrust and the desire for revenge against the perpetrating unit takes hold. Friendly fire is also likely to result in a lingering fear of supporting weapons

on the part of individual soldiers who are thus disinclined to follow their artillery support as closely as possible or to bring air support in close where needed and most effective. Commanders and staff officers of affected units are also more likely to avoid closely coordinated operations in the future, preferring larger safety margins over effectiveness in the planning of supporting air and artillery fires.

Friendly fire surely generates understandable fear, anxiety, and hesitation on part of even veteran soldiers, but the public affairs impact of amicicide incidents is generally more troublesome. Most soldiers understand that such incidents are an unfortunate but natural part of warfare. The civilian populace is less likely to understand. The news media have a tendency to blow friendly fire incidents out of proportion, and an ill-informed public reacts with distrust, demands for retribution, and remedies which are generally unhelpful. The families of the victims of friendly fire display excusable anguish and suspicion, which are often translated into demands for investigations and explanations which cannot be provided with any degree of speed or accuracy and thus often lead to unwarranted charges of cover-up and malfeasance.

Solutions

Military and civilian leaders must face the unpleasant reality that the total elimination of friendly fire casualties on the modern battlefield is not possible. There is no one solution which will prove 100-percent effective in protecting against friendly fire. Even so there are various remedies which can and should be applied to minimize the occurrence of such events.

Several quick fixes were applied in the Gulf War, including the marking of vehicles with luminous paint and thermal tape and the use of several types of small infrared beacons mounted on combat vehicles. As the 28 Gulf War amicicide incidents attest, these remedies were not entirely foolproof, but the search for a technological solution seems to have wide support within the Army and certainly among defense contractors. Indeed, the Gulf War has stimulated the traditional American preoccupation with technological solutions to all sorts of problems, and there appears to be an unwarranted faith in eliminating amicicide through the application of some technological remedy. On 12 December 1991 a Department of the Army study group investigating the friendly fire incidents in the Gulf War released its report spotlighting problems, and the Army pledged $5 to 10 million in 1992 to find technological solutions.[22] Among the systems slated for further investigation and development are the Budd light, the DARPA light, and refinements of the Global Positioning System.[23] Given our traditional national preoccupation with technological solutions, these measures are sure to gain favorable public recognition (and government funding), since it seems that the American public is conditioned to think that technology and money can solve every problem. But new technology will not solve the problem

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and, in view of its probable high cost-to-benefit ratio, may prove fiscally impractical if not impossible.

In the last analysis war is a human endeavor, and only by addressing the human factors can we affect what does or does not happen in combat. A careful study of amicicide reveals that the solutions to the problem of friendly fire, if any, are more likely to be human rather than mechanical. Increased emphasis on training, combat conditioning, fire discipline, planning and coordination of operations, and keeping the troops informed is likely to produce more joy than all the expensive technological toys combined. In large part the responsibility for such measures falls most heavily on NCOs and junior officers. They are in the best position to ensure that their soldiers master their weapons and know the basics, such as the proper use of maps, accurately ascertaining their location and that of other friendly forces, and the correct and rapid identification of enemy and friendly uniforms, vehicles, equipment, and methods. Electronic imagery operators must be able to distinguish the relevant signatures under all conditions, and all troops must exercise proper dispersion and use of cover and concealment on the battlefield.

Veteran NCOs and officers also bear a special obligation to share their combat experience and to prepare their troops for the stresses of combat. Hard, realistic training which includes active awareness of the problem of friendly fire is a must, as is constant insistence on discipline, especially fire discipline, in training and on the battlefield. Commanders and staff officers must also do their part by considering the likelihood of friendly fire in the drafting of plans and by ensuring complete staff work and thorough coordination, including the dissemination of information to all echelons. Troops who know what is supposed to happen, where they are, where both enemy and friendly units are, and what to expect are far less likely to become either the victims or the perpetrators of friendly fire incidents.

Some would argue that we do all these things already and that such basic prescriptions are of little value. But leaders at every level from the squad leader to the Chief of Staff of the Army must search their consciences before declaring that they have done everything possible. Every officer and NCO must be personally involved and perpetually dedicated to ensuring that the soldiers under their supervision are properly trained, properly disciplined, and

properly informed. Indeed, they must in effect take the pledge that "no soldier under my supervision will be either a victim or a perpetrator of friendly fire if I can help it."

Conclusion

Even after we have applied the full range of technological and human preventatives, friendly fire incidents will continue to occur. Some friendly fire incidents are simply unavoidable, and we should not deceive ourselves or the public that this is not so. Perhaps the salient lessons learned about friendly fire from the Gulf War are that thorough, honest reporting of such incidents is essential and that little is gained by either avoiding the problem or punishing those involved. The wisest course may be to heed the elegant words of Major General Matthew B. Ridgway, then commander of the 82d Airborne Division, concerning the disastrous airdrop at Gela, Sicily:

> The responsibility for the loss of life and material resulting from this operation is so divided, so difficult to fix with impartial justice, and so questionable of ultimate value to the service because of the acrimonious debates which would follow efforts to hold responsible persons or services to account, that disciplinary action is of doubtful wisdom. Deplorable as is the loss of life which occurred, I believe that the lessons now learned could have been driven home in no other way, and that these lessons provided a sound basis for the belief that recurrences can be avoided. The losses are part of the inevitable price of war in human life.[24]

NOTES

1. *The Complete Writings of Thucydides—The Peloponnesian War*, unabridged Crawley translation, with an introduction by John H. Finley, Jr. (New York: Random House, The Modern Library, 1951), VII, 22 [pp. 425-26].

2. Office of the Assistant Secretary of Defense for Public Affairs, News Release on Friendly Fire, dated 13 August 1991, pp. 1-2. Unless otherwise noted, all data herein on Gulf War friendly fire incidents is derived from this news release. Most of the other incidents are described in detail in Charles R. Shrader, *Amicicide: The Problem of Friendly Fire in Modern War*, Combat Studies Institute Research Survey No. 1 (Fort Leavenworth, Kans.: Combat Studies Institute, US Army Command and General Staff College, December 1982).

3. US Department of the Army, *The Army Casualty System*, Army Regulation 600-10 (Washington: Department of the Army, 28 February 1985), para. 3-3a (Table 3-2). The codes to be used in completing Block 47 (Inflicting Force) of DD Form 1300 (Report of Casualty) include: ENEMY, AMIGO (Allied), BUDDY (US forces), and OTHER. The most recent casualty reporting regulation contains similar provisions.

4. I have presented the rationale for the two percent figure in *Amicicide: The Problem of Amicicide in Modern War*, pp. xi-xii. Other estimates range as high as 25 percent of total casualties.

5. For a discussion of the Hayles incident and its aftermath, see Robert Johnson and Caleb Solomon, "Gulf War Casualty: 'Friendly Fire' Downs The Soaring Career of a Gung-Ho Colonel," *The Wall Street Journal* (Southwestern Edition), 10 September 1991, p. A1; and "Chilling Tapes Show How Soldiers Died in 'Friendly Fire,'" *The Wall Street Journal* (Southwestern Edition), 7 November 1991, p. A1.

6. The court-martial was held at Headquarters, 2d Air Division, at Horsham St. Faith, England, on 1 June 1945, and was presided over by Colonel James M. (Jimmy) Stewart, the famous movie actor. See Jonathan E. Helmreich, "The Diplomacy of Apology: US Bombing of Switzerland during World War II," *Air University Review*, 28 (May-June 1977), 31 and 34-36; and Wesley Frank Craven and James Lea Cates, eds., *The Army Air Forces in World War II, Volume III: Europe: ARGUMENT to V-E Day, January 1944 to May 1945* (Chicago: Univ. of Chicago Press, 1951), pp. 735-36. Helmreich suggests that the US bombings of Switzerland were not

entirely accidental, and the disciplinary action taken against the perpetrators of the 4 March 1945 incident appears to have been an attempt to influence Swiss and world opinion. In April 1992 General Edwin H. Burba, Jr., commander of US Forces Command, overruled the recommendations of the appointed investigating officers and issued letters of reprimand to three officers formerly of the 3d Armored Cavalry Regiment for "negligence" in connection with the friendly fire death on 27 February 1991 of Sergeant Douglas "Lance" Fielder of C Company, 54th Engineer Battalion, during the Gulf War. See: Barton Gellman, "3 Rebuked in 'Friendly Fire' Death," *The Washington Post*, 4 June 1992, p. A1; Tom Donnelly, "Friendly Fire: The Toll," *Army Times*, 15 June 1992, p. 3.

7. Survey of students, staff, and faculty, US Army Command and General Staff College, regarding Vietnam friendly fire incidents conducted by Lieutenant Colonel Charles R. Shrader, Fort Leavenworth, Kans., 1980.

8. Jim Tice and Don Hirst, "Air Support Communications Failure Reported in Grenada," *Army Times*, 21 January 1985, p. 33.

9. The detailed story of the planning and execution of Operation Cobra and the accompanying close air support operations is set forth in *Amicicide*, pp. 40-43, based on the accounts given in Martin Blumenson, *Breakout and Pursuit* (Washington: Office of the Chief of Military History, US Army, 1970); Robert L. Hewitt, *The Workhorse of the Western Front: The Story of the 30th Infantry Division* (Washington: Infantry Journal Press, 1946); US Army Air Forces Evaluation Board in the European Theater of Operations, *The Effectiveness of Third Phase Tactical Air Operations In the European Theater, 5 May 1944 - 8 May 1945* (Orlando Army Air Base, Fla.: USAAF Evaluation Board in the European Theater of Operations, 1945); and Craven and Cates. In general I have favored Blumenson's account throughout inasmuch as his work was conducted later with the benefit of better materials. For an interesting account based on secondary sources, see John J. Sullivan, "The Botched Air Support of Operation Cobra," *Parameters*, 18 (March 1988), 97-110.

10. Interview by the author with Brigadier General James L. Collins, Jr., who commanded the 957th Field Artillery Battalion at the time. The 957th was hit by air strikes 13 times in Europe. Seven of those attacks were by friendly aircraft.

11. Alexandre Percin, *Le Massacre de notre Infanterie, 1914-1918* (Paris: Albin Michel, 1921).

12. Courtlandt Dixon Barnes Bryan, *Friendly Fire* (New York: Bantam Books, 1977). The book, and the television program based on it, tell the story of the reaction of the family of acting Sergeant Michael Mullens to his death by friendly artillery fire in Vietnam in February 1970 and their refusal to accept the Army's version of the events.

13. Ibid., pp. 337-38. The commander of the 1st Battalion, 6th Infantry, at the time was Lieutenant Colonel H. Norman Schwarzkopf.

14. Letter, US Department of the Army, The Adjutant General (AGAM-P[M]), subject: Special Operational Report—Lessons Learned, Casualties from Own Fires, 8 January 1968. Copy at US Army Center of Military History.

15. CBS television program on the anniversary of the Japanese attack on Pearl Harbor, 7 December 1991.

16. I have described the incident in some detail in *Amicicide*, pp. 67-68, following the account given in Albert N. Garland and Howard McGaw Smyth (with Martin Blumenson), *Sicily and the Surrender of Italy* (Washington: Office of the Chief of Military History, US Army, 1970), pp. 175-85.

17. Quoted in Garland and Smyth, p. 184.

18. Brian Wynne Garfield, *The Thousand-Mile War: World War II in Alaska and the Aleutians* (New York: Ballantine Books, 1969), pp. 334-35.

19. The incident is described in detail in *Amicicide*, pp. 88-89, based on a student research report prepared by Committee 21 entitled "Armor in the Night Attack" (Fort Knox, Ky.: The Armor School, June 1950); and Hewitt, *Workhorse*, p. 228.

20. Company C, 823d Tank Destroyer Battalion, was also involved in an earlier incident near St. Jean-de-Daye in Normandy, which I have described in detail in *Amicicide*, pp. 80-84. That incident involved a similar mistake in direction by American tanks which then engaged elements of the 823d in a serious exchange of friendly fire.

21. Craven and Cates, III, 255.

22. Eric Schmitt, "U.S. Seeks to Cut Accidental War Death," *The New York Times*, 9 December 1991, p. A12; John Lancaster and Barton Gellman, "Breakthrough to Avert 'Friendly Fire' in War Is Years Away, Army Says," *The Washington Post*, 13 December 1991, p. A10.

23. The DARPA light and the Budd light are both infrared beacons mounted on ground vehicles. Their infrared emissions can be picked up by thermal sensors on aircraft or on other ground vehicles. The Global Positioning System consists of a hand-held or vehicle-mounted device which provides a very accurate location read-out based on satellite data. Several of the more promising "technological solutions" were tested at Fort Bliss, Texas, in April 1992, but the results have not yet been released. See: Eric Schmitt, "War's 'Friendly Fire' Toll Spurs Push for Solution," *The New York Times*, 5 June 1992, p. A14.

24. Appearing in a letter dated 2 August 1943, as quoted in Garland and Smyth, p. 184.