CHAPTER V : CONCLUSION
CONCLUSION

The 1991 Gulf War was a victory for the coalition forces and based primarily on a revolution in weapons technology. Today, as during the opening days of the nuclear age, we are confronted with the likelihood of large changes in the weapons of war arising from a variety of technological advances, especially those bearing on the gathering, processing and dissemination, and rapid exploitation of ever more precise, detailed and synoptic information. Precision weapons, advanced surveillance platforms, and even low observability can be viewed as technological driven variations on this overreaching theme. Such changes in the prevailing means of war inevitably entail changes in other aspects of military societies. “Military organizations are societies built around and upon the prevailing weapons systems. Intuitively and quite correctly the military men feels that a change in his weapon portends a change in the arrangement of his society”\(^{183}\). This undoubtedly creates a clear cohesiveness that war and technology are responsible for swift military victories, as well seen in the 1991 Gulf War and constitute the ever-binding theme for future warfare.

Technological warfare is the direct and purposeful application of a countries national technological base and of specific advances generated by that base to attain strategic and tactical objective. It is employed in concert in other forms of

\(^{183}\) Elting E. Morison: Men, Machines and Modern Times, Cambridge; Massachusetts; MIT Press, 1966, p 36
national power. The purpose of this kind of warfare, as for all other source of technological warfare, are to enforce the national will of enemy powers, to cause them to modify their goals, strategies, tactics and operations, to attain a position of security dominance which assist or supports other forms of conflict techniques. This is to promote and capitalize on advances in technology to reach superior military power as to prevent open warfare, and to allow the arts of peace to flourish in order to satisfy the constructive objectives of society.

The 1991 Gulf War, as mentioned in the beginning chapters, marked the first microchip war, a battle of high-tech weaponry and a watershed in the history of combat. Operation Desert Storm, a new chapter in the history of warfare, a conflict marking the first widespread use of advanced high technology, accurate weapons to destroy military targets from the air-land-sea, with minimum loss of civilian life and casualties proved that technology was the forefront of the victory attained by the coalition forces.

The air war was against Iraq was fought with the most diverse and one of the most deadly assortments of warplanes ever assembled. The runways of Iraqi bases took on the appearances of cratered moonscapes after relentless, around the clock bombardment by allied forces to cripple Iraq’s air force. It has been noted that Iraq’s air force was the most powerful in that region and this caused a threat to allied troops and civilians in Saudi Arabia and neighboring countries. The coalition air war
was fought not only from bases strategically placed across Saudi Arabia but also from the sea, and below the sea in the form of submarine launched cruise missiles, unmanned computer control flying bombs capable of striking their targets with pinpoint accuracy. In addition, a NATO base at Incirlik, Turkey was used as a strong ground for fighter escorted bombing runs by F-111s headed into northern and western Iraq. The allied forces included a deadly mix of interceptors and strike aircraft, including F-117A stealth fighters, Agile F-16s, heavily armed F-15s, radar killing F-4s and carrier based A-6s, F-16s and F14s along with Tomahawk cruise missiles. Also seen were computer age 21st, century weapons ranging from laser-guided bombs to big “star wars” weapons. The American air power also included six aircraft carriers the Midway and the Ranger in the Persian Gulf and the Saratoga, Roosevelt, America and Kennedy in the Red Sea, which contributed 450 aircraft to the coalition.

The initial objective was to sweep Iraq’s air force from the skies, knock out its air defense and Scud missile sites, cripple its military command and control apparatus, and stop the reinforcement of Iraq’s southern front. Although Iraq has anti-aircraft guns from the Soviet Union, they were considered to be of poor quality and the crews were not experienced gunners. Once this was done, the allies would have a long list of military-industrial targets to choose from. Iraq’s chemical warfare facility, including the key production center at Samara, north of Baghdad was
a top priority and also the biological warfare center at the southwest.\textsuperscript{184} Less urgent but equally important targets would be Iraq's nuclear facilities, which are working on atomic weapons but considered a long way from producing them were targets chosen.

Allied leaders suspected from the beginning that air war alone would not be enough to get Iraq out of Kuwait. So the air-land battle was employed. Modern computer weapons were aided in the battle. The Field Manual 100-5 was the way the air-land battle was employed. It has been noted that the Americans followed this technique of war closely.\textsuperscript{185} The job of the Navy and Marine airplanes was to prepare the amphibious landing as ground attack was with multiple launch rocket tubes. As this was done, only then would the infantryman be sent onto the field of battle, protected initially by a wide array of armored personnel carriers and infantry fighting vehicles. Although air war was a major emphasis, this operation was also a combination of the three forces, the "Ail-Land-Sea campaign as noted by General Colin Powel.

Technology seem to have been a benchmark during the 1991 Gulf campaign as it proved that the use of technology was in fact the determinant factor that the coalitions forces won the war. With technological advances, the war was planed way in advance and using specific technologies to overcome the war in the

\textsuperscript{184} Author: U.S. Army, Reserve Officers Training Corp (ROTC); Alpha Company, Command Center, UoII., KY, USA, 1990-1992

\textsuperscript{185} Ibid
early stages, brought the much speedy victory for the coalition forces. Overall, this research indicates that technology dominated the 1991 Gulf War as seen with specific technologies used and highlighted. The technological superiority of allied forces with a variety of technological systems, gave the necessary advantage during the 1991 Gulf campaign.¹⁸⁶ Key factors in technology, that determined victory in the Gulf War in 1991, were technologies of stealth aircraft, stealth systems that were able to drop precision munitions, which revealed an increased ability to limit collateral casualties and property damage. These smart weapons were seen to have virtually pinpointed targets with tremendous accuracy. Some scholars have argued, that this technology changed the principles of victory in the Gulf campaign.

Chapter 4 indicates some of the technologies that contributed success in the 1991 Gulf War. Weapons technology using stealth systems allowed threading laser and optical guided bombs through air vents and doorways and fewer munitions were required to accomplish the same task as to prior wars.¹⁸⁷ Moreover, technological superiority not only allowed the coalition to gain absolute air control rapidly, it also insured maximum compliance in engaging armed conflict to collateral damage.

Precision guided munitions, with accurate near zero miss accuracy combined with Global Positioning Systems were effective in pinpointing targets and capable of

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penetrating buildings way before detonation. Smart weapons with intelligence of recognizing, identifying and sort targets as their sensors guide them were proven in accuracy’s as measured by centimeters rather than meters. Other smart weapons in contribution to the gulf campaign are the Airborne Warning Control System (AWACS), which is the command and control system premier example. These electronic warfare capabilities include advanced active jamming, decoys, homing, antiradiation missiles, and standoff weapons.

The Patriot missiles proved a good success rate in the Gulf campaign to intercept Scud missiles aimed at Israel and Saudi Arabia. The Patriot scored an 80 percent success rate in shooting down Scud’s missiles fired at allied forces and its surrounding region. Tomahawk cruise missiles which can fly through dangerous air defense systems and destroy their targets with no risk to lives for the American pilots, was another key factor in preventing allied forces from being killed, wounded or taken as prisoners of war.

Joint Surveillance Target Attack System (JSTARS), a radar and information processing system for the U.S. artillery, aircraft and missiles defense systems. This system is an all weather seeking enemy tanks and armored personnel carrier and can detect up to 56 miles away from enemy target. The system helped to gauge the extent of damage caused by allied planes to enemy supply lines as well as

monitoring and locating Iraqi tank and vehicles in the Gulf campaign. Iraq had 5,000 tanks and 8,000 armored personnel carriers, which not for the JSTARS would have had trouble stopping Iraqi armored forces against allied forces in the ground campaign. If the air campaign did not destroy this large portion of the forces, the ground campaign could have been a bitter bloodshed. The Army tactical Missiles Systems (ATACMS) was capable of striking large concentrations of armored vehicles and was needed to destroy the tanks Iraq had. The systems were engaged to take out and disarmed Iraqi forces from maneuvering their tanks from stopping attempts by allied tanks to break strongly defended Iraqi positions.

The U.S. military reconnaissance and communication satellite proved extremely valuable during the war. The U.S. had a distinct advantage in this field against the Iraqi’s in overcoming troop movement and locating strategic arrears. The Global Positioning Systems (GPS) was a space-based surveillance to guide and navigate soldiers in the desert landscape. It played a key role for all coalition forces on the ground traversing the desert, especially during sandstorms. This allowed the coalition forces to plan their attacks back and forth virtually up to the moment of attack.

The Gulf War in a variety of postmortems has generated everything from eyewitness accounts, to detailed Defense Department reports, to popular

188 Lambert, S. Benjamin; "Technology and Air War", Air Force Magazine 79, no. 11, November 1996: pp 50
overviews emphasizing dramatic events and controversial issues. However, the strategic phase did have its dramatic successes. The campaign against Iraqi air power, its air defense system and its air force was swift and effective. Perhaps the most important feature of the entire air campaign was establishment of air superiority in the first hours of battle. The Iraqi Air Force was blinded, then pinned down and destroyed in all sense. This achievement was a precondition for the unhindered pursuit of the rest of the air campaign, including attacks on the enemy’s command and control facilities and supply routes. The strategic phase, therefore, contributed important spillover effects, disrupting supply lines and hampering the enemy’s battle movement, which weakened Iraqi forces even before the start of the battlefield preparation phase that immediately preceded the ground war. Strikes on enemy ground units were the air campaign’s most significant contribution to the war.

The role of emerging technologies in the future is deep and a complicated subject to be addressed. The role certainly will be critical, and in some case decisive. But to expect the god of technology to save us from the drudgery of war is folly. In thinking about the future, we would do better to dream less about the marvels of technology and consider instead the sorts of task superpowers may actually be called upon to perform. Even in a world without obvious threats, the basis of a successful defense remains what it has been for almost a century, the ability to project highly trained and well-equipped forces in decisive numbers anywhere in the world. Now or in he distant future, that underlying reality is unlikely to change.
At present, the U.S., Russia and other first world countries possess a distinct advantage over third world armies, technology. There are two things that are likely to change in the future, the availability of advanced weapons and weapons of mass destruction and the importance of information warfare. Technology is becoming cheaper, communications are making information including that of weapons more available, and the number of countries seeking it larger, it will be harder to prevent small dictatorships from obtaining it. Most feared are future conflicts with countries that have chemical, biological, and nuclear weapons and are prepared to use them by traditional deterrents. Equally feared is the use of these weapons, which could be just as devastating in death toll in an armed conflict. Armies facing this situation will have to dramatically change their tactics to accommodate for the chance of a nuclear or biological attack.

Future war will also depend on even more advanced technologies as in information warfare that takes on the role since the advent of war. Information warfare uses information as an advantage over an adversary in times of war. As seen in the Gulf campaign, the U.S. destroyed Iraqi radar systems using G.P.S. Information warfare is crucial in determining the exact locations of targets and future war will depend highly on its information gathering and processing.

In terms of technological advances, those who acquire them will have a distinct advantage over any forces in modern warfare. The traditional war
technology cycle of advantage counter advantage is thrown into a new fast pace of arms race among international forces. Future war will incorporate latest and most advanced weapons brought in by intellectual scientist who are paid to come up with sophisticated weapons. Wars will be fought in a distance and the best equipped force will endower the victory it so desires. Thus, technology will be a force multiplier in society and will continue to move forward, weather it brings peace or destruction, will depend on the force that acquires it....technology! Recent cases of war in Afghanistan and the recent Iraq war, once more confirmed the position of this thesis in assessing the role of technology in the 1991 Gulf War.