

F O C U S

The Changing Face of War: Into the Fourth Generation

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A study of warfare in the modern era suggests a progression through three distinct generations. Although U.S. Armed Forces are still coming to grips with the third of these, strong trends point to an emerging fourth generation. Those who would prepare for future warfare must consider the trends envisaged here and the challenges they would present to existing forces.

The peacetime soldier's principal task is to prepare effectively for the next war. In order to do so, he must anticipate what the next war will be like. This is a difficult task that gets continuously more difficult. German Gen Franz Uhle-Wettler writes:

At an earlier time, a commander could be certain that a future war would resemble past and present ones. This enabled him to analyze appropriate tactics from past and present. The troop commander of today no longer has this possibility. He knows only that whoever fails to adapt the experiences of the last war will surely lose the next one.

The Central Question

If we look at the development of warfare in the modern era, we see three distinct generations. In the United States, the Army and the Marine Corps are now coming to grips with the change to the third generation. This transition is entirely for the good. However, third generation warfare was conceptually developed by the German offensive in the spring of 1918. It is now more than 70 years old. This suggests some interesting questions: Is it not about time for a fourth generation to appear? If so, what might it look like? These questions are of central importance. Whoever is first to recognize, understand, and implement a generational change can gain a decisive advantage. Conversely, a nation that is slow to adapt to generational change opens itself to catastrophic defeat.

Our purpose here is less to answer these questions than to pose them. Nonetheless, we will offer some tentative answers. To begin to see what these might be, we need to put the questions into historical context.

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Three Generations of Warfare

While military development is generally a continuous evolutionary process, the modern era has witnessed three watersheds in which change has been dialectically qualitative. Consequently, modern military development comprises three distinct generations.

First generation warfare reflects tactics of the era of the smoothbore musket, the tactics of line and column. These tactics were developed partially in response to technological factors—the line maximized firepower, rigid drill was necessary to generate a high rate of fire, etc.—and partially in response to social conditions and ideas, e.g., the columns of the French revolutionary armies reflected both the *elan* of the revolution and the low training levels of conscripted troops. Although rendered obsolete with the replacement of the smoothbore by the rifled musket, vestiges of first generation tactics survive today, especially in a frequently encountered desire for linearity on the battlefield. Operational art in the first generation did not exist as a concept although it was practiced by individual commanders, most prominently Napoleon.

Second generation warfare was a response to the rifled musket, breechloaders, barbed wire, the machinegun, and indirect fire. Tactics were based on fire and movement, and they remained essentially linear. The defense still attempted to prevent all penetrations, and in the attack a laterally dispersed line advanced by rushes in small groups. Perhaps the principal change from first generation tactics was heavy reliance on indirect fire; second generation tactics were summed up in the French maxim, “the artillery conquers, the infantry occupies.” Massed firepower replaced massed manpower. Second generation tactics remained the basis of U.S. doctrine until the 1980s, and they are still practiced by most American units in the field.

While ideas played a role in the development of second generation tactics (particularly the idea of lateral dispersion), technology was the principal driver of change. Technology manifested itself both qualitatively, in such things as heavier artillery and bombing aircraft, and quantitatively, in the ability of an industrialized economy to fight a battle of materiel (*Materialschlacht*).

The second generation saw the formal recognition and adoption of the operational art, initially by the Prussian army. Again, both ideas and technology drove the change. The ideas sprang largely from Prussian studies of Napoleon’s campaigns. Technological factors included von Moltke’s realization that modern tactical firepower mandated battles of encirclement and the desire to exploit the capabilities of the railway and the telegraph.

Third generation warfare was also a response to the increase in battlefield firepower. However, the driving force was primarily ideas. Aware they could not prevail in a contest of materiel because of their weaker industrial base in World War I, the Germans developed radically new tactics. Based on maneuver rather than attrition, third generation tactics were the

first truly nonlinear tactics. The attack relied on infiltration to bypass and collapse the enemy’s combat forces rather than seeking to close with and destroy them. The defense was in depth and often invited penetration, which set the enemy up for a counterattack.

While the basic concepts of third generation tactics were in place by the end of 1918, the addition of a new technological element—tanks—brought about a major shift at the operational level in World War II. That shift was blitzkrieg. In the blitzkrieg, the basis of the operational art shifted from place (as in Liddell-Hart’s indirect approach) to time. This shift was explicitly recognized only recently in the work of retired Air Force Col John Boyd and his “OODA (observation-orientation-decision-action) Loop” theory.

Thus we see two major catalysts for change in previous generational shifts: technology and ideas. What perspective do we gain from these earlier shifts as we look toward a potential fourth generation of warfare?

Elements That Carry Over

Earlier generational shifts, especially the shift from the second to the third generation, were marked by growing emphasis on several central ideas. Four of these seem likely to carry over into the fourth generation, and indeed to expand their influence.

The first is mission orders. Each generational change has been marked by greater dispersion on the battlefield. The fourth generation battlefield is likely to include the whole of the enemy’s society. Such dispersion, coupled with what seems likely to be increased importance for actions by very small groups of combatants, will require even the lowest level to operate flexibly on the basis of the commander’s intent.

Second is decreasing dependence on centralized logistics. Dispersion, coupled with increased value placed on tempo, will require a high degree of ability to live off the land and the enemy.

Third is more emphasis on maneuver. Mass, of men or firepower, will no longer be an overwhelming factor. In fact, mass may become a disadvantage as it will be easy to target. Small, highly maneuverable, agile forces will tend to dominate.

Fourth is a goal of collapsing the enemy internally rather than physically destroying him. Targets will include such things as the population’s support for the war and the enemy’s culture. Correct identification of enemy strategic centers of gravity will be highly important.

In broad terms, fourth generation warfare seems likely to be widely dispersed and largely undefined; the distinction between war and peace will be blurred to the vanishing point. It will be nonlinear, possibly to the point of having no definable battlefields or fronts. The distinction between “civilian” and “military” may disappear. Actions will occur concurrently throughout all participants’ depth, including their society as a cultural, not just a physical, entity. Major military facilities, such as airfields,

fixed communications sites, and large headquarters will become rarities because of their vulnerability; the same may be true of civilian equivalents, such as seats of government, power plants, and industrial sites (including knowledge as well as manufacturing industries). Success will depend heavily on effectiveness in joint operations as lines between responsibility and mission become very blurred. Again, all these elements are present in third generation warfare; fourth generation will merely accentuate them.

A Potential Technology-Driven Fourth Generation

If we combine the above general characteristics of fourth generation warfare with new technology, we see one possible outline of the new generation. For example, directed energy may permit small elements to destroy targets they could not attack with conventional energy weapons. Directed energy may permit the achievement of EMP (electromagnetic pulse) effects without a nuclear blast. Research in superconductivity suggests the possibility of storing and using large quantities of energy in very small packages. Technologically, it is possible that a very few soldiers could have the same battlefield effect as a current brigade.

The growth of robotics, remotely piloted vehicles, low probability of intercept communications, and artificial intelligence may offer a potential for radically altered tactics. In turn, growing dependence on such technology may open the door to new vulnerabilities, such as the vulnerability to computer viruses.

Small, highly mobile elements composed of very intelligent soliders armed with high technology weapons may range over wide areas seeking critical targets. Targets may be more in the civilian than the military sector. Front-rear terms will be replaced with targeted-untargeted. This may in turn radically alter the way in which military Services are organized and structured.

Units will combine reconnaissance and strike functions. Remote, "smart" assets with preprogrammed artificial intelligence may play a key role. Concurrently, the greatest defensive strengths may be the ability to hide from and spoof these assets.

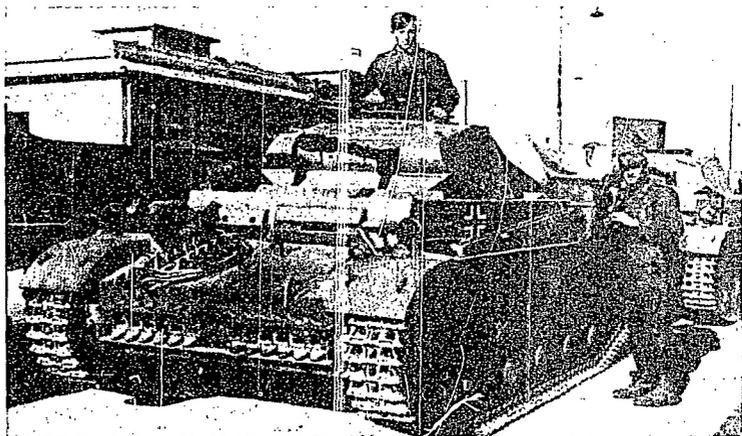
The tactical and strategic levels will blend as the opponent's political infrastructure and civilian society become battlefield targets. It will be critically important to isolate the enemy from one's own homeland because a small number of people will be able to render great damage in a very short time.

Leaders will have to be masters of both the art of war and technology, a difficult combination as two different mindsets are involved. Primary challenges facing commanders at all levels will include target selection (which will be a political and cultural, not just a military, decision), the ability to concentrate suddenly from very wide dispersion, and selection of subordinates who can manage the challenge of minimal or no supervision in a rapidly changing environment. A major challenge will be handling the tremendous potential information overload without losing sight of the operational and strategic objectives.

Psychological operations may become the dominant operational and strategic weapon in the form of media/information intervention. Logic bombs and computer viruses, including latent viruses, may be used to disrupt civilian as well as military operations. Fourth generation adversaries will be adept at manipulating the media to alter domestic and world opinion to the point where skillful use of psychological operations will sometimes preclude the commitment of combat forces. A major target will be the enemy population's support of its government and the war. Television news may become a more powerful operational weapon than armored divisions.

This kind of high-technology fourth generation warfare may carry in it the seeds of nuclear destruction. Its effectiveness could rapidly eliminate the ability of a nuclear-armed opponent to wage war conventionally. Destruction or disruption of vital industrial capacities, political infrastructure, and social fabric, coupled with sudden shifts in the balance of power and concomitant emotions, could easily lead to escalation to nuclear weapons. This risk may deter fourth generation warfare among nuclear armed powers just as it deters major conventional warfare among them today.

Tanks brought about a major shift at the operational level in World War II. This German light tank (Panzer Mark II) was used in Libya by the Afrika Corps.





An amphibious landing in the Persian Gulf. Some non-Western areas not strong in technology may develop a fourth generation of war through ideas.

A major caveat must be placed on the possibility of a technologically driven fourth generation, at least in the American context. Even if the technological state of the art permits a high-technology fourth generation—and this is not clearly the case—the technology itself must be translated into weapons that are effective in actual combat. At present, our research, development, and procurement process has great difficulty making this transition. It often produces weapons that incorporate high technology irrelevant in combat or too complex to work in the chaos of combat. Too many so-called “smart” weapons provide examples; in combat, they are easy to counter, fail of their own complexity, or make impossible demands on their operators. The current American research, development, and procurement process may simply not be able to make the transition to a militarily effective fourth generation of weapons.

A Potential Idea-Driven Fourth Generation

Technology was the primary driver of the second generation of warfare; ideas were the primary driver of the third. An idea-based fourth generation is also conceivable.

For about the last 500 years, the West has defined warfare. For a military to be effective it generally had to follow Western models. Because the West's strength is technology, it may tend to conceive of a fourth generation in technological terms.

However, the West no longer dominates the world. A fourth generation may emerge from non-Western cultural traditions, such as Islamic or Asiatic traditions. The fact that some non-Western areas, such as the Islamic world, are not strong in technology may lead them to develop a fourth generation through ideas rather than technology.

The genesis of an idea-based fourth generation may be visible in terrorism. This is not to say that terrorism is fourth generation warfare, but rather that elements of it may be signs pointing toward a fourth generation.

Some elements in terrorism appear to reflect the previously noted “carryovers” from third generation war-

fare. The more successful terrorists appear to operate on broad mission orders that carry down to the level of the individual terrorist. The “battlefield” is highly dispersed and includes the whole of the enemy's society. The terrorist lives almost completely off the land and the enemy. Terrorism is very much a matter of maneuver: the terrorist's firepower is small, and where and when he applies it is critical.

Two additional carryovers must be noted as they may be useful “signposts” pointing toward the fourth generation. The first is a component of collapsing the enemy. It is a shift in focus from the enemy's front to his rear. Terrorism must seek to collapse the enemy from within as it has little capability (at least at present) to inflict widespread destruction. First generation warfare focused tactically and operationally (when operational art was practiced) on the enemy's front, his combat forces. Second generation warfare remained frontal tactically, but at least in Prussian practice it focused operationally on the enemy's rear through the emphasis on encirclement. The third generation shifted the tactical as well as the operational focus to the enemy's rear. Terrorism takes this a major step further. It attempts to bypass the enemy's military entirely and strike directly at his homeland, at civilian targets. Ideally, the enemy's military is simply irrelevant to the terrorist.

The second signpost is the way terrorism seeks to use the enemy's strength against him. This “judo” concept of warfare begins to manifest itself in the second generation, in the campaign and battle of encirclement. The enemy's fortresses, such as Metz and Sedan, became fatal traps. It was pushed further in the third generation where, on the defensive, one side often tries to let the other penetrate so his own momentum makes him less able to turn and deal with a counterstroke.

Terrorists use a free society's freedom and openness, its greatest strengths, against it. They can move freely within our society while actively working to subvert it. They use our democratic rights not only to penetrate but also to defend themselves. If we treat them within our laws, they gain many protections; if

we simply shoot them down, the television news can easily make them appear to be the victims. Terrorists can effectively wage their form of warfare while being protected by the society they are attacking. If we are forced to set aside our own system of legal protections to deal with terrorists, the terrorists win another sort of victory.

Terrorism also appears to represent a solution to a problem that has been generated by previous generational changes but not really addressed by any of them. It is the contradiction between the nature of the modern battlefield and the traditional military culture. That culture, embodied in ranks, saluting, uniforms, drill, etc., is largely a product of first generation warfare. It is a culture of order. At the time it evolved it was consistent with the battlefield, which was itself dominated by order. The ideal army was a perfectly oiled machine, and that was what the military culture of order sought to produce.

However, each new generation has brought a major shift toward a battlefield of disorder. The military culture, which has remained a culture of order, has become contradictory to the battlefield. Even in the third generation warfare, the contradiction has not been insoluble; the *Wehrmacht* bridged it effectively, outwardly maintaining the traditional culture of order while in combat demonstrating the adaptability and fluidity a disorderly battlefield demands. But other militaries, such as the British, have been less successful at dealing with the contradiction. They have often attempted to carry the culture of order over onto the battlefield with disastrous results. At Biddulphsberg, in the Boer War, for example, a handful of Boers defeated two British Guards battalions that fought as if on parade.

The contradiction between the military culture and the nature of modern war confronts a traditional military Service with a dilemma. Terrorists resolve the dilemma by eliminating the culture of order. Terrorists do not have uniforms, drill, saluting, or, for the most part, ranks. Potentially, they have or could develop a military culture that is consistent with the disorderly nature of modern war. The fact that their broader culture may be non-Western may facilitate this development.

Even in equipment, terrorism may point toward signs of a change in generations. Typically, an older generation requires much greater resources to achieve a given end than does its successor. Today, the United States is spending \$500 million apiece for stealth bombers. A terrorist stealth bomber is a car with a bomb in the trunk—a car that looks like every other car.

Terrorism, Technology, and Beyond

Again, we are not suggesting terrorism is the fourth generation. It is not a new phenomenon, and so far it has proven largely ineffective. However, what do we see if we combine terrorism with some of the new technology we have discussed? For example, what effectiveness might the terrorist have if his car bomb were a product of genetic engineering rather than high explosives? To draw our potential fourth gener-

ation out still further, what if we combined terrorism, high technology, and the following additional elements?

- A nonnational or transnational base, such as an ideology or religion. Our national security capabilities are designed to operate within a nation-state framework. Outside that framework, they have great difficulties. The drug war provides an example. Because the drug traffic has no nation-state base, it is very difficult to attack. The nation-state shields the drug lords but cannot control them. We cannot attack them without violating the sovereignty of a friendly nation. A fourth-generation attacker could well operate in a similar manner, as some Middle Eastern terrorists already do.

- A direct attack on the enemy's culture. Such an attack works from within as well as from without. It can bypass not only the enemy's military but the state itself. The United States is already suffering heavily from such a cultural attack in the form of the drug traffic. Drugs directly attack our culture. They have the support of a powerful "fifth column," the drug buyers. They bypass the entire state apparatus despite our best efforts. Some ideological elements in South America see drugs as a weapon; they call them the "poor man's intercontinental ballistic missile." They prize the drug traffic not only for the money it brings in—through which we finance the war against ourselves—but also for the damage it does to the hated North Americans.

- Highly sophisticated psychological warfare, especially through manipulation of the media, particularly television news. Some terrorists already know how to play this game. More broadly, hostile forces could easily take advantage of a significant product of television reporting—the fact that on television the enemy's casualties can be almost as devastating on the home front as are friendly casualties. If we bomb an enemy city, the pictures of enemy civilian dead brought into every living room in the country on the evening news can easily turn what may have been a military success (assuming we also hit the military target) into a serious defeat.

All of these elements already exist. They are not the product of "futurism," of gazing into a crystal ball. We are simply asking what would we face if they were all combined? Would such a combination constitute at least the beginnings of a fourth generation of warfare? One thought that suggests they might is that third (not to speak of second) generation militaries would seem to have little capability against such a synthesis. This is typical of generational shifts.

The purpose of this paper is to pose a question, not to answer it. The partial answers suggested here may in fact prove to be false leads. But in view of the fact that third generation warfare is now over 70 years old, we should be asking ourselves the question, what will the fourth generation be? US&MC