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**Future Warfare: The Direct Link between Strategy and Tactics**

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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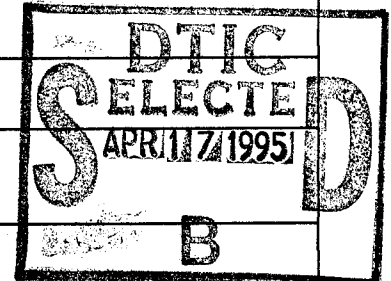
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Abstract of

**Future Warfare: The Direct Link between Strategy and Tactics**

New technologies are altering the way warfare is conducted. Future technologies and future threats will tend to decrease authority at the operational level of war. The nature of the threat and the threat environment will heighten national strategic interest in battlefield tactical events. Strong strategic interest combined with new technologies, which will enable interactive connectivity with the tactical level, will result in a fading distinction between the three levels of war. High-level commanders will control the battlefield from remote locations, while field units will become reactionary and dependent on external direction. The ability to communicate and receive real-time guidance directly from the strategic level will soon transform command and control structures. Future technology will offer its capabilities indiscriminantly, and the advantage will go to the side best prepared to use it. The difficulties of utilizing advanced technologies as well as the capabilities produced must be examined in order to derive optimal fighting strategies.

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## **Future Warfare: The Direct Link between Strategy & Tactics**

*"If you don't prepare for future warfare, it will prepare for you."*

The pace of technological development today is astronomical. Recent history records a surge of computer, communications, and information technology. In the last decade, mass data storage capabilities have increased from a standard ten megabytes to over a thousand. From the first experimental and high priced cellular telephones to the worldwide dispersal of privately-owned satellite dishes and commercial GPS receivers, advances in technology have multiplied exponentially. These new and advanced technologies will alter the way we conduct warfare, as what was preposterous yesterday becomes possible tomorrow. As Carl von Clausewitz maintained, each age has its own unique brand of warfare.<sup>1</sup> Warfare of the future will reflect the information age revolution currently in our midst. *Likely threat scenarios and emerging technologies will transform tomorrow's battlefield command and control structures. Authority at the operational level of war will diminish as warfare begins to emphasize a direct link between the strategic and tactical levels of war. To ensure the protection of American interests, it is imperative that US leaders and military planners anticipate the effect of new technologies on warfare in order to prepare the best possible fighting strategies.*

### **THE DIRECTION OF FUTURE WARFARE**

The military community generally recognizes three distinct levels of warfare. The national strategic level encompasses the highest level of decision-making and guidance, the tactical level is absorbed with actual military execution, and the operational level bridges

the gap between strategy and tactics. Many years ago, tactical command on the battlefield was absolute. In many instances, the tactical commander was also the political leader; therefore, there was an intimate correlation between national strategy and tactics--warfare was mainly conducted at a single level. With limited resources and slow, unreliable communications, it was difficult to relate tactical events into grand campaign plans. However, the advent of radio and inventions such as the aircraft and the tank produced a previously unmatched mobility and provided operational, or higher-level, commanders with the ability to design war into more than just a series of battles. Operational commanders began to exert great influence upon tactical events. Likewise, in the future, as technology continues to evolve, direct command and influence of battlefield events will move further upward, decreasing the distance between the strategic and tactical levels of warfare. Ample real-time information will become available at the strategic level, and reliance upon the operational commander will diminish. New technologies will enable active strategic direction of a large number of simultaneous and sequential tactical events to directly achieve national strategic goals.<sup>2</sup> The three distinct levels of war will blend into a new structure where each event, each action, and each soldier may be directly controlled by the strategic level, with each directly contributing to the desired strategic end state.

## THE THREAT ENVIRONMENT

The nature of future threats, combined with sophisticated media reporting on high-visibility operations will increase strategic involvement in tactical events. America's need for low casualty rates and the increasing likelihood of encountering mass destruction weapons on the battlefield will further encourage direct strategic involvement in tactical

action. This threat "environment" will lessen the gap between strategy and tactics, resulting in centralized command structures and simultaneously reducing operational influence.

### Nature of the Threat

Our National Security Strategy forecasts that future threats to US interests will likely be regional ones.<sup>3</sup> Rogue states and small conflicts, mainly in the domain of "operations other than war," will engage the attention of military planners. Many of these future conflicts in which US forces are employed will consist of a single, high-visibility action or major operation against an adversary. This type of conflict, where tactical events directly support strategic goals, has occurred with increasing frequency in recent years. In response to state-sponsored terrorism, in 1986 the US put together a huge military contingent for a single strategic strike against Libyan targets. Recent military actions in Turkey, Russia, and Bosnia all involved tactical actions directly supporting strategic goals of providing humanitarian aid or enforcing no-fly zones. The operational level of war had already begun to contract as "operations other than war" demanded vigilant supervision of military action. These battlefield events were closely monitored by Washington, serving to decrease the influence of the operational commander. In future warfare, the nature of the threat will continue to increase national strategic involvement in military tactical events.

### The American Concern for Casualties

The United States is obsessed with the need to avoid casualties. Even in the Gulf War, which enjoyed enormous public support, the idea of numerous casualties affected the

entire planning and targeting process. Today, there appears to be no immediate threat to our vital interests so important that we are willing to withstand great losses. In both Beirut and Somalia, when American lives were lost, US commitment to the mission immediately dissipated. The concern for casualties in future conflicts will encourage high-level interest, direction, and interference in tactical actions. In Panama during Operation Just Cause, tactical units were required to get approval at the two-star (or higher) level simply to return artillery fire, so closely were the events controlled in order to avoid casualties.<sup>4</sup> During the raid on Libya, neither of the operational commanders wanted a third carrier involved in the operation. But Secretary of Defense Weinberger, in his desire for overwhelming force, insisted on it, and so the carrier and all its accoutrements had to be incorporated.<sup>5</sup> Any time US military force is employed in future conflicts, the American public's great concern for casualties will demand top-level attention on military matters.

#### The Effect of the Media

As military capabilities improve, so too will civilian communications and broadcast abilities. Media sophistication will increase as greater amounts of data become available via independent commercial reconnaissance satellites, public domain sensor technology, and worldwide computer network communications. CNN will be just one of many worldwide stations dedicated to reporting US and coalition military operations. The expansion of accurate public information will alter the dynamics of military strategy, forcing strategic interest in tactical execution. By the time US forces arrived in Somalia, a horde of television cameras were gathered on the beach to greet them, and arriving forces

had to be prepared to "meet the press."<sup>6</sup> In Panama, the media was able to ascertain and broadcast the exact time of the impending military strikes, causing movement of the strike time.<sup>7</sup> Additionally, CNN's Gulf War broadcasts from Israel offered Saddam the unique opportunity to receive real-time SCUD battle damage assessment for possible retargeting.<sup>8</sup> It also may have been media exaggeration of the coalition force sizes during the critical first few months of Desert Shield that deterred Saddam from a Saudi invasion. The media and its growing sophistication will continue to promote worldwide attention on the use of US military might, while concurrently influencing the execution of military events. As a result, political leaders will maintain a keen interest in operations, and military commanders must factor this external influence into planning.

#### Weapons of Mass Destruction on the Battlefield

The sensitivity and high probability of weapons of mass destruction on future battlefields will guarantee strong strategic involvement in military tactical affairs, reducing the authority of the operational commander. Currently there are more than twenty countries which either have or are developing nuclear weapons, and about one-third of all countries worldwide are in the mass destruction club (which includes biological and chemical weapons).<sup>9</sup> As a result of easier access to nuclear technology and the loss of tight control over the roughly 30,000 nuclear warheads within the former Soviet Union, nuclear weapons proliferation is a virtual certainty.<sup>10</sup> Many experts predict that in the next few decades, weapons of mass destruction will become widespread from North Africa to South Asia.<sup>11</sup> Alternately, Carl Builder from the RAND Corporation predicts that nuclear problems will first arise from terrorist organizations, religious movements, drug

cartels, and other non-national groups.<sup>12</sup> In either case, US forces will soon be forced to deal with the issue of mass destruction weapons on the battlefield. To date, the US military has done little operational planning on the use of nuclear weapons, and for good reason.<sup>13</sup> It is highly unlikely that nuclear weapons will be used by US forces except under direct strategic control. National-strategic direction of battlefield events will erode the operational level of war.

## ADVANCED TECHNOLOGY

Emerging technology is the driving factor behind the current Revolution in Military Affairs. As the industrial revolution of the 1900s greatly influenced warfare, information-age advances will also alter warfare. New communications technology will enable a greater span of control and access to real time information will transform command and control systems.

### Communications and Connectivity

Technology gave the coalition in Desert Storm a decisive edge. By the end of Desert Storm, there were more than 3,000 computers in the war zone linked to the United States.<sup>14</sup> Yet, this revolutionary inventory of battlefield computers and information transfer rates will seem primitive by future standards. The battlefield will be greatly affected by technology advances: high-speed computer nets, secure cellular communications, mass storage and data transmittal techniques, sensor technology, and all battlefield elements coupled to intelligence and targeting systems.<sup>15</sup> In the future, strategic commanders and national leaders will be able to share a real-time battlefield picture. Depictions of the order of battle of both friendly and enemy forces, linked to

reconnaissance and intelligence data, and displayed on real-time video systems will supply strategic leaders with instantaneous battlefield information. The capability to communicate interactively with units in the field to update or assess information will enable strategic direction of simultaneous tactical actions at multiple locations. During Desert Storm, the practicality of information-age technology was glimpsed when Special Forces were able to data-link directly to CIA computers from the battlefield.<sup>16</sup> The future may reveal soldiers, airmen, and sailors with hand-held "Newton-like" devices providing connectivity to multiple external sources. Even Russia's military doctrine, in attempting to adopt lessons from the Gulf War, places the highest priority on emerging technology.<sup>17</sup> Third world countries are already able to purchase satellite reconnaissance data and use cellular telephones to equalize the technology gap.<sup>18</sup> Potential enemies own updatable GPS receivers which are less susceptible to accuracy degradation. They can obtain accurate weather data via public satellite broadcasts and receive worldwide news which might provide useful information during battle.

Tomorrow's warfare will be information-based, and knowledge will be extremely powerful. Detailed data is now used for precise targeting, as a basis for decisions, as a weapon *and* as a target.<sup>19</sup> Even in the Gulf War, the value of information and the need to disrupt the information flow rivaled the importance of more traditional military tactics.<sup>20</sup> Comprehensive infrastructure details, satellite imagery analysis, accurate depictions of current troops movements, and all types of other current data will be available to future warfare leaders. As the enemy garners more information, we will be even more reliant on timely battle data to make rapid decisions. Tomorrow's warfare decisions will have to be

made by those with access to the complete battle picture, which includes tactical, theater, and national level data. Additionally, tactical events greatly affect political careers, thus further tempting national leaders, who now have extensive, real-time battlefield information, to influence tactical events. In Libya, when surface-to-air missiles were fired at US airplanes, Washington immediately demanded to know why pilots had not shot back.<sup>21</sup> Technology enabled Washington's interference in an almost real-time manner, and further advancements will make strategic involvement even more likely. Technology will provide high-level commanders with the ability to see the battlefield in real-time. Decision-making will become more centralized and the individual soldier will lose independence as his progress on the battlefield is monitored in real-time.

#### The Increased Depth of Warfare and Decision-Making

Instantaneous data reception will encourage a faster tempo in the war zone.<sup>22</sup> The advantage goes to the side with the quickest decision cycle. Accurate data must be quickly received, the decision must be made, rapidly transmitted, and quickly executed to maintain battlefield initiative. During the American Revolution, the British navy had to wait weeks to receive orders from the king due to the primitive state of technology. In Bosnia, the decision for retaliatory strikes against Serbs violating UN resolutions routinely took hours due to multiple command layers and the complicated coordination cycle. Tomorrow's decisions will need to take place in minutes as opposed to hours to benefit from unfolding events on the battlefield. The side with the quicker decision cycle will be able to maintain battlefield momentum, holding the enemy in a react mode. Extra and unnecessary layers of command only serve to slow the decision-making process--especially

if a real-time battlefield picture is available to the commander with decision authority. Intelligence collection and rapid analysis, which is the basis of most warfare decisions, will facilitate a faster decision cycle. Australia recently acquired the ability to process a 20-meter resolution relief radar image of a 62-mile square area in only 2 1/2 minutes--a process that used to take 8 hours.<sup>23</sup> Future technology will permit a quicker pace of warfare. In order to take full advantage of emerging capabilities, tomorrow's command and control structures will minimize command layers between the decision-maker and the soldier executing the action.

Technology will increase the span of control, allowing each commander to supervise the movements of more personnel at greatly dispersed locations.<sup>24</sup> Higher data rate technology and communications connectivity will enable the commander to accurately track multiple and simultaneous events. More precise weaponry means that fewer weapons systems will be required to achieve the same effects. Today, one F-117 with one bomb can do what it took 4500 B-17 sorties to accomplish in WW2 or even 95 B-52 sorties to accomplish in Vietnam.<sup>25</sup> Future fire control systems will integrate reconnaissance and up-to-date intelligence to produce highly accurate targeting. Already under development is a real-time imaging system which passes target information into the cockpit. In a recent test, F-16 pilots received target images directly from Washington within two minutes of transmittal.<sup>26</sup> Lessons learned during Desert Storm indicated the need for a higher percentage of aircraft with "smart bomb" capability, which would increase the damage capacity of a given number of aircraft.<sup>27</sup> Higher-level commanders with a greater span of control and elevated firepower will supervise a greater battlefield

area. Technology might not provide digital assessment of the abstract elements of warfare, such as emotion or morale, but nevertheless, technology will provide the capability for strategic leaders to directly command tactical events.

The expanded battlefield space and the extended range of precise weaponry mean that combat operations may be conducted with little enemy contact. As Hollywood has long suggested, future warfare may truly be waged on a computer screen. Technology will empower and our concern for casualties will demand, that as the depth of warfare increases so too will the use of computers and robotics on the battlefield. Reconnaissance, targeting, and battle damage assessment may be assigned to remotely piloted vehicles which could be remotely commanded to launch "smart" weapons. Already in existence, for commercial use, are unmanned, robot sentry vehicles with video and fire control systems which are controlled from distant locations.<sup>28</sup> The US Navy also has under development a program which allows the commander on one ship to remotely control weapon launches from other ships in the battle group.<sup>29</sup> In the future, the individual soldier may never see the enemy as the majority of fighting is conducted with "over-the-horizon," long distance weaponry. Recently, China Lake test aircraft received targeting data from space sensors and fired perfect shots from not only beyond visual range, but also beyond radar range--truly an over-the-horizon capability.<sup>30</sup> In time, technology will enable targeting and fire control to become centrally controlled. The on-scene commander will then offer few advantages over the strategic commander who has the complete theater picture and the ability to prosecute the war by remote control.

## CONCLUSION

Regardless of US military planning, warfare will respond to technological progress and the threat environment. The distinction between the three levels of war will fade as information connectivity between the levels of war increases.<sup>31</sup> A single warfare structure will result as US national leaders and strategic commanders receive more and more real-time information regarding actual conditions on the battlefield. Mid-level commanders might become information facilitators, with decision-making power passing over their heads as the distance between the strategic commander and the field soldier decreases. Communications will allow interactive dialogue between those at the execution level and those providing strategic direction for tactical events. Individual soldiers will be better trained, highly skilled, more lethal, and increasingly relied upon for reliable information. Weapons will be information based, and the side with the most knowledge will have a distinct advantage. A single commander who can make decisions from a remote location might control the battlefield, while field units become reactionary and dependent on external direction. The ability to communicate and receive guidance directly from the strategic level will soon transform the battlefield command and control environment.

While a reduction of command authority at the operational level might expedite decision-making and provide less distortion of the commander's intent, tomorrow's information-age warfare will bring with it several difficulties that must be addressed. With more information available, strategic thinkers may get mired in tactical details. Small tactical setbacks might drive national strategy to the detriment of cohesive, long-term policy. Relying on communications and computer technology will result in vulnerabilities.

We need redundant systems and the ability to commence battle should technology be disrupted. Real-time monitoring of tactical events and tight control could stifle innovation and improvisation, which has so often been critical in coping with the fog of war.

Communications and sensor technology can reduce the unknowns of war, but once battle begins, unexpected occurrences are a reality. There must be on-scene commanders who have not only the responsibility, but also the authority and ability to deal with unforeseen events--without relying on "big brother" for direction. As much as technology may affect warfare, warfare will remain a human endeavor. We must devise a method for accurately judging the human element of warfare--feelings, emotions, readiness, morale, the will to fight. These are things which can sway the tide of battle and cannot be discounted by a computer commander.

In order to take advantage of future technology, military leaders must adapt doctrine to information-age warfare. The importance of information must be highly stressed, as well as the importance of protecting friendly information resources. Laser guided bombs and high technology weapons are also ineffective against spears and knives, so a capability for low intensity, information-based warfare must also be developed.

Future technology will offer capabilities to both sides, and the advantage will go to those who are best prepared to use it. General Shalikashvili, Chairman of the Joint Chiefs of Staff, referred to the coming Revolution in Military Affairs and highlighted his concern: "...revolutions are fickle. Once begun, they have a tendency to drift into the hands of those who are willing to stoke the fires of change. We must now either stay ahead of this revolution or watch our position erode."<sup>32</sup> We can't predict exactly what changes the

future will hold for warfare, but certainly, the conduct of future warfare will adapt to technology and the threat environment. America must consider probable forms of future warfare and plan optimal strategies. We can not be reactive--allowing technology and external factors to drive strategy, organizational, and command structures. Rather, our strategy must incorporate new capabilities, using characteristics of the threat environment to provide the most effective security of America's national interests.

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