WARFIGHTING SKILLS PROGRAM

COMBINED ARMS

MARINE BARRACKS
WASHINGTON, D.C.

MCI 8405

COMBINED ARMS
8405

Marine Corps Institute, Washington, D.C.

1990

Warfighting Skills Program

STUDENT INFORMATION

This information is provided to assist you in completing your course/program of study. For additional information, refer to the MCI Procedures Manual.

1. **Course Procedure:**

a. Read the text. When you have finished reading the text, review the course objectives at the end of the text. It's important that you take the time to review each objective **thoroughly**. Don't try to memorize the text solutions. Instead, pick out the key concepts for each objective and make sure you can express them in your own words. Think of examples that highlight these concepts. The exam questions are taken from the review objectives. *You will not do well on the exam unless you review the course objectives properly*!

b. When you complete the text, take the exam. The exam includes 10 essay and problem-solving questions, and you are allowed 2 hours to complete it. You are **not** allowed to use your text or any notes during the exam. To pass the exam, you must score at least 75%.

c. The case study and annex located at the back of the text are included only for your information. You are not responsible for this material in the course exam, although you may find it useful.

d. Individual Ready Reservists (IRR) and non-Marines should send exams directly to MCI for grading and posting. Return all materials to:

Marine Corps Institute (Attn: PMED Warfighting)
Arlington, VA. 22222-0001

2. **Receipt of Examinations at MCI.** Your exam will be graded at MCI by the Division Officer of the Warfighting Skills Program. If you pass the primary exam, MCI records your completion and mails you a course completion certificate. If you fail the primary exam, an alternate exam is automatically mailed to you. If you fail **both** the primary and the alternate exams, you are administratively deleted from the remaining courses of the program. If you desire to complete the program, you must Enroll as a new student and submit copies of course completion certificates to receive prior credit. You must successfully complete all course exams with a passing score of 75 percent in order to complete the program. For Marines, MCI enters the completion in the Marine Corps Manpower Management System (MMS).

3. **Disenrollment.** Disenrollment occurs upon reaching the Course Completion Deadline (CCD) date or the Adjusted Course Completion Deadline (ACCD) date (6-month extension) for the program. Reenrollment will be granted upon request within 3 months after disenrollment if a reenrollment was not previously granted for the program.

a. You will be disenrolled if you do not complete your course by the course completion deadline (CCD). To avoid this, call or write the Student Operations Department to request a six month extension allowing you more time to complete your course/program.

b. If you already have a six month extension and still cannot complete your course by your adjusted course completion deadline, you will automatically be disenrolled from the program. If you wish to continue the program, you must reenroll. **You are allowed only one extension and one reenrollment!**

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5. **Reserve Retirement Credits.** Reserve retirement credits are awarded **only** to inactive duty personnel upon successful completion of each course. Reserve retirement credits are earned at the rate of one credit for every 3 hours of estimated student effort. The total number of reserve retirement credits is indicated on the course title page and is awarded upon the successful completion of the course.

6. **Mail-Time Delay.** If you do not receive a requested service within 30 days, call or write to MCI.

7. **Information/assistance From MCI.** Further information is found in the current MCI Procedures Manual. If you have a question about the **content** of a course/program, call commercial (202) 433-4109/4110 or autovon 288-4109/4110. For **administrative assistance**, use the enclosed MCI-R11/14 or the Unit Activity Report (UAR) or call commercial (202) 433-2299 or autovon 288-4175.

8. **Student Data.** If you need to request a change to your student data in the MCI database, e.g., rank, change of address, use the MCI-R11k (Old MCI-R14 Student Request/Inquiry) located at the end of each text.

9. **Course Evaluation Questionnaire.** Please take a few minutes to complete and return the course questionnaire located at the end of this course.

PROGRAM:	WARFIGHTING SKILLS PROGRAM
COURSE:	*Combined Arms* MCI-8405 (1990)
ESTIMATED STUDENT EFFORT:	6 hours
RESERVE RETIREMENT CREDITS:	2
PURPOSE:	To teach you the fundamental concepts for combined arms warfare.
SCOPE:	This course studies the role of fire in tactics, the principles behind combined arms techniques, and the fundamental concepts for using indirect fire.

WARFIGHTING SKILLS PROGRAM

PROGRAM OUTLINE

COURSE NUMBER	COURSE	ESTIMATED HOURS	RESERVE RETIREMENT CREDITS
8401	Tactical Fundamentals	12	4
8402	Small Unit Tactical Problems Problems	9	3
8403	Combat Techniques	9	3
8404	Marine Corps Leadership	18	6
8405	**COMBINED ARMS**	**6**	**2**

Note: These are the courses as of 1 July 1990 in the Warfighting Skills Program. Disregard program outlines in any course texts you may have received previously. Some of the courses listed above may be out of stock or still under development; they will be automatically mailed to you once they are completed and in stock. New courses will be added to the program as they are developed. However, you are responsible to complete **only** those courses listed above and any others that are open **on the date you enroll in the program** in order to get a Warfighting Skills Program diploma. If you have completed the program and wish to take courses that were added to the program after your enrollment date, you must enroll in the new courses **individually**. If you are unsure about which courses you must complete to receive a program diploma, call MCI's Student Operations Department at commercial (202) 433-2299 or autovon 288-4175.

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INTRODUCTION

You have already studied combined arms in the *Tactical Fundamentals* course in this program. You learned that there is more to the concept of combined arms than simply having two or more types of forces or weapons. Combined arms is using your supporting arms, organic fires, and maneuver so that the action which the enemy takes to avoid one threat makes him more vulnerable to another. *Combined arms puts the enemy on the horns of a dilemma.*

You may remember an example from that course, one taken from first generation warfare. In the 18th century, if infantry was charged by cavalry, it usually formed square. The square was largely impervious to cavalry attack. But was highly vulnerable to artillery, with the men all packed close together. So if the attacker had both cavalry and artillery, he would use the cavalry to make the enemy form square, then bring his artillery up and blast the square to pieces. The enemy's infantry was faced with a dilemma: If it broke the square to avoid the artillery, it became vulnerable to the cavalry. But if enemy infantry maintained the square for protection against the cavalry, it was vulnerable to the artillery. That is combined arms.

This course will teach you how to fight combined-arms style. As you have seen, the basic concept is simple. But putting it into practice takes some study, thought, some imagination and some techniques.

The starting point is firepower. . .

CHAPTER 1

ROLE OF FIRE IN MODERN TACTICS

LIMITATIONS OF FIRE

The first thing to realize about firepower is that fire used alone is easy to counter. Most Marines have seen and been impressed by firepower demonstrations. But the most remarkable thing about modern weapons is not their destructiveness but the ability of human beings to counteract their effects. A slight irregularity in the ground protects a prone man from 50-caliber machinegun fire that, if he were standing, would literally cut him in half. A bit of overhead cover--a few logs packed with dirt or a heavy door torn from its hinges--will shelter a soldier from the otherwise deadly splinters raining down from a mortar bomb bursting in the air.

The ability of such simple expedients to deprive weapons of their decisive effect is well illustrated by the experience of a tiny French village named Fleury, which during the First World War, had the bad luck to be located in the middle of the battlefield of Verdun. On the morning of June 22nd, 1916, twenty-six batteries of German heavy artillery reinforced by nine light batteries fired over 100,000 high explosive and poison gas shells on the village, on "no man's land" between the village and the German lines, and on the French batteries supporting the defenders.[1]

Despite the ferocity of the bombardment--one observer described Fleury as "*One of the few towns which in the course of the World War was literally pulverized and blown off the face of the earth by long-continued, concentrated artillery fire*"[2] --a large number of French machinegunners, sheltering in cellars beneath the ruins of the village, not only survived the bombardment but retained the will to fight. The Germans had to clear the cellars one by one, with handgrenades and flamethrowers, before all resistance ceased in the ruins of Fleury.[3]

What happened in Fleury has happened over and over again in modern history. Huge amounts of firepower poured down on defenders who are well dug-in succeeded in killing a few of them and wounding others. Some were driven insane. All, no doubt, got splitting headaches. However, in most cases, the trenches or cellars were strong enough to allow some of the enemy to survive the bombardment and to come out fighting once it stopped. In the words of a Marine who experienced this phenomenon first-hand in Vietnam: "*They may have been bleeding from the ears, but they were still shooting at us.*"[4]

PINCER TACTICS

The phenomenon of men in battle surviving massive bombardments should remind you of a key concept of maneuver warfare. The point of tactics is not just to do damage to the enemy--to hurt him a little and hope that he will run away. Rather, the true aim of tactics is *to put the enemy into a trap from which there is no escape*, a dilemma that he can only solve by giving up his fight against us.

Such a trap or dilemma is very much like a nutcracker. By itself, each arm of the nutcracker can only push. This is true no matter how strong each arm is. However, when joined together in the right way, two arms combine to produce a strong grip, an effect that is many times stronger than the effect of many single arms. As you learned earlier in *Tactical Fundamentals*, this "pincer principle" is the central concept of combined arms warfare.[5] Combined arms is the use of two tactical actions--the "arms"--each of which alone is relatively weak, to put the enemy in a situation where he is "damned if he does, and damned if he doesn't." Let's look at some common techniques for achieving this effect.

The Cross Fire

The simplest form of combined arms tactics is the cross fire. Consider the case of an enemy rifleman shooting at you from behind a tree. If you fire at him only from the front, he is protected by the tree. If you go around him and start firing from his rear, he can go to the other side of the tree and still have the same degree of protection. However, if there are two of you and one fires at the enemy rifleman from the front while the other fires at him from the rear, you have put him in a dilemma. If he faces towards the front, he exposes his unprotected back. If he faces towards the rear, he exposes his back to your buddy. *Whatever he does, he is vulnerable.*

The devastating nature of even an imperfect cross fire is well illustrated by the experience of French Lieutenant Andre' Laffargue, who found himself caught in one in the opening days of World War I. On August 20th, 1914, Laffargue's company found itself at the foot of a small draw. As the Frenchmen moved forward up the draw, small groups of German riflemen infiltrated among the trees on either side of the draw, forming a horseshoe around the advancing Frenchmen. When the horseshoe was complete, the Germans opened fire. With his men dying around him, Laffargue tried to attack into the ambush. He forced his men into a skirmish line

and charged farther up the draw. The closer the Frenchmen got to the top of the draw, however, the more they exposed themselves to the German cross fire.

True to their peacetime training, the surviving Frenchmen knelt and began returning fire. However, after a few more minutes, the cohesion of the French company broke down. As a result of the predicament in which they found themselves, Laffargue's company degenerated into a mass of individuals concerned more for their own survival than for the accomplishment of their mission. Without orders, the French started to withdraw. Within a few minutes, the unauthorized withdrawal had turned into a rout. Laffargue found himself alone in the cross fire, convinced that not only the battle but the entire war was doomed to failure. As he later recalled, "*It was 1870 all over again.*"[6]

Lifting Fire

Whereas the cross fire sets up a pincer action that creates a dilemma of **space** --whichever way the enemy turns he makes himself vulnerable to fire from the other direction--the **lifting barrage** technique sets up a pincer action that creates a dilemma of **time**. First used in the Russo-Japanese War of 1904-1905, the lifting barrage exploits the short period of time that it takes a military unit to switch from one activity to another. To create a pincer using this technique, the base of fire--which in most historical uses of the technique consisted of fire from artillery or mortars--fires on the enemy positions and forces the enemy to take cover. When the maneuver element is only a few feet from the enemy position, the base of fire "lifts" its fire by either shifting it to another target or ceasing fire altogether. Then the maneuver element rushes into the enemy's position. The enemy, who just moments earlier was concerned only with avoiding the fire coming from the base of fire, now tries desperately to get into his firing positions. Unfortunately for him, the maneuver element is already in possession of those firing positions.

The lifting barrage was used in both World War I and World War II to attack enemy forces protected by extensive trenches and deep dug-outs. When the timing was right and the maneuver element literally followed the last salvo of shells into the enemy trench, the technique worked well.[7] However, when the timing was off and more than a few seconds passed between the lifting of the fire and the break-in of the maneuver element, the maneuver element found itself exposed to the undivided attention of an enemy firing at point-blank range.[8]

In *Field Artillery* magazine, Col. Homer S. Reese, U. S. Army (Ret.) explains how his unit effectively used the lifting barrage technique in World War II against the Germans:

> *. . . When we had advanced about 40 miles, we came to Hill 192. It was some 600 feet high and heavily wooded. The Germans had flown in their elite parachute troops to defend it and make it appear impregnable.*

General George P. Hayes . . . fired about 24,000 rounds on Hill 192, arranging with the infantry for signals to raise the barrage every 50 yards (site adjusted). When the infantry crawled up closer, they would fire another signal. Slowly they reached the top and started down the south side. We took the Hill in one day. The Germans couldn't stay there without being killed or wounded.[9]

Fire and Maneuver

The classic application of the "pincer effect" is the technique of fire and maneuver. To apply this technique, a force divides itself into two elements. The first element is called the base of fire, and the second element is called the maneuver element. The base of fire takes up a position from which it can deliver enough fire to keep the enemy suppressed. Then the maneuver element takes advantage of that suppression to move close enough to the enemy's position and deliver a decisive blow. Since the decisive blow almost always takes the form of some sort of fire--whether it be automatic rifle fire, handgrenade fire, or rocket fire--the technique of fire and maneuver is really a form of cross fire. If the enemy responds to the action of the base of fire--either by trying to reply with fire of its own or simply by taking cover--he exposes himself to the action of the maneuver element. On the other hand, if the enemy tries to move into a position from which he can counteract the fire of the maneuver element, he makes himself vulnerable to the fire coming from the base of fire.

Combining Different Types of Fire

Different types of fire have different effects on the enemy. For example, direct horizontal fire, such as fire from an M-16, forces the enemy to get down. Plunging shells force him to get under something for cover. By combining different types of fire, you can squeeze the enemy with the nutcracker that is combined arms.

A simple example of this technique is pinning an enemy soldier behind a log or boulder with direct fire weapons while rolling handgrenades down the hill at him. While the boulder may provide frontal cover against your M-16s or M-60s, it won't protect the enemy soldier from the grenade if it explodes behind him. With the

variety of weapons available to small unit leaders today, you can combine many different types of fires in an almost unlimited number of ways.

A master of combining fire of different types was the World War I German artillery "virtuoso," Lieutenant Colonel George Bruchmueller. Bruchmueller's favorite combination consisted of artillery shells that used different kinds of poison gas. Green Cross shells carried diphosgene, an especially effective asphyxiating agent. However, by the time that diphosgene was introduced, gas masks had improved sufficiently enough to protect against it. To solve this problem, Bruchmueller used Green Cross shells in combination with Blue Cross shells. Blue Cross shells contained both high explosive (75%) and diphenylchlorarsine (25%), a chemical that could penetrate all but the best gas masks. Although diphenylchlorasine was deadly only in very high concentrations, it cooperated with diphosgene by causing the victim to sneeze violently. This sneezing forced the victim to tear off his gas mask and expose himself to the deadly effect of the diphosgene. Again, the thoughtful combination of fires with different characteristics created a new combined arms technique.

Fire and Obstacles

Fire and obstacles can also be put together to create a combined arms dilemma for the enemy. Consider, for example, a barrier such as a combination of logs, branches, and barbed wire, covered by machinegun fire. To dismantle the barrier, the enemy must stand up or at least expose the upper part of his body. When he does so, he makes himself vulnerable to the fire of the machineguns. If he takes cover from the machinegun fire, he cannot dismantle the obstacle, which he must do to move forward.

Or, consider the example of an obstacle in the form of an anti-tank mine field covered by fire from TOWs and Dragons. To avoid the mines, enemy tanks must move slowly and carefully and keep visibility clear. To avoid the fire of the TOWs and Dragons, the tanks need to move fast and turn frequently, while making smoke to block the anti-tank gunner's vision. Whichever threat the tanks take action against, the mines or the anti-tank weapons, they make themselves more vulnerable to the other threat.

Fire and Deception

Up to this point, both arms of every pincer mentioned presented a real danger to the enemy. There are cases, however, when one of the pincer arms can exist primarily in the enemy's mind. An enemy force that has experienced a real minefield once or twice will take the trouble to walk around an area that it thinks is mined. Thus, in the right circumstances, a dummy minefield might be as good a pincer arm as a real one.

General Hermann Balck, Germany's foremost Panzer commander in World War II, explains how he used dummy mines effectively:

> *. . . The mine fields consisted of a few real mines and lots of dummy mines. Using the dummy mines, and the otherwise useless troops from the hospital, I was able to keep the whole defense together and to seriously slow down Patton.*
>
> *It all worked beautifully. After all, when a tank moves out and sees signs of mines, he can't know whether they're fake or real. So he's got to stop and get the mine field cleared, even if it has lots of dummy mines. Of course, the dummies have to have a bit of metal in them in order to ring the mine detectors.*
>
> *It worked brilliantly. I would never have been able to slow the American attack--and consequently our own Ardennes offensive would never have taken place--if I had not used mines in this way.*[10]

Other forms of deception can also serve to encourage the enemy to make himself vulnerable to your fire. For example, you might feign a withdrawal, leading the enemy to assault into an ambush that you have prepared for him. You might be able to cause the enemy to shift his reserve by making a demonstration, then call air in on the reserve as it moves out in the open. You might create a dummy logistics point and surround it with hidden anti-aircraft weapons; when the enemy attacks it with his aircraft, he runs into a flak trap. Anything that causes the enemy to expose himself to your fire can create a combined arms effect. Whenever deception can do that, it is one of the arms you are combining. Deception itself is a weapon.

Surprise Fire

Earlier in this chapter, you learned that fire used alone is easy to counter. But the pincer tactics discussed in this section should not blind you to the fact that there are occasions where fire alone can be effective. One such occasion is surprise fire. Troops caught in the open by sudden and massive concentrations of surprise fire tend to suffer horrible casualties. An extreme case of this sort of fire is recorded by Lieutenant General George S. Patton, Jr., in his report about the effectiveness of the then experimental Variable Time (VT) fuze. "*. . . The other night*," Patton wrote in December of 1944, "*we caught a German battalion, which was trying to get across the Sauer River, with a battalion concentration and killed by actual count 702.*"[11]

Fire in overwhelming quantities can also be decisive. Truly gargantuan amounts of fire--that is to say, explosions measured in kilotons--result in the actual physical destruction of enemy forces regardless of the countermeasure taken. This is true whether the fire comes from nuclear explosions or huge concentrations of conventional explosions.

However, while you can sometimes arrange surprise, you are rarely in a position to use nuclear weapons or massive B-52 strikes. Thus, you are back where you started--looking for ways to put the enemy between "a rock and a hard place" through combined arms.

Summary

This section taught you a number of techniques for achieving combined arms. The concept in each case is the same: using two or more weapons or tactical actions (including deception and surprise) in such a way as to make the enemy vulnerable regardless of what he does. Whatever action he takes to counter one makes him more vulnerable to the other.

This concept should be your guide in every tactical action. Whenever you can achieve combined arms, you get far more effect on the enemy from your weapons and your actions than when you simply "hit" the enemy in an uncoordinated fashion. Your goal should always be to put the enemy on the horns of a dilemma, not simply to give him a problem that he can solve. Remember, in maneuver warfare you are always trying to achieve a decision, not just to hurt the enemy. Combined arms turns your combat power into decisions.

EFFECTS OF FIRE

Although the "pincer effect" is a powerful idea that is central to combined arms, just bringing two arms together is not sufficient. If the pincer is going to have a decisive effect on the enemy, both arms must be of sufficient strength to make the trap work. Since one or both of the arms of a pincer are often made up of fire, you can't have much of an idea of whether your pincer will work unless you know what kinds of effects to expect from your fire.

In general, fire has three effects. The most obvious is the **physical effect**--what your fire does to vehicles, buildings, ground, trees, people, etc. Less obvious but no less powerful is the **moral effect**--what your fire does to the enemy's will to resist. However, the most important effect of all is the **tactical effect**--how your fire contributes to what you are trying to do to the enemy.

The effects of fire are not mutually exclusive. On the contrary, the moral effect of the fire results from fear of its physical effects. Likewise, the tactical effect of fire is often a result of a combination of its physical and moral effects.

Physical Effect

The physical effect of fire results from the interaction between a given projectile, its target, and the environment. Different projectiles have different physical effects. A rifle bullet hitting a vehicle has a different effect from an AT-4 hitting a vehicle. A grenade bursting on the ground among enemy infantry has a different physical effect from a shell from a 105mm howitzer bursting above them. A shell that comes down on top of the enemy from a high angle has a very different result from one that comes at him horizontally.

To employ combined arms effectively, you need to know the physical effects of each type of projectile you use. You need to know what the projectile can penetrate, what its bursting radius is, how much damage it will do within that radius, etc. You should know this for each of the weapons you will use or control. You can find this information in various technical manuals (TMs), instructional publications (IPs), school handouts, and other various weapons-related publications.

You also need to know your targets. The ability of a T-55 tank to resist your weapons is different from that of a BMP or a truck. The ability of a soldier in the open to escape the effect of your weapons is different from that of a soldier under cover. Different types of cover also have different effects; a man hastily dug in has different vulnerabilities to your weapons than a man who is in carefully prepared entrenchments.

The environment also influences the physical effects of your weapons. A shell bursting in the jungle has different physical effects on men nearby than does a shell bursting in an open area. Terrain plays a major role in weapons' effect. Broken terrain makes machinegun fire much less effective than it is in open terrain. The condition of the ground--wet or dry--has major effects on the results of shell fire.

In every engagement, you need to consider these influences on weapons' effect. What has a strong effect on the enemy in one situation will have only a weak effect in another. You must evaluate weapons' effect carefully in setting up your combined arms pincers. If the effect of your weapons is less than you expect, the enemy may not suffer decisively from your combined arms, and you may fail in what you are trying to accomplish.

Moral Effect

On June 30th, 1942, the 3rd South African Brigade (reinforced with a 24-gun field artillery regiment) found itself defending the El Alamein station on the coastal railroad to Alexandria. The station itself had no great military value, but the land corridor immediately south of El Alamein did. Bounded on the north by the Mediterranean Sea and on the south by the impassable Quattara Depression, the forty-mile wide corridor was the last place short of the Nile River itself where the British 9th Army could make a stand.[12]

The narrowness of the corridor gave the South Africans an unexpected opportunity to rectify the British habit of mishandling their artillery. The two sister brigades of the El Alamein garrison (the 1st and 2nd South African Brigades), each reinforced with a 24-gun field artillery regiment, were located less than six miles south of the railroad station. Since their standard artillery piece--the 25 pounder--had an effective range of 13,500 yards (about 7½ miles), and each artillery regiment could effectively cover an arc of 60 degrees, the overlapping arcs created a twenty square-mile "shooting gallery" whose every point could be reached by the concentrated fire of 72 field guns. (To add insult to injury, the South Africans were reinforced by a British medium artillery regiment--sixteen 4.5-inch guns--that brought the total number of guns up to 88.)[13]

On the afternoon of the 1st of July, 1942, the German 90th Light Division found itself trapped in this "shooting gallery." True to the German tradition of *Lucken und Flachen Taktik* ("the tactics of gaps and surfaces"), the 90th had been probing for gaps in the South African defense with the intention of bypassing the islands of resistance and cutting off the El Alamein garrison.[14] However, what the veteran Panzergrenadiers failed to realize was that the convergence of 88 artillery pieces had turned the gap into a surface far deadlier than the infantry and armored brigades whose direct fire weapons they were trying to avoid.

The British artillery began falling about 4 PM. At first the fire was desultory serving mainly to slow down the attacking Germans. However, within an hour all eleven of the British and South African batteries were in action with devastating effect. The artillery of the 90th Light Division was paralyzed.[15] The infantry was pinned down. Some German units, both infantry and supply troops, were driven to panic.[16] While energetic leadership on the part of German battle group commanders

kept the panic from turning into a rout, nothing, including the presence of Rommel himself, could induce the men of the 90th Light to resume their forward movement.[17]

The South African artillerymen had little knowledge of the effect that their fire was having on the unfortunate Germans. Each of the three regiments had been acting on its own without any sort of centralized fire control. Thus, although the battery and troop commanders acting as forward observers could see the sooty smoke produced by the burning German trucks, they failed to realize that their inadvertent cross fire had stopped a whole division.[18]

The history of war is full of similar examples of the moral effect of fire. They range from cases such as this, where the will to attack of a whole division was broken, to individual soldiers who were so affected by the enemy's force that they cowered on the ground, unable to move or even think. Sometimes, the moral effect is direct; soldiers see their comrades being killed all around them by fire and they panic. At other times, it may be indirect. In the 1940 campaign against France, the Germans fitted sirens on their Stuka dive bombers. At times, the mere sound of the sirens of the diving Stukas was enough to panic Allied units.

You must consider both the probable moral effects of fire and its physical effects when you plan an action. You must consider the action in reference to both the enemy, the effect of your fire on him, and to yourself, the moral and physical effects of his fire on your own men. There is no formula for doing this; it varies with such factors as whether the unit is green or veteran, whether the men are tired or fresh, and whether it is day or night, etc. Here, as elsewhere, you--the leader--must exercise your own judgment.

Tactical Effect

The most important effect of fire is its tactical effect. If the fire contributes to the pincer--if it works as one arm of the "nutcracker"--it is tactically effective. If it does not, it has no tactical effect, no matter how much ground it churns up or how much noise it makes.

A good example of the massive use of fire that had no tactical effect was the great Allied bombardments that preceded attacks in World War I. For example, in *Tactical Fundamentals*, you learned that at the battle of the Somme in 1916, the

British fired 4,000,000 shells over a seven-day period. It would be difficult to imagine a more massive display of firepower. But the tactical effect was nil. The Germans were not destroyed by it. When the British troops went "over the top" in their attack, 60,000 were killed or wounded on the first day alone, and the attack failed.

A good example of fire used with tactical effect was the Marine technique for destroying Japanese pillboxes and bunkers in the Pacific campaign in World War II. First, the Marines used smoke to blind the Japanese in the pillbox or bunker so that they could maneuver in close to them. Then, they used flamethrowers--fire--to force the Japanese defenders away from the firing ports so that they could not see or shoot. Finally, using the fire from the flamethrowers as a form of suppression, they closed with the pillbox or bunker to where they could throw satchel charges in and kill the defenders. They had an effective pincer; the Japanese could not meet the one threat, the flamethrower, without making themselves vulnerable to the other, the satchel charge.

Both physical effect and moral effect contribute to tactical effect. If your fire has neither physical nor moral effect, it is unlikely to have any tactical effect. Rommel recounts, from his campaign in North Africa, of courageous Italian anti-tank gunners vainly firing their guns at British tanks until the tanks rolled over and crushed them. Unfortunately, their guns could not penetrate the British tanks; they had no physical effect. And once the British realized this, the Italian guns also had no moral effect. Therefore, they had no tactical effect either. The British simply continued their attack.

Therefore, the law for achieving tactical effect is: In order to have tactical effect, your fire must have either physical or moral effect, or both. But unless the physical and/or moral effects are used correctly, so as to be an arm of the pincer, they will not add up to tactical effect. How you use them as an arm of the pincer depends on the situation. You learn **how** by doing it. In map problems and field exercises, you must practice calculating the probable effects of your fire, then see how to use those effects as an arm of your pincer. There is no formula; there is only practice.

NOTES

1. Douglas Johnson, *Battlefields of the World War: Western and Southern Fronts. A Study in Military Geography*. (New York: Oxford University Press, 1921) p. 365.
2. Johnson, p. 366.
3. For a more complete account of the battle of Fleury, see Bruce Gudmundsson, *Stormtroop Tactics: Innovation in the German Army, 1914-1918*, (New York: Praeger, 1989), Chapter 4.
4. Conversation between Capt Bruce Gudmundsson, USMCR, and LtCol Ray Cole, USMC, June, 1989.
5. The term "pincer tactics" was coined by Capt Bernhard Reddemann, a fireman by profession who, as a reserve officer in the German Army in the First World War, developed the modern flamethrower and a number of techniques for its use to create tactical dilemmas.
6. Andre' Laffargue, *Fantassin de Gascogne. De mon lardin a la Marne et au Danube*, (Paris: Elammarion, 1962), pp. 59-78. Laffargue was referring to the French defeat by the Prussians in 1870. He survived to become a vigorous spokesman for improving the tactics of the French infantry.
7. For detailed descriptions of this sort of attack in World War I, see G. C. Wynne, *If Germany Attacks*, (Westport, CT: Greenwood Press, 1976).
8. This happened to many British units during the first day of their Somme offensive in the summer of 1916. See Martin Middlebrook, *The First Day on the Somme*, or Timothy Travers, *The Killing Ground* for more detailed information.
9. Col Homer S. Reese, USA (Ret), "Redleg Recollections," in *Field Artillery* magazine, (Fort Sill, OK: U. S. Army Field Artillery School, April, 1989), p. 32.
10. *Translation of Taped Conversation With General Hermann Balck*, (Columbus Ohio: Battelle Columbus Laboratories, January, 1979), p. 11.
11. Quoted in Ralph B. Baldwin, *The Deadly Fuze*, (San Rafael, CA: Presidio Press, 1980), p. xxxi.
12. At this time, the South Africans were fighting as part of the British Commonwealth forces.
13. Shelford Bidwell, *Gunners at War*, pp. 178-179.
14. W. G. F. Jackson, *The Battle for North Africa*, (New York: Mason/Charter, 1975), pp. 252-253.
15. Erwin Rommel, *The Rommel Papers*, (New York: Harcourt, Brace, and Company, 1965), p. 246.

16. Von Mellinthin refers to this as "*Confusion not far removed from panic.*" F. W. von Mellinthin, *Panzer Battles: A Study of the Employment of Armor in the Second World War*, (Norman, OK: University of Oklahoma Press, 1978), p. 132.
17. "War Diary of the 90th Light Division." Quoted in Barrie Pitt, *The Crucible of War: Year of Alamein 1942*, (London: Jonathan Cape, 1984), p. 139.
18. John A. I. Hamilton and L. C. F. Turner, *Crisis in the Desert: May-July 1942*, (Capetown: Oxford University Press, 1952), p. 296.

CHAPTER 2

COOPERATION--PUTTING THE PINCERS TOGETHER

INTRODUCTION

In the last chapter, you learned the concept of using the "nutcracker effect" to put the enemy in a "damned if he does, damned if he doesn't" situation. In this chapter, you will learn some ways Marines can cooperate on the battlefield to produce these dilemmas.

The first step in putting the enemy in a dilemma is thinking through how to do it. In each situation, you, the leader, must decide how you want to put the enemy in your pincers. Do you want to do it by "squeezing" him between two maneuver elements? Do you want to do it by combining fire and an obstacle? Do you want to pin him down with fire while you get around behind him? Since all situations are unique, you must come up with your concept of how to make the pincers work in each particular case.

Then, once you have done that, you must make it happen. Remember, the Marine leader makes it happen. You must make the two arms of your pincer **cooperate**. If they don't cooperate--if they do not work together--you won't have a pincer. You will have only two, separate, uncoordinated blows at the enemy, enabling him to deal with each one in turn. He will face a problem or two, but not a dilemma.

How do you get cooperation between the two arms of your pincers? There are two basic ways: through **commands** and **orders**, and through **working together**.

COMMANDS AND ORDERS

The most obvious way to achieve cooperation is by means of a command. The command might be a direct order. For example, a squad leader might set up a single envelopment by pointing out the target and giving the following command: "*1st and 2d fire teams put suppressive fire on the machinegun in the farm house. 3d team follow me.*" Alternatively, the command could be a code word that triggers a preset battle drill. The battle drill might be to envelope a machinegun using the 1st and 2d fire teams as a base of fire to suppress the machinegun, while the third fire team maneuvers around it.

Commands and battle drills often deny subordinates the flexibility they need to adjust to their immediate surroundings. In such cases, cooperation is better achieved by means of **mission orders**. Such orders tell subordinates what needs to be accomplished, not how to do it. For example, in the same situation described above, the squad leader might have said, "*I'm taking the 3d fire team closer to the farm house so that we can destroy the machinegun. 1st and 2d fire teams: Keep that machinegun and any other enemy forces in the area off my back.*"

If a leader has subordinates who have worked with him (and each other) for some time, it might even be possible to dispense with mission orders. The squad leader who tells his squad "*I'm taking the 3d fire team closer to the farm house so that we can destroy the machinegun*" may not have to tell his other fire teams what to do. They know, from first hand experience, that the 3d fire team won't get very far unless the enemy machinegun (and all other weapons that can bring fire to bear) is suppressed. In other words, the squad leader need only express his intent.

The common element in all three of the above situations is the **intent**. The squad leader clearly indicated what needed to be done--eliminate the enemy machinegun. The difference is how restrictively the order is phrased. If his subordinates are relatively green, the squad leader has to be very specific about what needs to be done and how to do it. If the subordinates are relatively well trained, the squad leader only needs to tell them what has to be done. However, if his Marines work together like a well-oiled machine, the squad leader can get away with a simple declaration of his intent.

GUNG HO

Often, there will be times when the forces that provide both arms of the "nutcracker" are not under the direct control of a common commander. In such cases, the pincer is established by mutual agreement--by working together.

In the early stages of World War II, LtCol. Evans Carlson formed his famous Marine Raider battalion. Their motto was "Gung Ho." Carlson took this motto from the Red Chinese army, with which he had worked. "*Gung Ho*" translates as "working together." Carlson had been impressed with the results which the Red Chinese got against the Japanese by a strong spirit of working together. Each Chinese soldier looked for ways he could support his comrades in whatever they were doing. This attitude made cooperation and mutual support common and easy.

"Gung Ho"--working together--is the key to making the pincers of combined arms work when there is no common commander who can simply give an order. It is not a process, but an attitude. It is an attitude that leads every Marine to look for ways he can support his fellow Marines and what they are trying to accomplish.

Sometimes, working together leads to a formal agreement: "*O.K. Sir, my mortars will keep their heads down. We know you'll be bringing your platoon in from the east on their right flank. We'll watch for you and lift our fire in that sector when you get near them.*" But in many cases, if Marines are really working together, no formal agreement will be necessary. Marines will see other Marines who need their help and they will just give it. Both arms of the pincer will act together, without even communicating, because they see what needs to be done.

A good example of a situation where both of these types of cooperation resulted in tactical victory is provided by the experience of Sergeant Grund, a flamethrower section commander in the German Army in World War I.

On the 21st of March, 1918, Grund's twenty-man section found itself faced with the task of reducing a "nest" of seven enemy machineguns. Each one of these machineguns had been so well dug-in that neither the "hurricane" bombardment that had opened the day's fighting nor the subsequent "special treatment" by the artillery was able to knock them out. To make matters worse, Sergeant Grund and his six flamethrowers, which could fire effectively out to about twenty five meters, had to cross 1,000 meters of open ground just to get to the machinegun nest.

Grund's plan was a classic example of nutcracker tactics. He and his twenty men, divided into two squads of ten men and three flamethrowers each, provided one arm of the nutcracker. A nearby infantry company provided the other arm. After a short talk with Grund, the infantry company commander agreed to keep the enemy machinegun nest under fire while Grund and his men worked their way around what looked like an exposed flank.

The suppression of the enemy machineguns went well. The enemy's machinegunners were so concerned with the fire to their front that they failed to notice the maneuvering flamethrower troops. However, unknown to Grund, the route that he chose was dominated by the machineguns of a stranded enemy tank.

Knocking out the tank proved costly. Two flamethrower men were hit before the two squads could get close enough to fire at the tank. Although the tank's crew was soon silenced by two bursts of flame, the distinctive column of black smoke rising from the tank attracted the attention of the enemy machinegunners on the original objective.

At this point, Grund and his two squads were on the left flank of the enemy machinegun nest. This meant that some enemy machineguns could not go into action without exposing themselves to the fire of the infantry company cooperating with Grund's unit. The first nutcracker--Grund's flamethrower squads as a maneuver element and the infantry company as a base of fire--had gotten Grund's men across the open ground. But it broke down because the infantry company's fire was no longer effectively suppressing the enemy machineguns. As a result, one of Grund's squads was hit by heavy machinegun fire 200 meters away from the machinegun nest. Two men were killed, and the eight survivors tumbled into to shelter of a nearby shell hole.

Sergeant Grund, USMC?

However, the squad leader didn't allow this to prevent him from innovating a second "nutcracker." Knowing that Sergeant Grund and the other flamethrower squad would still try to attack the machinegun nest, the squad leader whose unit was pinned down ordered his men to fire long bursts of flame. Although this action had no physical effect on the enemy, it drew their attention. That allowed Sergeant Grund and the remaining squad to creep right up to the enemy machinegun nest and fire effectively into the gun emplacements. Within seconds, 75 machinegunners ran out of their trenches and surrendered.[1]

The story of Sergeant Grund shows both formal cooperation, in the agreement between the sergeant and the rifle company commander, and working together without an agreement, in the action of squad leader. But it also illustrates something else: working together in non-standard ways. When the squad leader ordered his men to fire bursts of flame which he knew could not reach the machineguns but might draw the enemy's attention away from the rest of the attacking force, he used his weapons in a non-standard way. His first concern was working together to create a pincer, not optimizing the effect of his weapons. He understood that it was the total tactical effect that was really important. He fully grasped the concepts of combined arms and working together.

The British in the Falklands provide another example of working together in non-standard ways. They had brought with them a number of Milan anti-tank weapons, similar to the Marine Corps' Dragon. The Argentines had no serious armor capability. But the Milan gunners used their missiles to fire at and destroy Argentine .50-caliber machinegun positions that were well dug in and protected from British machinegun fire. The suppression provided by the Milans, which were used in a non-standard way, enabled the British infantry to attack successfully. Again, working together to create a pincer was more important than using the weapon the way it was supposed to be used.

CONCLUSION

Whether the weapon is vintage flamethrowers or modern ATGMs, the principle is the same. The combined arms effect can only be achieved through cooperation. Sometimes this is **explicit**--by command, by mission order, by intent, or by agreement. Other times,when two units work together to produce a dilemma without even talking to each other, cooperation is **implicit.** In both situations, the common element is

working together to create a pincer and put the enemy in a dilemma. That is the goal, and any way you can achieve it, including non-standard ways, is good.

NOTES

1. Captain Bernhard Redemann, "Der Totenkopf Pioniere," in Paul Heinrici, ed., *Ehrenbuch der deutschen Pioniere*, (Berlin: Verlag Tradition Wilhelm Kolk, 1933), p. 183.

CHAPTER 3

INDIRECT FIRE

NEW OPPORTUNITIES

Until World War I, there was very little indirect fire on battlefields. Most artillery was designed to shoot direct fire, aiming at targets which the gunners could see. Indirect fire was considered something used only in sieges of fortresses or cities.

Since 1914, indirect fire has become a major force on most battlefields. In fact, in most wars, it has been the single greatest killer. With indirect fire, you have many new opportunities to generate combat power. Through long-range artillery, aviation, and naval gunfire, a Marine platoon or even squad or fire team can create a much more powerful "nutcracker" than a battalion or even regiment could create in past conflicts. Even a lone Marine manning a radio in an observation post (OP) can command enough indirect fire to halt the attack of an entire armor brigade. But you also face a new challenge. You must know the central concepts behind how to use these powerful tools. Then you must learn how to call for and control them. This chapter will teach you the central concepts behind using indirect fire.

INDIRECT FIRE AND THE GUNNERY PROBLEM

What is indirect fire? It is fire delivered on a target that the gunner cannot see. It may come from company mortars, heavy machineguns, 105mm howitzers, or a battleship 20 miles off the coast.

Because the gunner cannot see the target, someone else must guide the fire onto the target. This is called "the gunnery problem." Someone who can see the target (or predict it) must communicate with the gunner, telling him where to shoot. In principle, this is simple. Someone near the actual fighting sees a target. He communicates with a gunner who can fire indirectly to hit that target. He asks for fire. When the fire comes, he sees if the shell or bomb has hit the target. If not, he tells the gunner how to adjust his fire: right or left, add or drop, and by how much distance. He keeps doing this until the target is hit.

However, as anyone with combat experience or a good knowledge of combat history knows, many things can go wrong in this simple process. Most often, the communication link breaks down. The person who sees the target finds he cannot communicate with a gunner who can fire on it. He calls for fire but gets no response.

For a number of reasons, speed of response is also frequently a problem. Perhaps the person who sees the target communicates with the gunner, but the guns are either moving or already firing on a different target. Perhaps the guns are taking fire from enemy artillery and trying to shoot back. Or perhaps his fire request must pass through a coordinating agency that orders the guns to hold their fire until they can check and make sure that no friendly troops are in or around the impact area. Then, the person calling for fire has to wait until the gunner is cleared to answer his request. But what often happens is that the fire comes too late to create a pincer effect on the enemy.

Sometimes, the person calling for fire gets some fire, but not enough. The gunners are responding to many requests for fire, and cannot mass sufficient fire on this target to make a difference. The mass of fire is not sufficient to generate tactical effect, and again there is no pincer.

At other times, the fire comes in time and in sufficient mass, but it is not accurate. It misses the target. For example, you might call for air support and two A-6s, each carrying 6,000 pounds of bombs, respond to your call. They respond quickly to your call, and all those bombs create an enormous explosion. But the enemy tanks took no direct hits, and you see them emerge from the smoke and dust, still coming at you. The aircraft missed their targets.

To some degree, these problems are inherent in war. Nothing will make them go away completely. At times, communications break down, the artillery or air is too busy with other things to support you, Fire support coordination centers (FSCCs) delay fire missions, or the bombs miss their targets. That is one reason why you should make use of your own weapons as much as possible. Indirect fire is powerful, but it is not always accurate or available.

INDIRECT FIRE TECHNIQUES

Since indirect fire became common in World War I, a number of techniques have been developed to control it and make it support you, the man in the thick of the fight. A look at some of those techniques may give you some ideas about how to control the fire you want to support you.

Timed Fire

One of the first techniques to be developed was **timed fire.** To use this technique, artillery and infantry commanders would get together before an operation began, and decide how they thought the combat was likely to go. Then, on the basis of that expectation, they told the gunners when to shoot and where.

In World War I, timed fire often took the form of a rolling or creeping barrage. One German account tells about the development of the creeping barrage:

> *A great weakness of artillery support had always been that after the drum-fire ["prep fire"] barrage and the beginning of the infantry attack there was at first no artillery support for the attack. This gave the defense the opportunity of concentrating its reserves for a counter-thrust without being harried by a bombardment, whereas it was obviously necessary that his reserves should be kept under heavy fire precisely at such a critical movement. This necessity led to the development of a curtain of artillery fire advancing slowly in front of the infantry. This was the so-called creeping barrage. At a pre-arranged time, the time when the infantry attack begins, the artillery increases its range, and continues to do so steadily at a pre-arranged rate of advance up to a certain depth. The speed at which this creeping barrage moves forward is determined by the probable rate at which the infantry will be able to advance and this was usually estimated at between two and two and a half miles per hour.*[1]

Timed fire can be useful on occasion. But as you know from the earlier courses in this program, it has one major weakness: War is not predictable. The way the commanders think the action will go and the way it actually ends up going may be very different. After all, the enemy usually has something to say about it too.

With the rolling barrage, what commonly happened was that the barrage moved forward faster than the infantry attack could move, and the artillery fire outran the infantry. The pincer came apart. The enemy then had time to get out of his dugouts and man his firing positions before the infantry arrived, and the attack was usually defeated. First World War accounts say over and over, "*Sadly, we watched the barrage roll on and there was nothing we could do to stop it.*"

Timed fire still remains a technique. However, you have to decide where you can use it. If the situation seems highly predictable, you may try it. But the less you can predict how the combat is likely to unfold, and at what pace, the less useful timed fire is likely to be.

Unobserved Fire

Another way to control indirect fire is by using unobserved fire. The guns simply fire where they think the enemy may be. In Vietnam, U. S. forces used vast amounts of unobserved fire in an attempt to harass suspected enemy locations and interdict enemy movement. U. S. artillerymen fired millions of artillery rounds into the jungle where they thought the enemy might be. As a general rule, most of these missions proved ineffective.

Usually, unobserved fire is a waste of ammunition. It is not effective. It has virtually no chance of acting as one arm of a pincer. Occasionally, you may get lucky and hit something worthwhile, creating some tactical effect, but history shows that this is not very likely.

The Gunnery Team

In general, the best solution to the indirect fire problem has been the technique of forming a gunnery team. (See figure 3-1.) The gunnery team has three basic elements: First, the "eyes" of the team is an observer, who locates a target and calls back to the "brains," a Marine or group of Marines. They receive the observer's call and translate it into firing data useful to the guns. Then the gunners--the "brawn" --apply the data on their weapons and deliver the fire. As you saw earlier, this system has its weaknesses, but overall it has proved a better approach to using indirect fire than timed or unobserved fire.

Your challenge--a challenge for all Marine leaders--is to find ways to apply the basic gunnery team technique to create a "nutcracker" for various problems and circumstances. There are many ways you can do this. You might use indirect high explosive fire in combination with a minefield to ambush an enemy force that stumbles into the minefield. Or you might use a smoke screen generated by an artillery battery to permit maneuver elements to bypass an enemy strong point. In either case, indirect fire contributes one arm of the "pincer."

Fig 3-1. The Gunnery Team.

The Parham Method

An example of a highly innovative way of applying the gunnery team is a technique the British developed in World War II, called the "Parham method." The Parham method was an innovative solution to a problem inherent in modern, long-range artillery: how to have the ability to both rapidly respond to small unit fire requests, which required decentralization of fire control, and also mass fires quickly on a single decisive target. Usually, these two requirements are not compatible. If you decentralize artillery fire control, it usually takes a long time to then mass fires onto one target. Conversely, when you centralize fire control, your artillery becomes less responsive to the needs of the various subordinate maneuver units. Before the outbreak of World War II, the British field artillery had solved the centralization /decentralization problem by ignoring the need for massed fire. They decided to decentralize control of their artillery because of their experience during World War I: Massed, week-long bombardments that characterized British and French operations in 1916 and 1917 had little effect before an attack and failed to adjust to the infantry's needs when an attack fell behind schedule. As a result, the British field artillery that went to war in 1939 operated, for all practical purposes, as independent batteries.

An over-reliance on decentralization was a critical factor in the British defeat in the Battle of France in 1940. Their artillery's inability to quickly concentrate its fire against Rommel's anti-tank guns at the Battle of Arras (21 May, 1940) turned what should have been a decisive victory for the Allies into a minor irritation for the Germans.

After the Allied evacuation at Dunkirk, one of the veterans of the lost campaign in France and Belgium, an artillery officer by the name of A. J. Parham proposed a system of artillery command that might have won the Battle of Arras. In Parham's mind, this system would combine one of the traditional virtues of the British field artillery--the initiative and tactical sense of junior officers--with enduring direct support relationships and authoritative leadership at the division level.

At the top of Parham's system stood the Commander, Royal Artillery (CRA), the senior artillery officer of an infantry or armored division. (See figure 3-2.) Serving both as the commander of every battery organic or attached to his division and the principle staff officer for artillery, the CRA was in charge of both planning and executing fires in support of his division's operations.

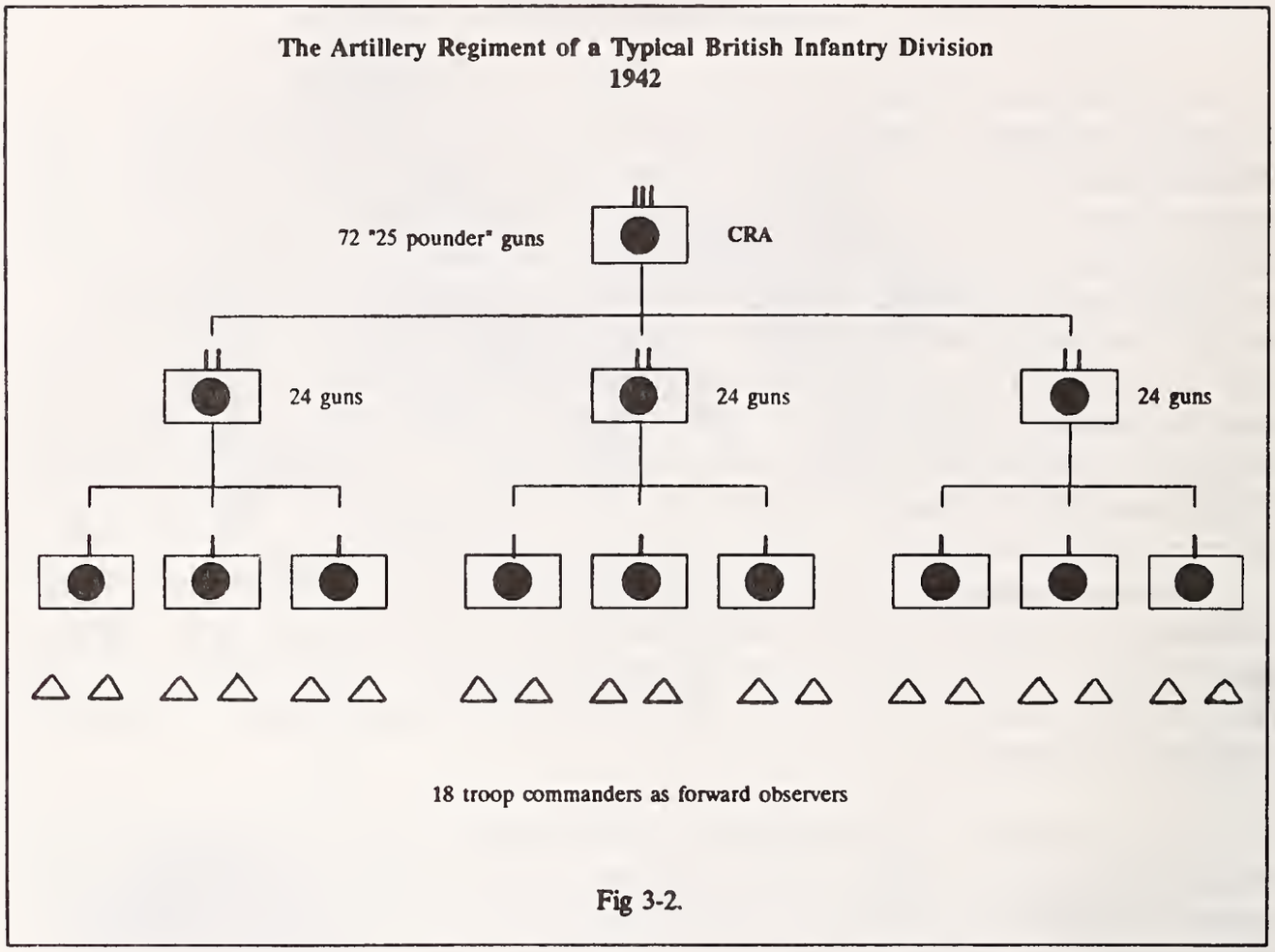


Fig 3-2.

When the need arose, the CRA's authority allowed him to order the concentration of all his batteries on a single target. Because the CRA could not observe every important point on the division's battlefield, the Parham System provided him with eighteen forward observers who acted as "directed telescopes" for the CRA. If any of these "directed telescopes" spotted a target that he considered worthy of the fire of all 72 of the division's guns, he was able, by means of the authority delegated to him by the CRA, to command that fire.

Each of Parham's observers used two radio nets. One was the regimental call for fire net. Every battery and artillery battalion command post as well as each of the eighteen forward observers and the CRA were on that net. The other was a battery call-for-fire net that connected the observer to his "home" battery.

The procedure was a model of simplicity. If a forward observer spotted a target worthy of concentrated fire from the entire artillery regiment, he got on the regimental call for fire net, shouted "*Uncle Target*" three times into his microphone, and gave the grid coordinates of the target. All batteries would cease what they were doing, aim in on the grid, and commence firing. Once the mission was over, each battery was free to return to whatever the "Uncle Target" had interrupted.

Of course, not all targets were worthy of such intense fire. Some only needed the attention of a 24-gun battalion.[2] Some could be serviced by an 8-gun battery or even a 4-gun platoon. For that reason, Parham's system of "directed telescopes" was superimposed upon a system of direct support relationships. Within each division, an artillery battalion was assigned to support a particular maneuver brigade. Within each artillery battalion, a battery was "married" to a maneuver battalions.

The forward observers who provided the eyes for this system were the same officers that formed the CRA's network of "directed telescopes." Ranking mostly as captains, these observers were platoon commanders in firing batteries. Connected by radio to their own batteries and to the CRA, these observers had the option of ordering a little fire from their own battery, a little more from their battalion, or a whole lot from the entire artillery regiment.

Fire from the battery in direct support was usually more accurate than fire from the entire artillery regiment. It was thus handier for suppressing the fire of enemy troops in contact with the supported maneuver unit. Fire from the entire artillery regiment had the virtue of coming down all at once in great heaps. Thus, it was very useful for such fleeting targets as enemy formations caught moving in the open.

When Parham first proposed his system, many of his colleagues feared that the regimental call for fire net with its more than twenty stations would degenerate into chaos. However, this problem was prevented by a combination of strict radio discipline, reserving the net for "Uncle Targets" only, and the short call for fire procedure.

The same critics also feared that the forward observers were incapable of exercising self-restraint in their calls for fire. Young officers in battle, these critics argued, would not be able to resist the temptation to call down "Uncle Targets" on anything that moved in their sector. The result would be a division with eighteen CRAs, a massive waste of ammunition, and "Uncle Targets" being called for at the same time.

These fears turned out not only to be exaggerated, but utterly groundless. In battle, the officers chosen to serve as forward observers quickly developed a sense for what was a proper "Uncle Target" and what could be dispatched by lesser concentrations. Like well-trained outfielders in baseball, they never cried "*I've got it*" unless the ball was coming their way. Rarely, if ever, did the CRA have to get on the net and choose between two simultaneous commands for regimental concentrations.

The Parham system itself may be useful to Marines; 10th Marines began experimenting with it in the summer of 1990. However, even more useful is the way it illustrates the key components of a workable technique:

--It is based on the gunnery team concept.

--It is simple. It has a minimum of communication links and decision points. It ties the man observing the fire to the guns as directly as possible.

--It is flexible. It can provide a little fire or a great deal of fire and do it on very short notice. It can mass with speed.

--It can create a powerful nutcracker.

The challenge to you is to come up with ways to employ indirect fire and control it that meet these same criteria. You can learn the Parham Method, but more importantly you can learn from the way Parham thought the British problems through. Remember, being a leader means not only knowing what to do, but also how to think.

CONCLUSION

Often, Marines can be intimidated by the process of calling for and adjusting indirect fire. Many are afraid of what seems to be a very complicated, highly technical process for getting fire support. They fear that they do not know how to do it.

But as you saw in this chapter, at root, indirect fire is simple. It requires a gunner on one end and an observer on the other, someone who can see the target and call for and adjust the fire. They have to communicate, but nothing says that the procedure must be complex. As a fire team, squad, or platoon leader, you can talk a gunner or a pilot into hitting the target. You can tell him where it is and guide him onto it. If he is a "gung ho Marine"--if he believes in working together--he will help you give him the information which he needs. He will "go the extra mile" to provide an arm of the pincer that gets you the tactical effect that you want.

Indirect fire gives you new opportunities. Use them!

NOTES

1. Ludwig Renn, *Warfare. The Relation of War to Society*. (London: Faber and Faber, 1939), pp. 145-146.
2. The text uses American terminology to describe equivalent British units. The British called their battalions (commanded by majors) "batteries," and their platoons (commanded by captains) "troops." The Commander, Royal Artillery (CRA), commanding all the artillery of the division (what we would call the artillery regiment), was a brigadier general.

CASE STUDY:

WORLD WAR I AND THE BIRTH OF MODERN COMBINED ARMS

INTRODUCTION

In this case study, you will look at the development of combined arms during World War I. Although combined arms was not new in World War I, warfare underwent a number of fundamental changes then. By 1918, you can see combined arms warfare as we think of it today. To understand modern combined arms, it is helpful to look in some detail at what happened in World War I.

1914

When war came to Europe in August 1914, a rifle company in every European army was just that. Every man in it was armed with a rifle and a bayonet, and nothing else. The officers had pistols and perhaps swords. No one had machineguns, mortars, or even handgrenades.

The same was true of the infantry battalion. It was only at the level of the regiment that any other weapon appeared, usually a couple of machineguns. Still there were no mortars or grenades, much less any artillery. Mortars were all large, belonged to the artillery, and were considered only siege guns. Only the engineers had grenades or explosives.

All the guns belonged to the artillery and were organized in artillery batteries, brigades, and regiments. Further, almost all the guns were designed for direct fire only. The relatively few guns designed for indirect fire, with the mortars, were intended for sieges of forts.

Two of the major nations at war provide examples. The French had about 4,150 artillery pieces, of which about 3,500 were the famous "French 75"--75mm-guns designed only for direct fire. The French had only about 300 pieces heavier than 75mm, and these were part of the army artillery train, intended for sieges. Germany had about 5,800 artillery pieces, of which about 4,450 were 77mm-guns. Like the "French 75", these were only designed for direct fire. Germany had substantially more heavy artillery than France, about 1,250 pieces ranging up to 420mm "Big Bertha", but again, they were all part of the siege artillery. Neither France nor Germany was prepared to use indirect fire to support troops in the field.

As you might imagine, in this situation there was little opportunity for combined arms. Unless you were at least a brigade commander, your battle was fought only with rifles. You might have a few 75mm- or 77mm-guns or a few machineguns supporting you with direct fire. But these just reinforced your effort to gain fire dominance with your rifles, so you could launch a charge in closely packed columns of infantry. Unless you were besieged in a fortress, such as Liege, you were unlikely to come under indirect fire. Because weapons like the "French 75" were guns with flat trajectories, you were also unlikely to come under plunging fire. Even a shallow trench gave you effective protection.

This situation worked greatly in favor of the defense. Once the front became continuous so that there were no flanks, the attacker had no choice, he had to launch frontal attacks against an entrenched enemy. The trenches gave effective protection from the direct fire, flat trajectory artillery, so the defender was relatively safe. Not surprisingly, the attacks failed, usually with heavy casualties.

RESTORING THE POWER OF THE OFFENSE

All the nations involved in World War I faced the problem of restoring the power of the offense. The methods they used brought about the birth of modern combined arms warfare.

Indirect Fire

The first thing they did was use artillery to attack the defenders in their trenches. This required indirect, plunging fire. Guns firing directly across the trenches accomplished little. The shot had to come arcing down into the trench.

New artillery pieces, especially howitzers, were produced. Heavy guns and mortars were taken from the siege trains and put behind the lines to support the infantry. Guns like the "French 75" were fired at much higher elevations than they had been designed for. Because this gave the guns more range, they could be moved further to the rear, where they were safer.

This in turn brought a major change in fire support coordination. The gunners could no longer see their targets over their sights. Someone else, a forward observer (FO), had to control the fire. The FO would spot the shots and, over land lines, tell the artillery to shorten or increase the range or shift left or right. This was the birth of indirect fire. As the war went on, indirect artillery fire came to dominate the battlefield. It caused far more casualties than rifles and machineguns. Sixty Five percent of all World War I casualties on the Western Front were caused by artillery, most of it indirect fire.

The same change took place in the infantry units. By 1915, the pure rifle armed infantry company was a thing of the past. At first, the riflemen had engineers attached to throw grenades and use satchel charges. Then, they began using grenades and satchel charges themselves. By the end of the war, they received light machineguns, down to the squad level. Riflemen were equipped with light mortars and flamethrowers.

This made the small infantry unit, as small as a squad, capable of combined arms tactics. A small unit could now call in artillery to keep the enemy down in his dugouts--deep holes dug beneath the trenches--while they attacked. The ideal situation was where the enemy did not come out of his dugouts until the attacker was already in his trenches. Infantry units used grenades and mortars the same way. If the enemy stayed down, the grenades and mortar bombs got him. If he got up, he was hit by rifle and machinegun fire.

As the war went on, aircraft joined the combined arms team. Both sides formed special air squadrons dedicated to trench strafing and general ground attack. Special aircraft were built, especially by the Germans, heavily armored and with machineguns so that the observer could fire down out the belly of the aircraft into a trench. These aircraft worked as part of the infantry's attack, strafing enemy riflemen who did not take shelter in the dugouts.

Combined arms tactics was a central part of the new third generation, maneuver warfare tactics which the Germans introduced in 1918. Each storm troop had a combined arms capability with its light machinegun and trench mortar. They used these weapons to keep the enemy down while they got around him and went deep into his rear. New artillery tactics were also part of maneuver warfare. Instead of massive artillery bombardments lasting days or weeks, the Germans used short, intense bombardments that broke up the cohesion of the Allied defense so that the storm troopers could penetrate. The artillery learned techniques for firing accurately

without registration shots, so the element of surprise could be preserved. Each German regiment was given a couple of 77mm-guns that went with it into the attack to provide heavy fire against machinegun nests and to serve as anti-tank weapons.

THE POST-WAR REVOLUTION: RADIO

Throughout World War I, one problem was never solved: controlling the artillery after the battle started. The FOs communicated to the artillery through land lines; radios were too large and cumbersome for use in the front lines. But as soon as the artillery of both sides started shooting, the shells cut many of the land lines. The artillery could not be controlled from the front and had to follow timetables set in advance. This meant that artillery fire often moved too far out ahead of the advancing infantry and allowed the enemy to come up out of his dugouts and man his firing positions before the attacker could get in his trenches. Or, if the attack moved faster than the timetable, the attacking infantry came under their own artillery fire.

Between the two wars, radio solved this problem. Radios became light enough to be carried in the front lines, and they used voice rather than Morse code, which the World War I radios used. With radio, the individual squad leader could control the artillery supporting him.

CONCLUSION

The changes that occurred in World War I, with the addition of radio control of fire between the wars, gave us modern combined arms warfare. The nature of infantry fighting from combat between riflemen changed to combined arms fire fights, engagements, and battles. Down to private, the infantryman could now coordinate supporting arms and create combined arms dilemmas for his enemy.

What does this mean for you, a United States Marine in the 1990s? It means three basic things:

First, the days when combat was largely a matter of men throwing themselves upon the enemy and fire played only a supporting role are gone forever. In even the smallest skirmish, grenades burst, mortar shells explode, and automatic weapons fill the air with bullets. Coordinating fires is a basic part of infantry combat.

Second, **you** can coordinate fires and employ combined arms. You know you can because men like you have been doing it in combat for more than 70 years. What German corporals leading storm troops could do in 1918, Marine corporals leading fire teams can do today. It is not something which only officers or specialists, such as artillerymen, do!

Third, you need to learn how to do it. You need to take the concepts presented in both this course and other courses in this program and apply them in the field. The concepts are only a starting point; your goal must be: to **do** combined arms tactics and techniques, not simply **understand** them. There is a big difference between the unit that can do combined arms tactics and that unit which can only talk about them.

WARFIGHTING SKILLS PROGRAM: CONCLUSION

In The Warfighting Skills Program, you have learned the fundamentals of modern, third generation tactics and applied them in tactical decision exercises. You have learned small unit combat techniques and ways to innovate techniques. You have studied the challenges of being a leader and the qualities required to be a real leader. In this final course, you have studied the central concept of combined arms. In short, you have been introduced to modern war.

The tactics presented in this program reflect a major change in Marine Corps doctrine, the change to maneuver warfare. This change became official with the issue of FMFM 1, *Warfighting*, in 1989. The Warfighting Skills Program is designed to give you the tools to make the change real, to make maneuver warfare happen in the field.

One of the fundamental messages of this program has been that modern warfare demands active, thinking Marines at every level. It demands innovation, imagination, and, above all, initiative. The Marine who sits and waits for orders or waits for someone else to do the job is not prepared for modern war.

The change in tactics demanded by FMFM 1 requires the same qualities and the same behavior. Neither FMFM 1, these courses, nor any other books or schools can make the change happen. Only **you** can make it happen. Whether you are a division commander or a company commander or a fire team leader, you are in a position to make maneuver warfare and modern tactics happen in your unit. Equally, you are in a position to make sure they don't happen. All you have to do is sit and wait for someone else to do it for you.

That is a choice you must make. It is a choice at the highest level: the moral level. It is a choice on which may depend the lives of your Marines and the safety of our country.

Remember: the Marine leader makes it happen!

Course Review Objectives

To prepare for the exam, you should review the objectives listed below. You will do well on the exam if you can satisfactorily complete each objective.

Chapter 1. Role of Fire in Modern Tactics

1. Define "Pincer Tactics."

2. Describe and give examples of the following combined arms techniques:

    a. The Cross Fire.
    b. Lifting Fire.
    c. Fire and Maneuver.
    d. Combining Different Types of Fire.
    e. Fire and Obstacles.
    f. Fire and Deception.
    g. Surprise Fire.

3. Explain the three effects of fire, give examples for each, and know which effect is the most important.

4. Explain the *relationship* between the three effects of fire.

5. When placed in a tactical scenario, develop a plan of attack or defense and explain how to combine arms using the weapons and units available. (You may find it useful to review *Tactical Fundamentals*, Chapter 3, *Small Unit Tactical Problems*, Chapter 5, and *Combat Techniques*, Chapters 4 and 5.)

Chapter 2. Cooperation--Putting the Pincers Together

1. Describe the two basic methods for getting cooperation between the two arms of the "pincer."

2. When achieving coordination through commands and orders, know what is common among each of the techniques described, and what makes them different.

3. State the translation of "Gung Ho" and explain how the concept applies in combined arms.

4. Explain and give an example of how you cooperate through working together in non-standard ways.

Chapter 3. Indirect Fire

1. Explain "the gunnery problem" and what types of "friction" can complicate the basic procedure.

2. Explain and give examples of the following indirect fire techniques:

    a. Timed Fire.
    b. Unobserved Fire.
    c. The Gunnery Team.
    d. The Parham Method.

COURSE EVALUATION QUESTIONNAIRE

Combined Arms MCI-8405 (1990)

To improve this course, please complete and return this questionnaire to MCI. If you answer "no" to any of the questions, please explain your answer. Include recommendations to improve this course, as appropriate.

1. Do you feel the purpose of this course was fulfilled?

2. Did the text present the material clearly? Were the examples helpful?

3. Was the level of instruction appropriate to your grade and MOS?

4. Did the course review adequately prepare you for the exam?

5. Did the exam adequately measure your understanding of the course? Was the method of testing effective?

6. Additional comments or recommendations. Please be specific.

How many hours did it take for you to complete the course?_____

Please provide the following:

1. Rank:
2. MOS:
3. Current Assignment:

If you have an administrative problem, please use the Student Request/Inquiry Form (MCI R-11K) provided.

Annex A

Selected Articles

Article	Page
The Lost Art of Indirect Machinegun Fire, by Capt Bruce I. Gudmundsson, (*Marine Corps Gazette*, September, 1988), pp. 43-44.	59
Ambushes--Still Viable as a Combat Tactic, by LtCol Charles L. Armstrong, (*Marine Corps Gazette*, July, 1990), pp. 27-28.	61
The Attack on Knob Hill, by Capt John F. Schmitt, (*Marine Corps Gazette*, May, 1990), p. 96.	63
Solutions to TDG #90-2, by Capt John F. Schmitt, et al., (*Marine Corps Gazette*, July, 1990), pp. 22-25.	65

The Lost Art of Indirect Machinegun Fire

by Capt Bruce I. Gudmundsson, USMCR

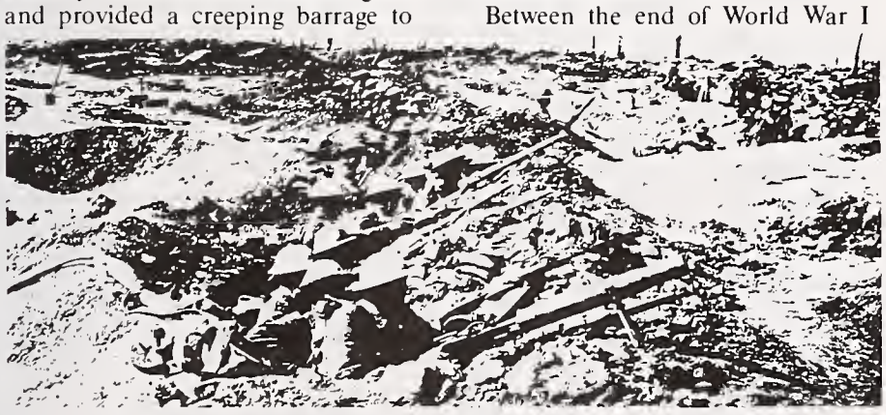
In the past century, we have forgotten more about the business of war than we have learned. The heliograph and the semaphore, simple communications devices, which were immune to the effects of jamming, interception, soggy batteries, and broken wires, have given way to radios and field telephones. Distance estimation, an essential skill when each rifleman was expected to be able to hit a man-sized target at 500 meters and a squad in close order at 1,000, has been replaced by laser rangefinders. We have even forgotten the old trick of slathering the feet with axel grease before a route march.

The worst loss of all is the art of indirect machinegun fire. It was first developed in 1917 by the Canadian Machine Gun Corps, then serving in Flanders (a region of northern France and western Belgium). Realizing that even the relatively flat trajectory of the high-powered rifle bullets then being fired from machineguns had a significant "curve" that could be put to use, they obtained some fire control devices from the artillery, drew up firing tables, and organized their machinegun companies into unofficial "batteries." These batteries were then placed in a position to put a "barrage" of machinegun fire behind the German trenches.

Indirect machinegun fire was first used in a big way on the first day of the Battle of Vimy Ridge (9 April 1917). While Canadian and British artillery silenced the German guns and provided a creeping barrage to suppress the thin line of defenders in the German frontline trenches, the machinegun barrages that had been laid between the German frontline trenches and the bunkers where the bulk of the German defenders were sheltering prevented the Germans from counterattacking. The result was one of the most spectacular victories achieved by British Empire forces during the first three years of the war. The Canadians took the ridge, which the Germans had held against more conventional attacks for over two years, in a matter of hours.

Indirect machinegun fire also proved itself in the defense. During the great German offensive that began on 21 March 1918 the only British forces that were able to inflict serious losses on the Germans were the ground attack squadrons of the Royal Flying Corps and the indirectly firing machinegun batteries. Because the British defenders were concentrated in battalion strongpoints, the Germans often tried to infiltrate through culverts, sunken roads, and other low ground located between these strongpoints. Where these "infiltration routes" were covered by the barrages of machinegun fire, however, the Germans were forced to attack the strongpoints themselves. Needless to say, this required that the attackers wait for artillery support to be organized and caused significant delays that were a major factor contributing to the failure of the German offensive.

Between the end of World War I and the beginning of World War II, machinegunners were expected, as a matter of routine, to be able to lay a cone of fire on a target, unseen to them or anyone near them, up to 2,000 meters away. In the course of World War II, the rapid removal of regular soldiers—through death, capture, or promotion—from the ranks and the mad rush to send units to the battlefield caused indirect machinegun fire to be removed from the curriculum at the schools and the training camps. It was, after all, a complicated procedure that required the use of complex firing tables, accurate maps, and quadrant sights. By the early 1960s, the technique had been all but forgotten. No machinegun manuals described the technique in detail and some even failed to mention its existence.



British used indirect fire from Lewis guns to defeat Germans.

Over the past four years, however, the Marine Corps has seen a gradual revival of interest in indirect machinegun fire. The direct cause of this renaissance has been *OH 6-9, Machineguns and Machinegun Gunnery*, the most complete book on the subject of machineguns published in the past 60 years.* While not devoted exclusively to indirect fire, *OH 6-9* provides enough information on the technique to spur a series of experiments and field exercises in which M60s, M2HBs, and Mk19 machineguns have been used to fire at unseen targets beyond their stated "maximum effective" ranges.

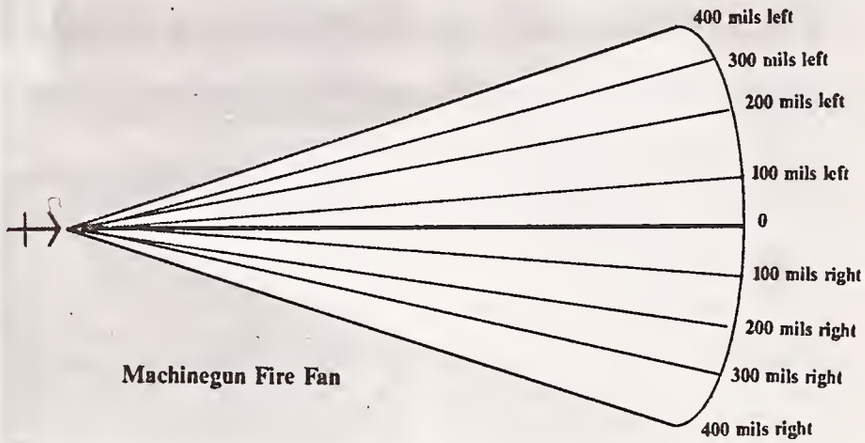
The resurrection of indirect machinegun fire could not come at a better time. Devices and techniques developed for other purposes make the learning of indirect machinegun fire easier than ever. Four-year enlistments and a renewed commitment to small unit training make it possible for Marines to take the time to master this skill. Most importantly, however, changes in weapons and tactics during the past few years make indirect machinegun fire an even more valuable part of our tactical repertoire than it was in World War I.

The techniques we have developed to simplify mortar fire can easily be transferred to machineguns. Most of the firing tables needed for indirect machinegun fire are already provided in *OH 6-9*, and will be in *FMFRP 6-3A*. The M16 "whiz wheel" plotting board, which is already used for all

*See footnote on page 39.

The Fire Fan

Of particular value to machinegunners considering the "indirect approach" is the fire fan that Capt Dana W. Moss (*MCG*, Feb86) suggests we use for controlling 60mm mortar fire. A major consideration in planning indirect machinegun fire is the limited traverse offered by the tripod. This means that targets located within the arc formed by the extreme left and right "settings" (400 mils left and right of zero) of the machinegun can be engaged much more rapidly than targets outside that arc. By drawing a fire fan representing an angle of 800 mils on the maps of both the forward observer and the machinegun crew, we can make use of this phenomonon to simplify fire control calculations.



Machinegun Fire Fan

The fire fan will also greatly simplify the call for fire of the forward observer. Any target located within the arc can quickly be designated by two numbers. The first is an angle (in mils) that corresponds exactly to a location on the traversing slide of the machinegun's tripod. The second is the distance, in meters, between the gun and the target. Through the use of firing tables, this number is quickly translated into an elevation setting for the traversing and elevating (T&E) mechanism.

If, in the course of an engagement, the machinegun crew changes its location, the forward observer need be given only two pieces of information—(1) the new location; and (2) an azimuth representing center of the new fire fan. Knowing this, the forward observer can draw himself a new fire fan on his map.

kinds of mortars, also can be used for indirect machinegun fire. (The only modifications required can be made with a felt tip pen or grease pencil.) The programmable handheld calculators we have been experimenting with for mortar fire control will also serve the needs of a machinegun unit firing in the indirect mode. The software needed for indirect machinegun fire control is identical in structure to that currently used for controlling mortar fire. Only the data will be different.

Today's tactical environment makes indirect machinegun fire even more useful than it was in 1918. Machineguns placed in a rear of a unit's position to provide antiaircraft fire or flank protection need not stay out of the main battle completely. Using indirect fire techniques, they can attack ground targets to the unit's front. The commander can thus provide for security against attack from an unlikely direction without completely losing the services of a machinegun section or platoon.

Machinegun bullets falling from the sky act very much like fragments from an artillery or mortar shell set off by a proximity fuze. Unlike proximity fuzed shells, however, machinegun bullets are safe to handle and can be fired with confidence in all weather conditions. Indirectly firing machineguns can thus perform missions like laying a "barrage" on enemy armored units, forcing them to button up and thus making them more vulnerable to mines and handheld antitank weapons. They can also attack personnel on surfaces, such as roads, bridges, or airfields, that we would rather leave intact than pocket with craters. In most situations, however, the most important capacity of indirect machinegun fire is its ability to supplement, complement, and economize on mortar fire.

The reduction in the infantry complement (proportionally to other arms and Services) in most all armies has resulted in an increase in both the opportunity and capability for attack by infiltration. Because the continuous line of trenches is a thing of the past, not likely to be revived except in the most unusual situations, the defender must think of ways to block avenues of approach by fire. Where fields of fire are good, this can be done by the direct fire of machineguns, rifles, and grenade launchers. In most areas of the world, however, there will be much dead ground to deal with as well. And it is this dead ground that is the preferred avenue of approach for those skilled in infiltration.

The textbook answer to dead ground is mortar fire. However, parceling out mortars to deal with dead ground, particularly in terrain where there is lots of it, dilutes the ability of a commander to mass his mortars against an enemy penetration or use them to support a counterattack. Using mortars to cover dead ground, moreover, risks their premature detection by an enemy equipped with countermortar radar or skilled in sound-ranging techniques. Finally, mortar ammunition is heavy. On a pound for pound basis, we can often get a better effect on troops in the open from indirect machinegun fire than from mortar fire.

This is not to say that we should replace our mortar platoons and sections with batteries of machineguns. On the contrary, faced with potential enemies whose artillery parks and tactical air forces are growing every day, we will have to rely more heavily on our mortars in the future than we ever had to in the past. It is precisely because mortars are so valuable, particularly when massed at the critical place and time, that we should not waste their fire doing what a machinegun, properly handled, can do more efficiently. USMC

> Capt Gudmundsson, a frequent contributor, is completing work on a book on German infantry tactics in World War I.

Ambushes—Still Viable as a Combat Tactic

by LtCol Charles L. Armstrong

The ambush can be one of the most useful combat techniques in low-intensity conflict, but the intelligence collection, planning, basic skills, and training required for truly successful execution are more difficult to acquire than most people realize.

A well-executed ambush is an act of premeditated murder and terrorism against strangers. If an ambush is well planned and executed with the desirable degree of surprise, the victims are not killed in a "fair fight"—they do not have the chance to fight at all. The so-called "hasty ambush," which we practiced so diligently in my days at The Basic School, is not really an ambush but a meeting engagement and is something to be avoided by small units.

The first criterion in planning an ambush is a thorough knowledge of the enemy's tactics. The second "must" is a thorough knowledge of the enemy's terrain. Knowing how and where he operates gives you a good idea of where and how he can be found and surprised. You must also know when he is likely to be located in various portions of his terrain. This information is put together over time using a variety of sources, such as prisoners, deserters, captured documents, friendly patrol and after-action debriefs, and experience gained from fighting the enemy. That all sounds too obvious for words, but think for a moment about how you train. Do all of your patrols have a standard debrief procedure they go through *every time* they get back to the rear? Does every patrol leader give the S-2 a map correction every time he returns from unfamiliar terrain? When you run your Marine Corps Combat Readiness Evaluation System against X Battalion/Y Marines, do all your unit leaders down to squad leader level study photographs and background packages on the unit leaders of that battalion? Is your S-2 tasked to research the personalities of those "enemy" leaders? Before you went to a Combines Arms Exercise (CAX) did your unit leaders study the after-action reports of the last few units to go through? How about the personalities of the control group officers? Did all your lieutenants pick the brains of the lieutenants who had just come back from CAX? Did they do it with the maps of the Delta corridor in hand? After you got through with these training exercises and evaluations, did you correct maps, flesh out your dossiers on the enemy commanders, and add to your archives for the benefit of the next officers who would rotate through your outfit? Knowing the enemy and his terrain is a process, a complex process, and like so many other factors of small unit combat, you will probably do it the way you have done it in training.

Knowledge of the enemy and terrain lets you pick the time and location of the ambush. How you conduct the ambush will be determined by your own resources and imagination. Some characteristics of good ambushes should always apply (such as surprise, mentioned earlier). Ambushes should be firepower intense. Every man in the ambush should have an automatic weapon, and all the weapons should be loaded with tracer ammunition. If your troops do not have night sights on the weapons, put "cat-eye" tape on the front and rear sights to make low light aiming easier. Use claymore mines in series to cover areas of the kill zone. Use hand grenades to saturate the kill zone while shooters are changing magazines. Anchor the flanks of the ambush with machineguns or squad automatic weapons to thwart enemy maneuver and discourage reinforcement/counterattack by other enemy troops who might be nearby. As the ambush is completed and your troops withdraw, drop small mines to cover your movement away from the site. Prerigged boobytraps should be left on or near some of the enemy bodies to further delay, surprise, and terrorize the enemy soldiers who recover their dead. The ambush should always be triggered by a prearranged signal that everyone can recognize and that will work regardless of weather or light conditions. There must be a similar signal to cease fire. If the ambush is set within range of friendly supporting arms, the kill zone and surrounding area should have targets plotted. Every man in the ambush patrol should know the route of withdrawal. Every member of the ambush should wear a distinct field recognition signal (a headband of certain color, for instance, or an arm band or strip of cloth tied around the barrel of his weapon) so that in conditions of low light or the confusion produced by the countless things that can go wrong in close combat, the team members can quickly and positively recognize each other.

Ambushes should not only be planned in great detail, they should be rehearsed—every time. Most of us have read James Webb's *Fields of Fire* and have seen the movie *Platoon*. Both these stories have great, early examples of how not to conduct an ambush. None of us would think of making an amphibious landing without rehearsing the landing plan. Every ambush deserves the same painstaking rehearsal. The rehearsals should always be done over terrain similar to the ambush site, using live ammunition, in the same light conditions as the real thing. The best person to critique the rehearsal is an enemy prisoner or deserter. An experienced enemy soldier can tell you how his former comrades are likely to react.

Preparations for the ambush should be detailed. All the gear and weapons should be rigged for quiet carrying and should be checked for rattles during the rehearsal. Take the sling swivels off rifles and muffle the handguards with cloth. Leave digital watches with alarms in the rear. No one in the ambush team should use or carry any tobacco products, and no one should drink alcohol or eat exceptionally spicy food for two days before an ambush mission. Unless you plan to ambush someone who dips the same brand of snuff or drinks the same whiskey, you can give yourself away through poor smell discipline as certainly as through poor noise or light discipline. Leave in the rear everything that could identify your unit's location or mission. Patrol maps should be "sterile" of all friendly

information. Designated team members should have bags in which to carry captured enemy documents, radios, and other items.

The length of time you stay in the ambush site will be determined by the amount of food and water you can take with you, assuming you don't make enemy contact and are not detected by civilians in the area. If your ambush does not make contact in whatever time period you have planned, you then withdraw, debrief, and start over. Don't try to improvise or overextend your troops. If you don't make contact, you will most likely be withdrawing tired, frustrated, and low on chow and water. In other words, you are a likely victim for the enemy's ambush. Withdraw carefully according to plan and live to fight smart another day.

The Basic School probably teaches "actions at the ambush site" pretty thoroughly, but I think some real-world reminders are in order. When the ambush is triggered, every team member needs to shoot according to the rehearsed plan. If everyone runs out of ammunition at the same time, you are vulnerable to counterattack. You need a game plan for changing magazines. If survivors get out of the kill zone, pursue them by fire—don't chase them into terrain of their choosing and get killed. Pour fire onto the enemy bodies after they are all down, and put a bullet into every head before you search the bodies. The last thing you want is to be stuck in enemy territory with the bad guys alerted to your location and have a couple of wounded Marines who were shot by some tough guy playing possum. Make quick searches of the bodies, while the security team stands guard. Take documents, communications radios, serviceable weapons, and, if feasible, ammunition. Weapons you can't carry out should be destroyed with prerigged explosive charges on the receivers or barrels. Take photographs of the dead enemy—if you know who you took off the opposition's roster it may affect the enemy's tactics and your future operations. Work quickly according to the rehearsal and be prepared for a counterattack. Don't withdraw the same way every time. Having dedicated helicopters to take you out is great if the enemy doesn't have surface-to-air missiles. Routine kills; vary the routine and stay alive on the way back to the rear. When you get back to base, debrief with the unit commander and the S-2 before you eat, sleep, drink, or clean weapons. You never know which of hundreds of ambushes will yield information of extraordinary importance.

A number of these principles and lessons can be illustrated by two examples of ambushes executed by units of the Salvadoran Armed Forces (ESAF) in two different types of terrain.

In December 1989 a small reconnaissance team of Salvadoran soldiers from Military Detachment 4 ran an ambush mission into the guerrilla rearguard area of Northern Morazan.

The team was partially composed of former guerrillas who had "turned," so their knowledge of the enemy was sound. They set their ambush above a prominent trail along a traditional withdrawal route used by guerrillas after offensive missions further south. The ambush team rigged a series of claymore mines to cover the kill zone and settled down to wait. In the next few hours they permitted two point elements of guerrillas to pass through the kill zone without triggering the ambush. Their patience paid off. During the night the main body of guerrillas, feeling safe because their point element had passed unmolested, walked into the ambush singing and joking. The ESAF team blew the claymores and opened fire with small arms. The guerrillas tried to fight their way out of the kill zone, shooting and throwing grenades, but the element of surprise was too great. After a few futile minutes of trying to gain control, the enemy unit grabbed what dead and wounded it could and fled. A 20-man ESAF patrol had surprised, terrorized, and defeated an enemy unit which outnumbered it an estimated 7 to 1, at a cost of 2 lightly wounded soldiers. The enemy had at least 19 casualties in a fight that lasted only a few minutes. Follow-on reports indicated the enemy had been shocked and demoralized by the surprise attack in their own backyard. The friendly patrol withdrew (using the cover of darkness) overland to link up with another unit in a more secure area.

In the spring of 1989 a rifle company commander of the 6th Infantry Brigade was given the mission of securing a 15-kilometer stretch of El Salvador's littoral highway against enemy roadside ambushes. The commander, 2dLt Roberto Angel Escobar, decided to use counter-ambushes set along likely enemy avenues of approach to catch the enemy moving into position. He decided to employ 10-man ambush patrols that would be firepower heavy and move into position at night. Each ambush would have an M60 machinegun, an M79 grenade launcher, several light antitank assault weapons (LAAWs), and each team member would be issued hand grenades. He set the first ambush by keying on a traditional enemy avenue of approach that led to an area where roadside ambushes were often encountered. The 10-man ambush patrol moved out just before sundown (when they could be seen by any enemy informants using the highway), then moved into their ambush position well after dark. As dawn broke the next morning, an enemy ambush patrol, whose apparent mission was to set a mechanical ambush against early morning traffic, moved into the friendly troops' kill zone. The patrol leader triggered the ambush. In the next few minutes, nine guerrillas fell dead. The 6th Brigade troops recovered 10 claymore mines from the dead guerrillas. Several guerrillas who were not caught in the kill zone got away and apparently spread the word about the devastating ambush they had escaped. Enemy roadside ambushes stopped while Lt Angel's men were securing the highway.

Key in both examples were planning, surprise, overwhelming fire, shock, and the will to kill an unsuspecting stranger without giving him an even break. The ambush is a tremendous force multiplier and psychological weapon. When executed by well-trained and well-rehearsed professionals, it is the safest of all offensive combat. USMC

>LtCol Armstrong is the naval attache with the American Embassy in El Salvador.

Tactical Decision Game #90-2

The Attack on Knob Hill

by Capt John F. Schmitt

Note: "The Attack on Knob Hill" is the second in a series of tactical decision games that the Gazette *plans to continue for the foreseeable future. The intent of the series is to provide a Marine Corps-wide forum for discussing tactics. Readers are encouraged to submit their solutions for publication. This can be done easily by drawing a sketch and writing the critical parts of a frag order on overlay paper. The author's solution for each scenario and one or two others selected by the editor will be published two months after the scenario is introduced. Due to deadlines, solutions must be received at least one month before publication; i.e., solutions for "Knob Hill" must be received by 1 June to be considered for the July issue. The* Gazette *suggests that units might want to use the games at officers' calls or professional development classes and would welcome unit as well as individual solutions.*

The Situation

You are a rifle platoon commander fighting in a jungle environment against U.S.-trained and U.S.-equipped forces. The areas not covered by thick forest, such as Knob Hill, are covered by grass three to four feet high. You have been operating in the region for several weeks and are quite familiar with the terrain and the local population, which is generally friendly (but may be just as friendly to the enemy). The company commander gives you the following fragmentary order:

> Reconnaissance reports that an enemy infantry force of approximately platoon size has established a patrol base on Knob Hill [several kilometers to the north]. They have been operating out of this base for 24 hours and have made one helicopter resupply. [Due to the thick vegetation in the region, Knob Hill is one of the few pieces of terrain accessible to helicopters.] Your mission is to attack and destroy that enemy force on Knob Hill. I can spare you two machineguns and the company mortar section.

You move your platoon into an assembly area. It is 2200. The moon is half. You instruct your platoon sergeant to effect resupply and have the platoon get some rest. Your platoon is well trained in night operations, and if you can get a good fix on the enemy positions, you have in mind to launch a nonilluminated night attack. You take a radio and the squad leaders for a leaders' reconnaissance, bringing along two additional dependable Marines (Taylor and Bell) for security. You approach the objective from the south on a well-worn animal track. En route you come across a local farmer, for whose young son you once provided medical care. With one of your squad leaders translating, the farmer tells you that the enemy platoon is no longer on Knob Hill, but at dark moved into the low ground somewhere north of the hill. He says he could not ascertain the exact location without arousing suspicion, but he says that the enemy has left a four-man listening post (LP) on the topographical crest and a machinegun team on the southwest slope. During the day on "El Knobbo," he tells you, "there was much digging of holes."

Moving closer you are able to confirm that the LP and machinegun are where the farmer said they were. From the LP you hear quiet laughter and conversation; you see the glowing tip of a cigarette. You are not able to locate any additional enemy positions on the objective. It is now 0015. What do you do?

The Requirement

Within a 10-minute time limit, prepare the fragmentary order you will issue to your squad leaders and weapons platoon attachments—including the intent of your plan. Include plans for supporting fires and an overlay for your scheme. Then give a brief (250 words or less) explanation of your rationale. Send your solution to the *Marine Corps Gazette*, Tactical Decision Games, P.O. Box 1775, Quantico, VA 22134. My solution (which is by no means the only solution) will be published in July along with one or two others selected by the editor. USMC

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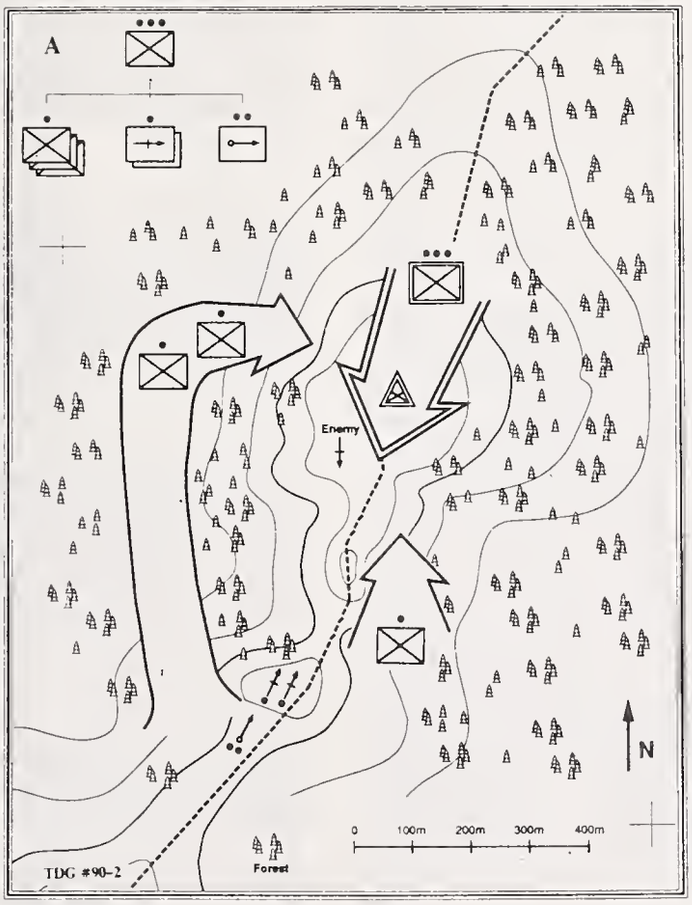
Solutions to TDG #90-2

Tactical Decision Game #90-2, "The Attack on Knob Hill," was presented in *MCG*, May90. In the game scenario covered in detail in that issue, you are a rifle platoon commander with two machineguns and the company mortar section attached. You have been ordered to destroy an enemy platoon-sized patrol base on Knob Hill. From local intelligence and personal reconnaissance conducted with your squad leaders, a radio operator, and two security men (Taylor and Bell), you learn that most of the platoon has left Knob Hill and is somewhere to the north. Only a machinegun team and four-man listening post (LP) remain on the hill. Your reconnaissance patrol has just pulled back slightly from the vicinity of the enemy positions; the rest of the platoon is in an assembly area to the south. The time is now 0015. What do you do? Give the frag order you would issue to your subordinates and explain your rationale.

Solution A
by Capt John F. Schmitt (Author)

The Platoon Commander's Order

"I believe the enemy will reoccupy his positions on the hill, probably before first light. I intend to ambush him as he moves back into position but before he has gotten himself settled in. Taylor, you and Bell keep the radio and stay here to report any changes in the situation. Work your way in as close to that enemy machinegun as you can *without being spotted*. As the attack goes down, take out that machinegun. 1st Squad, you will attack north along the trail toward the Knob to pin down the enemy and fix his attention. Don't push too hard; do not crest the high ground. It's all right to fall back under pressure; in fact, if you can suck the enemy in, that's perfect. Launch your attack when the bulk of the enemy force is concentrated on the Knob but before he has had a chance to move into his defensive positions.



Map by 2dLt Brendan B. McBreen

Once 1st Squad's attack begins, the machineguns, here [indicating on the map], will suppress the enemy on the objective. 2d and 3d Squads, the main effort, will move through the low ground following the treeline to the left [west] to take up a position on the west side of the hill and, after 1st Squad's supporting attack has fixed the enemy, will attack to destroy the enemy. Mortars, you take up a position behind the guns. As the attack goes down, put rounds north of the Knob to catch any enemy not yet in the kill zone or trying to escape north. Plan targets east of the Knob to catch any enemy trying to escape east. Do not open fire until the attack starts. Squad leaders, make sure everybody knows about Taylor and Bell; keep your eyes open. 2d and 3d Squads will mark the limits of their forward advance with yellow smoke. The signal for the main attack to commence and the machineguns to shift will be green visual [i.e., smoke or pyro, depending on the light conditions]. I will be with the main effort."

Explanation

Although I can take Knob Hill in the darkness without any trouble because it is practically undefended, the intent is to destroy the enemy, not possess the hill. I probably cannot take the hill without the enemy knowing it, which would give him the chance to formulate his own plan to get it back or, just as likely, to simply withdraw if he is so inclined—neither of which satisfies the company commander's intent.

I can attack the enemy in his harbor site, but with uncertain information of his exact location and security arrangements, I would have less of a chance of achieving clean surprise and a decisive victory. I would probably find him in the dark by bumping into him. I estimate I would probably take greater casualties and that the enemy might be able to slip away. Instead, I will exploit his apparent false sense of security to let him walk into a trap. My supporting attack will come from the most obvious direction—north along

the trail—and so I expect he will react quickly to it, exposing himself to the main attack from the west. To maintain a chance for surprise, I will not use preparation fires, but will have on-call targets planned north and east of the Knob to isolate the objective.

My plan is based on the key assumption that the enemy will return to the Knob. If he does not, I must form another plan to find him. If the main force does not return, the detachment left on the hill will eventually retire. They may lead me to the enemy or into a trap. I will have to be careful.

What Really Happened

This situation actually occurred during a 3d Battalion, 6th Marines field exercise in the Philippines. The enemy platoon was a platoon from another company. The local farmer who provided the valuable combat information was actually the Filipino guide supposedly assigned to the enemy platoon. In actuality, the order from the company commander did not specify whether the purpose was to seize the hill or destroy the enemy, and this caused some consternation for subordinates. They had to assume his intent. Taylor and Bell took out the enemy machinegun without a hitch immediately upon the fight breaking out; they had been able to crawl within 15 meters undetected. As it turned out, the machinegun, poorly positioned on a convex slope, had no more than 10 meters of grazing fire anyway. There were no developments in the course of the night, so the two lance corporals were not able to provide any additional information. But the fact that they were able to provide no information about any developments was itself very helpful—if for no other reason than it inspired confidence in the plan.

I expected the enemy to move into position just before dawn and intended to be in position myself on the west side of the hill with time to spare. The movement through the low ground took much longer than anticipated; we arrived in the nick of time. The enemy did in fact reoccupy his positions but—fortunately, as it turned out—not until *after* first light. The enveloping attack spent some tense moments in the tall grass on the western slope of the hill as flank elements of the enemy platoon moved within 15 meters of us as we waited for the supporting attack.

I was far from comfortable with the way my attack would start—the supporting attack against the enemy's front—but I did not have enough radios to maintain communication with 1st Squad. I had to make sure my squad leader knew my intent and understood clearly the conditions for starting the attack—then I had to trust him.

From the start, I had worried that the plan seemed almost too obvious. A supporting attack north along the trail seemed too predictable to fool anybody. As I viewed it from the small rise on the trail south of the Knob (where I later positioned the machineguns), the treeline curving around through the low ground to the west and into the west side of the hill seemed like a textbook example of an infantry avenue of approach. The vegetation on the right was not nearly as advantageous. From my perspective it, too, seemed obvious. I was worried the enemy commander would be expecting it. For that reason, I had at one point dismissed this plan and searched for another. It was only when I could not come up with another suitable plan that, with a feeling of surrender, I returned to the original scheme. The enemy reacted very quickly and aggressively to the supporting attack, creating an enfilade target for the flanking attack; my fears of being outguessed had been unfounded. I was not able to get my squads on line on the western slope of the hill, so we attacked essentially in column, penetrating the enemy force and firing outward rather than sweeping the enemy before us. The dropped-jaw gape of the enemy commander as we swept through his platoon betrayed his total surprise.

There were three significant lessons from the attack on Knob Hill. First is the importance of seeing things from the enemy's perspective. Seen from two different points of view, the same situation (or piece of terrain) can look completely different. Second is that while we should respect our enemy, we should not give him too much credit or ascribe to him superhuman powers of intuition. Had I done that, as I nearly did, I would have abandoned a plan that turned out to be successful. And third is that we all acknowledge the wisdom of attacking the enemy's flanks vice his front and of protecting our own flanks against attack, yet in practice we seem to be drawn to the obvious and direct. Could it be that, as Clausewitz tells us, "everything in war is simple, but the simplest thing is difficult"?

Solution B

by Sgt Robert B. Gimenez, USMCR

Platoon Leader's Frag Order

An enemy platoon is bivouacked for the night in the low ground north of Knob Hill. They have left a listening post on the topographical crest and a machinegun on the southwest slope for security. Our mission is to destroy this enemy unit.

My intent is to ambush the enemy from the east when he moves back to Knob Hill and then seize the Knob Hill position. The platoon will move along the east slope of Knob Hill to avoid detection by the enemy listening post. The platoon should be in position to assault the hill and ambush the returning enemy platoon no later than 0400. Upon initiation of the ambush by the 1st squad, the rest of the platoon will seize Knob Hill.

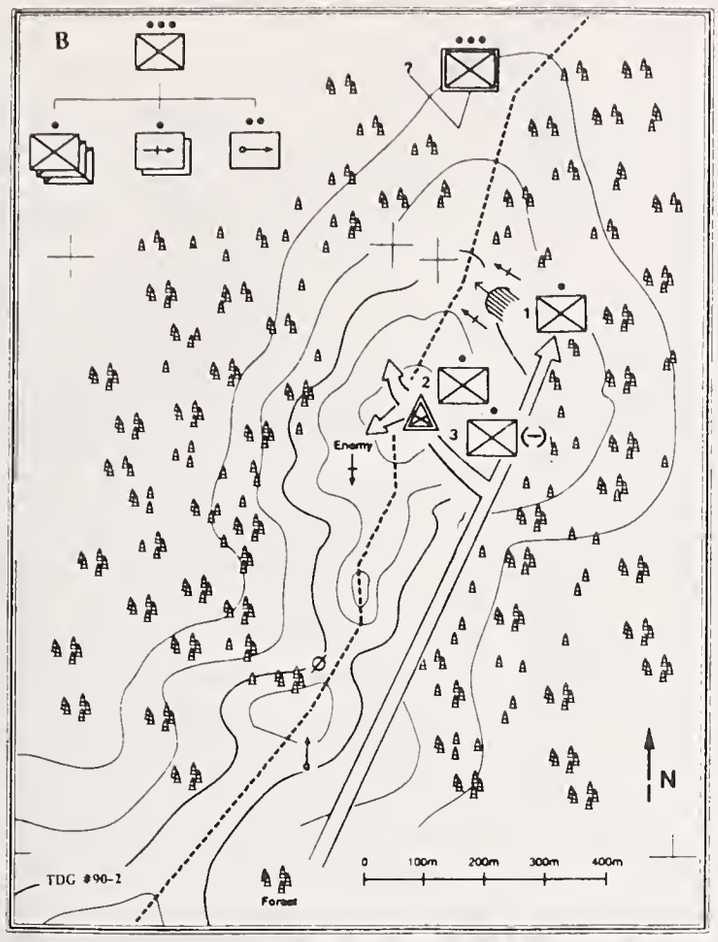
If the enemy platoon does not return, the attack on Knob Hill will be executed as planned by 2d and 3d Squads.

1st Squad with attached machineguns: Follow the tree line along the east side of Knob Hill to a position along the northeast slope of Knob Hill. From this position you will ambush the enemy platoon to the west as it moves back up the hill.

2d Squad: Follow 1st Squad and move into a position on the slope east of the topographical crest where you will be able to assault the listening post. Upon initiation of the ambush, seize the topographical crest and destroy the listening post. Then engage troops approaching from the north, down the trail.

3d Squad: Detach one team and place it in a position on the southern saddle of Knob Hill, where it can fire on the enemy machinegun position. The team will fire on the machinegun position when it hears the ambush. The other two teams of 3d Squad will follow 2d Squad to a position on the east slope of the hill, tied along the 2d Squad positions. On initiation of the ambush, assault with the 2d Squad up the crest of the hill and be prepared to assault the enemy machinegun from the rear.

Machinegun Section: Will be attached to 1st Squad for the ambush.



Mortar Section: On initiation of the ambush, fire on the northwest slope of Knob Hill. Be prepared to fire on the low ground north of Knob Hill. Also be prepared to fire on the machinegun position.

Taylor and Bell: Attempt to find a route along the east side of Knob Hill to a point where you are northeast of the topographical crest. Follow along the tree line as much as possible, find the simplest route possible. Come back to this position no later than 0200. You will act as guides for the 1st and 2d Squads.

Explanation:

Instead of attacking the enemy platoon's defensive position, I anticipated ambushing them in the open. I planned an ambush because I assumed that the enemy platoon would return to the hill in the morning due to the defense preparations that were being made there. In my solution, if the enemy platoon did return, they would not be expecting an ambush on their way up the hill (where their security elements were supposed to be). The enemy LP and machinegun position would have been attacked from an unexpected direction (from the east and to their rear). The 2d Squad overrunning the crest at the time of the ambush would have created an L-shaped ambush against the enemy platoon.

If the enemy did not return we would have seized the hill anyway.

I chose to move along the east slope of the hill because of the enemy listening post. The platoon should have had enough time to be in position before sunrise because the platoon would have avoided much of the dense forest/jungle which would have slowed it down.

Solution C

by Capt Dirk K. Vangeison

Platoon Leader's Frag Order

Our mission is to attack Knob Hill in order to destroy enemy force operating there.

The platoon will conduct a supported nonilluminated night attack. One squad with weapons attachments acts as base of fire. This is the supporting attack. Two squads act as the maneuver element to destroy defenders and intercept counterattack. This is the main effort. There is no reserve.

1st Squad: With machineguns and mortars attached, occupy middle hilltop of the ridge. On order engage units occupying Knob Hill. Displace on signal to objective. Be prepared to assault hill if required.

2d and 3d Squad: Move along right flank of objective. Establish ambush along trail to intercept counterattack/reaction force. Be prepared to assault enemy if found to be still in strength on objective.

Weapons attachments: Move with 1st Squad.

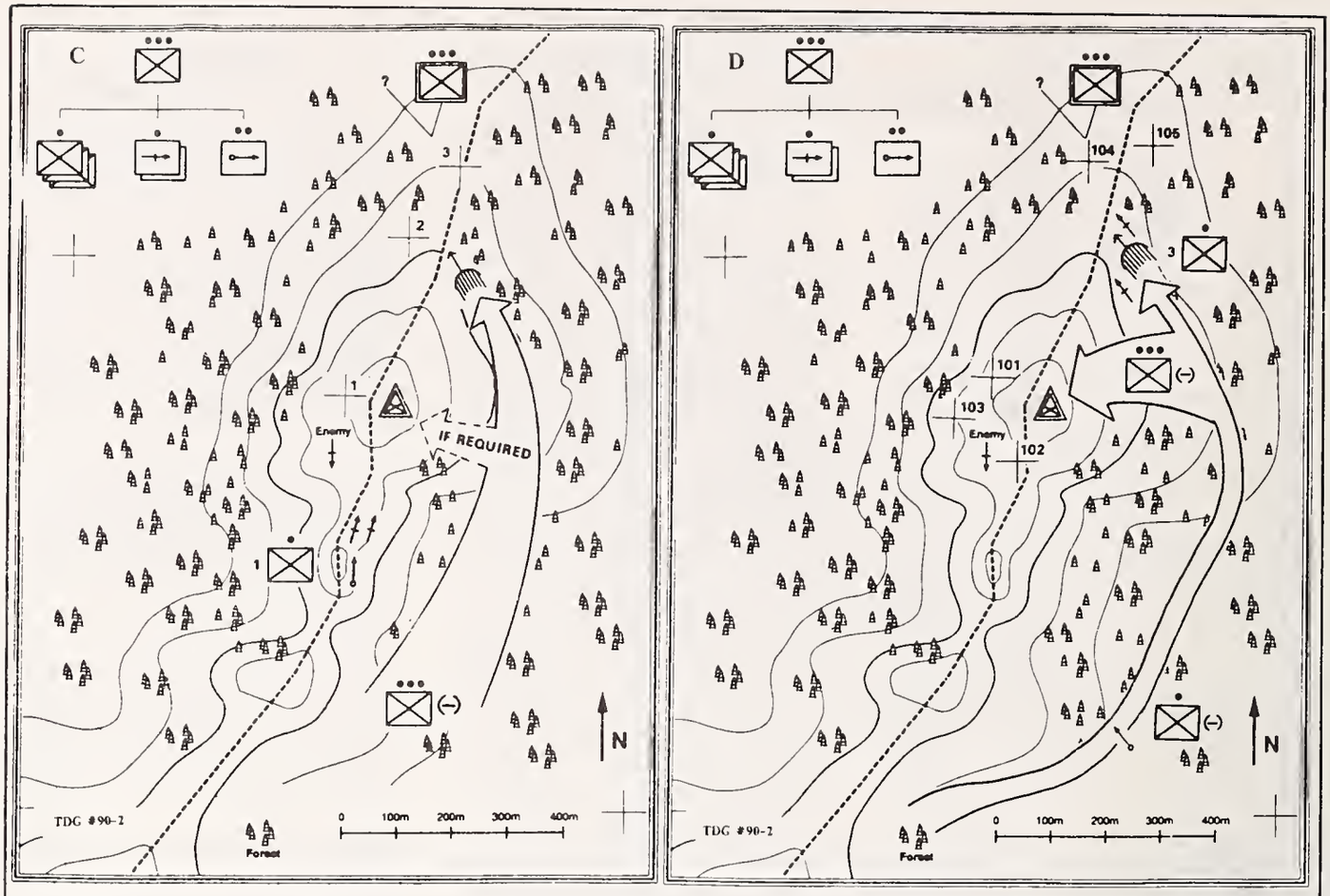
Machineguns: Suppress enemy guns.

Mortars: Engage LP support with illumination on my order only.

Explanation

The plan is to hold enemy LP and machinegun position with fire and to ambush bulk of unit moving up trail for counterattack/reinforcement. If enemy is still on hill in force, we would attack from right to left, go into a hasty 360-degree turn, and await any future counterattack. The mission is to destroy the enemy, *not* to take a piece of terrain. We must assume the farmer's intel (backed by my own recon) to be correct—that is, that there are minimal forces on hill proper. We must draw out the remainder without falling into their trap. We will use right flank to take advantage of enemy machinegun dead space. My unit is well trained, so I can go beyond the textbook night attack along the trail, which the enemy apparently is expecting. Once the maneuver unit is in place on the reverse slope, it is protected from my own machineguns.

My mortars suppress LP initially,



followed by support of the ambush, if needed. We can also fire illumination, but I will try to hold as long as possible without resorting to it. We will try to make the base of fire and maneuver mutually supporting without getting into cross fire. The base of fire can assault if opportunity presents itself, so the plan is flexible.

Solution D

by Maj Michael J. Stroff III, USMCR

Platoon Leader's Frag Order

Our mission is to destroy the enemy on Knob Hill. My intent is to conduct a nonilluminated night attack. The 1st Squad and 2d Squad will move to the east of Knob Hill and then conduct the assault through enemy positions. Then they will consolidate and organize the defense once the hill is taken. The 3d Squad will set up an ambush site 300 meters north of enemy positions on Knob Hill. The ambush site will be just off the main animal path. Both machineguns will be attached to the ambush force. Mortars will prepare a fire support plan to cover Knob Hill and trail north of ambush site. Priority of fire will be directed toward Knob Hill. All targets are on call. Be prepared to move to Knob Hill on order.

The main effort (1st and 2d Squads) will move to position as close to the crest as possible. Assault through the enemy and consolidate.

Command and signal and other coordinating instructions are given here. Prepare to move out at 0130. Be in position at 0300 for a 0330 attack. I will be with 1st Squad. Upon arrival at assembly area, Taylor will guide 1st and 2d Squads. Bell will guide 3d Squad to ambush site.

Explanation

The mission is to destroy the enemy on Knob Hill. With this in mind and with my visual confirmation of a small force (LP with machinegun) I feel confident that a violent nonilluminated night attack will accomplish my mission.

I also hope to "motivate" the enemy platoon north of the Knob to come to the rescue of their LP, then my ambush will have some effect on the main force.

This will throw the main force off balance as to the real strength of my force. The mortars will be set up to fire predesignated targets as depicted on the overlay. Priority of fire is given to the attack on Knob Hill.

Once we consolidate the position, our ambush will remain in position until contact or daylight. I will have an on-call signal for the ambush to break contact and move ESE and then WSW to re-enter my lines south of Knob Hill.

We would commence the attack at 0330. This gives ample time for movement and pre-positioning. Taylor and Bell would be left in place as observers/guides and would move to the jump-off point to set up the ambush and meet 1st and 2d Squads at 0230.

If compromised we would attack Knob Hill with two squads up, consolidate and hold position with the entire platoon.

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