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Governments, Societies, and Armed Forces: What the Gulf War Portends

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In his influential book *The Soldier and the State*, Samuel Huntington describes civil-military relations as the "principal institutional component of military security policy." He states that the issues of military policy determined by the relationship between military professionals and civil authority comprise three functional categories. First, the quantitative issues of the size, recruitment, and supply of military forces must be settled. This includes a determination of the portion of national resources to be devoted to defense. Second, qualitative questions of the organization, composition, equipment, and deployment of forces must be scrutinized. What types of armaments are appropriate? Where should forces be based? What alliance relationships are appropriate for improved security? Third, the dynamic issues pertaining to how forces are to be employed must be confronted. This is perhaps the fundamental question of statehood: Under what circumstances will military forces be brought into action? While debate over these questions is nearly continuous in the public forum, the institutional relationship between civil and military leadership will largely determine the outcome.[1]

With the dramatic changes that have occurred in the international political landscape during the last decade, states are now confronted by more complex questions concerning their military forces than ever before. The use of troops in concert with allies in peacekeeping operations, humanitarian missions, observer duty, and even peacemaking (e.g., Bosnia and Kosovo) presents a new assortment of implied tasks. Furthermore, the focus and attention span of military and political leaders seem reduced by the daunting array of ongoing wars around the globe that allow little time for considering long-term strategies and potential future conflicts. As we deal with these emerging challenges, however, it remains a responsibility of Western military and civilian force planners to also consider possible large conflicts and how to manage them. With this in mind, I shall examine the relationships during the Gulf War between civil and military authorities of the principal Western participants (United States, France, and the United Kingdom) acting as a "coalition of the willing." What did this war presage about the military policies of these states as they go about determining the character of their respective militaries for the 21st century? Most force planning occurs prior to hostilities or at its onset. It must include answers to several key questions: What are the threat and mission? What type and amount of forces are required? How are they to be raised, organized, and equipped? How will they be moved to the theater of operations and sustained once there? What military doctrines and strategies are appropriate to successfully accomplish the mission? How can these efforts be harmonized among allied states?

The military aspects of the Gulf War are particularly instructive for force planning. First, the Gulf War was the initial major war in the post-Cold War era. Without the thawing of relationships in Europe and the willingness of the Soviet leadership in 1990-91 to support international sanctions against Iraq under the terms of the UN Charter, the large-scale American force deployments in the region would have been doubtful. This dramatic turnabout in the strategic climate allowed the United States and Great Britain to redeploy significant portions of their NATO-committed forces to fight in the Gulf War with little concern of possible security threats arising in Europe. These changed relationships, coupled with the flagrant violations of international norms by Saddam Hussein, insured near global unity in opposition to Iraqi aggression. The Gulf War suggests that future crises may result in similar contingency operations around the globe involving the major powers. Second, the sheer size of the conflict makes it of particular interest in examining how force is projected and sustained. Third, the allied coalition that confronted Saddam Hussein included forces from 36 different nations. Wars fought by single nations against other states are unlikely in the future, and force planning must consider (if not assume) combined operations.

Each war is unique, occurring under conditions that will never again be wholly duplicated. Those factors that make a particular conflict distinctive are important to understand at the outset of any study. Five elements, all applicable to the Gulf War, underscore the continuing validity of this statement. First, and perhaps most important, the broad political goals of the coalition (to liberate Kuwait and reduce the threat posed by Iraq to its neighbors) were easily translated into clear military objectives. Second, the conflict was largely a "war by appointment" for the allies. The deployment of forces to Saudi Arabia was unencumbered by the Iraqis, with allied strategic lines of communications remaining totally unimpaired by enemy action. Initiative and the exact timing of the start of the war were exclusively allied choices. Third, forces were not confronted with immediate opposition or attack upon their arrival. Furthermore, Saudi Arabia had relatively modern infrastructure in terms of ports and airfields that made the introduction of large quantities of military equipment and personnel easier. Fourth, the geography of the region allowed the allied coalition full scope to maneuver its own forces and to engage enemy forces at long ranges. Fifth, the war remained solely conventional. Despite Iraqi threats and capabilities, there was no escalation to the use of weapons of mass destruction.

This article does not purport to present immutable "lessons learned," but rather to discover trends in force planning from the successes and failures occurring in the Gulf War. The term "lessons learned" is a badly overused oversimplification. It suggests that the study of military conflict is simply a matter of data reduction. This belief overlooks the fog of war surrounding every conflict and those factors unique to each war. Such scripts for the future often arise from self-serving insights proffered by certain countries, military services, or industries.[2] Any study based on a series of historical events, whether recent or in the distant past, cannot teach as much as it can enlighten. Events must be placed in the proper context, and an understanding of the conditions under which they occurred must be understood. With this caveat, let us apply the results in a comparative framework, guided by skepticism and mindful that a future opponent may play by different rules.[3]

Operation Desert Shield--Force Buildup

Following a meeting between King Fahd and senior American officials on 6 August 1990, orders were issued to begin the deployment of American and allied forces to the kingdom of Saudi Arabia. Initial US forces began arriving the next day. General Norman Schwarzkopf, the Central Command (CENTCOM) commander, was confronted with three missions. First, move forces immediately to Saudi Arabia to deter an attack by Iraq on the kingdom. This required the rapid deployment to the Persian Gulf of combat aircraft, naval forces, and air-deployable light ground forces. Second, continue the buildup of forces as quickly as possible to produce a credible defense of Saudi Arabia with the addition of sea-deployable heavy ground forces, which would take longer to arrive in theater. Third, conduct interdiction operations at sea to enforce UN economic sanctions (specifically UN Resolution 665) against Iraq. In November a fourth mission was added with the announcement by President Bush of a dramatic new deployment of forces (primarily the US VII Corps from Germany) and subsequent proportional increases by the leading Western allies, all designed to equip coalition forces to undertake offensive action. These missions required the successful integration of coalition forces in a fashion that made military sense while satisfying issues of national policies and pride for each participant state.

The nature of the deterrence mission meant that forces had to be able to move to Saudi Arabia rapidly and be relatively self-sustaining for up to 30 days. In addition, improved intelligence-gathering capabilities were critical to monitor the activities of Iraqi forces in Kuwait should they decide to continue the attack into Saudi Arabia. The impressive movement of military forces was possible only by dint of the large strategic airlift assets available to the US Air Force. During the first two days, 91 missions were flown to Saudi Arabia, and more than 70 missions were flown each day for the rest of the month.[4] Intelligence capabilities were quickly improved by the deployment of Airborne Warning and Control System (AWACS) aircraft, intelligence-gathering planes from the fleet offshore, and the redirection of satellites to better monitor Iraqi troop movements.

Naval forces asserted an immediate presence in the Persian Gulf, serving as a warning to Saddam Hussein and bolstering the deterrence effort. Even before the 6 August decision by King Fahd to accept the deployment, President Bush had ordered two carrier battle groups with more than 100 fighters to the Gulf to reinforce the few ships already present at the start of the crisis.[5] Ground and air forces began reaching Saudi Arabian soil within 48 hours of the deployment decision. The first Arab force, advance elements of the Egyptian army, landed on 11 August,[6] with detachments from Morocco and Syria arriving shortly afterwards. Sailing orders were issued to American

prepositioned ships at Diego Garcia and Guam on 7 August, and by 15 August the 7th Marine Brigade was marrying up with its equipment in Saudi Arabia.[7] While much of this initial deployment reflected contingency planning that had been completed by Western nations before the Iraqi attack, such plans were at best a framework that had to be adapted to meet the immediate threat.

General Schwarzkopf made a crucial decision early in the crisis that guided the buildup of forces. Based on military prudence and fears of a possible Iraqi attack, he accelerated the deployment of combat forces to ensure that the greatest amount of ground combat power was available quickly. This meant that theater logistic forces would arrive later, forcing initial units arriving in Saudi Arabia to depend on organic supplies, host-nation support provided by the Saudi government, and prepositioned stocks arriving by ship. Consequently, the theater logistical structure did not mature until about the middle of November.[8] This tradeoff between rapidly deployable but sparsely supported light combat forces as against heavier, logistics-supported forces to confront an armored threat carried with it great risks. In the event that the Iraqis chose to attack prior to the creation of an effective defense for Saudi Arabia, CENTCOM produced a plan directing ground forces to withdraw into enclaves around the major ports in the Persian Gulf to be reinforced or evacuated.[9]

The threat of an Iraqi invasion did not recede until mid-September. At that time Iraqi ground forces began preparing extensive defensive positions, and the Republican Guards along with other armor units on the border were removed and replaced by infantry. On 14 September, Iraqi forces in Kuwait consisted of 10 divisions comprising 155,000 troops, 1,350 tanks, 900 armored personnel carriers, and 650 artillery pieces; another 12 divisions of reinforcements and reserves were assembled in neighboring parts of Iraq.[10] Military planners could never discount completely the possibility that the Iraqis might conduct a limited attack, using either a combination of ground and air forces or just aircraft and ballistic missiles.

The transportation requirements for logistical operations are divided into two general parts. First, strategic operations involve the movement of men and materiel to the theater. Second, tactical operations entail the transport of supplies and personnel within the theater to meet the requirements dictated by operational planning and execution. The movement of sufficient heavy forces to the Gulf in order to have a credible defense (and offense after November) meant that the vast majority of equipment, supplies, and ammunition required would be transported by sea. In fact, throughout the entirety of Desert Shield and Storm, roughly 95 percent of everything required was moved by sea, with only the remaining five percent by air. This meant that careful consideration had to be given at all times to priorities for use of scarce air cargo assets. Since the route of most ships was via the Mediterranean Sea, Suez Canal, and Red Sea, the strategic lines of supply were vulnerable to hijacking, mines planted by Iraqi freighters, or even direct attack by some of Iraq's possible allies (e.g., Libya, Sudan, and Yemen). Had such attacks occurred, the allies would have had to slow the deployment, arrange convoys, and divert naval and air assets to protect shipping.[11]

Tactical operations included the movement of equipment within the kingdom, which became particularly acute once the decision was made to move forces west in order to envelop Iraqi forces. While Saudi Arabia is a fairly modern state in terms of infrastructure, the lack of railways to move supplies and equipment once they had arrived in theater presented the allies with significant challenges in terms of finding sufficient heavy equipment transporters and gaining free access to the few Saudi Arabian highways that could carry heavy loads, particularly in the north. By late September the United States had 112 heavy equipment transporters in theater; by the end of the conflict the number had risen to 1,300 (many coming from Eastern Europe), in most cases operated by third-country nationals.[12]

The scale of the deployment was enormous. The air movement was bigger than the Berlin Airlift in 1948-49. In the first 30 days, more than 38,000 soldiers and 39,000 tons of supplies were delivered by air. In comparison, in World War II the United States deployed fewer than 30,000 troops between December 1941 and February 1942 (all by ship); 12,000 to Korea in August 1950; and 16,300 to South Vietnam during the entire year of 1965.[13] American civil authorities were directed to activate 38 aircraft from the Civil Reserve Air Fleet (CRAF) for the first time in its 28-year history. CRAF is a system established by law in the United States which requires civilian airlines to make available 506 cargo and passenger aircraft when called upon by the Department of Defense in time of crisis or war. These aircraft made a significant contribution to the overall strategic airlift effort and were the primary means to move personnel into the theater.

By sea, 68,000 tons of supplies and equipment were delivered by prepositioned ships, as were 435,000 barrels of fuel and critical port operating equipment, in the first 30 days. Fast sealift would deliver an additional 40,000 tons of supplies and materials during the same period.[14] The sustained effort to move these mountains of supplies and equipment was not accomplished without overcoming many problems and deficiencies in strategic sealift. These included the age and state of repair of the vessels as well as recruiting sufficient experienced mariners to crew all the ships required. In September as many as 69 ships were en route to the theater, with 21 "empties" returning for more cargo. In November up to 172 ships were at sea during any given day to deliver additional forces and supplies to Saudi Arabia.[15] By the end of the war the United States had chartered 220 ships, most of which were foreign-flagged. During the first six months of Desert Shield, ship transports delivered 2.4 million tons of cargo. That was more than four times the cargo carried across the English Channel to Normandy during D-Day in June 1944 (which had been readied during the previous two years). It was 6.5 times that of the peak force buildup during the Vietnam War for a similar period. The average distance traveled by each ship also made Desert Shield one of the longest deployments ever, with the average sailing distance roughly 8,500 miles.[16]

Other coalition forces met similar difficulties in moving their troops and equipment to the theater. France deployed 16,500 personnel and 85,000 tons of freight between 2 August and 28 February. This required 49 merchant ships and 37 commercial B-747 and Airbus planes. In addition, 282 flights by military cargo aircraft and the contributions of two American C5A cargo aircraft were needed to accomplish the mission. While the maritime shipping performed fairly well, the use of civilian aircraft in a military operation for the first time caused the French some difficulty due to restrictions on the use of aircraft and the excessive cost of insurance (which reached five million Francs per flight once hostilities commenced). For these reasons the French General Staff has proposed the creation of a system similar to the American CRAF to meet future contingencies.

Political decisions in Paris also complicated the operation logistically. For example, despite an initial agreement between the United States and France to allow the French air force to operate at the large, well-equipped air base at Dhahran, the French Ministry of Defense insisted on a separate French-only base to minimize the interface with US forces. A base was found at Al-Ahsa, but the facility was marginal, necessitating additional construction for aircraft parking and taxiways before the arrival of French aircraft. This delayed the operation from the onset and resulted in additional logistical and operational burdens for the French air force. French ground forces used the port of Yanbu on the Red Sea to disembark equipment and supplies; although this port was close to the French facility at Djibouti, everything that arrived in Yanbu had to be moved by truck more than 900 miles (roughly the distance from Paris to Kaliningrad) to reach the initial French positions.[17] This also meant that French forces could be used only on the western flank of any allied offensive operation if they were to avoid crossing national lines of resupply and placing additional logistical stress on their operations.

The British deployment of 45,000 personnel was the most comprehensive operation that nation had undertaken since World War II--including the Falklands War. It required the movement of 400,000 tons of freight (including 15,000 vehicles, of which 2,500 were armored); 12,500 sorties by the Royal Air Force; and 146 cargo ship transits. General Sir Peter de la Billiere, commander of UK forces in the Gulf, noted in his retrospective study of the war that of the "146 ships sailing from England, only four or five were British." This fact reflected the high costs of chartering British-flagged vessels, the small size of the British merchant fleet, and the fact that most British ships were already employed.[18]

In undertaking the mission to build up naval forces to enforce the economic sanctions against Iraq, the coalition had both advantages and disadvantages. As previously noted, the major Western powers all had ships operating in the Gulf at the beginning of the crisis, and the American Navy had significant experience in the Persian Gulf from the reflagging operation that had been conducted during the Iran-Iraq War to protect neutral vessels. Still, the interdiction mission required direct encounters with Iraqi vessels (albeit civilian). The possibility of confrontation and hostilities was therefore high from the start. Furthermore, the scale of this maritime operation was huge. The area to be monitored included not only the Persian Gulf but also the Red Sea and Arabian Sea, an area embracing 250,000 square miles of salt water. By the end of the crisis, 165 ships from 19 different countries would be involved in the operation.

As in any multilateral military operation, the establishment of clear lines of command and control was problematic but vital. Multilateral command and control structures were created for air, land, and sea forces; all were different but still

successful. They also reflected national concerns that the dynamic decisions concerning where and how each nation's forces would be committed to combat were reserved to each nation. Overall the nations did not achieve "unity of command," but they were able to achieve a "unity of purpose" which, coupled with overwhelming operational superiority, led to ultimate victory. British ground forces were placed under the operational command of the Commander-in-Chief CENTCOM from the onset, while remaining under direct British command. British ground forces were initially attached to the American Marines and later placed under the tactical command of the US VII Corps. French forces operated independently under national command and control but coordinated closely with both CENTCOM and the Saudis. CENTCOM did not have direct operational command of Islamic forces, which were under the control of the Saudis. An informal planning group (the Coalition Coordination, Communication, and Integration [C3I] Cell) was established to ensure close coordination between CENTCOM and the Saudi General Staff. The political merit of placing Arab forces solely under an Arab commander rather than under General Schwarzkopf seems obvious, but the value of the C3I Cell continued to grow. It became a clearinghouse for such diverse activities as coordination for training areas, firing ranges, logistics, host-nation support, radio frequency management, and intelligence-sharing. It was quickly expanded and divided into ground, air, naval, logistics, special operations, and intelligence sections. It has served as a model for subsequent combined operations. The commander of CENTCOM air forces controlled all American aircraft in theater and was also assigned the function of airspace control authority as the Joint Force Air Component Commander. In this capacity his staff planned, coordinated, and allocated all theater-wide air operations in accordance with the guidance provided by the Commander-in-Chief, CENTCOM. At sea the CENTCOM naval forces commander was directed to develop operational plans, with the understanding that multinational units participating in the mission would operate under their respective national commands.[19]

Due in part to the contrasting character of the command structures as well as national prerogatives, differing guidance on the rules of engagement (ROE)--the rules delineating the circumstances and limitations under which forces could initiate a combat engagement with Iraqi forces--existed in all three areas (land, air, and sea). While in general the application of such rules has been rendered much more difficult by the ever-increasing range, lethality, and complexity of modern weapons, ROE remain critically important. The problem of defining and agreeing on ROE was of particular concern in the enforcement of the sanctions, since force might be required to halt vessels bound for Iraq or Kuwait. Permission to fire warning shots to halt a vessel was retained by the CENTCOM naval forces commander, and the decision to employ "disabling fire" to stop a ship was reserved by each respective national command authority.[20] Some of the boarding operations included forces of more than one country, which could result in a boarding party having different instructions. In addition to disagreements over ROE between nations, local military commanders often felt they had not received clear guidelines from their respective governments or were required to seek guidance if a confrontation seemed likely. General Schwarzkopf was frustrated by his inability to get clear instructions on what level of force was permitted to stop a ship refusing the standard warning to halt. At one point early in the crisis, he stated that instructions to him changed four times in 24 hours as he sought guidance on what measures could be taken to halt a tanker heading into the Gulf.[21] The first instance of a vessel being intercepted and boarded occurred on 31 August, when the missile cruiser USS *Biddle* confronted the tanker *Al Karamah* and a Navy and Coast Guard team inspected the ship. By the start of Desert Storm in January, nearly 7,000 vessels would be intercepted and 832 actually boarded. Thirty-six ships were diverted. The consequent loss to the Iraqi economy was estimated to be \$30 million per day.[22]

The final mission given CENTCOM was to prepare for possible offensive operations, a mission outlined by President Bush in his speech on 8 November 1990 when he announced an increase in US forces to nearly 500,000. A few days later the US Secretary of Defense announced an increase in the reserve call-up authorization.[23] This roughly doubled the call-up of 45,000 reservists by the United States in August, and the call-up authority was increased again on 1 December to 188,000. The requirement for massive reserve deployments underscored the different character of the American military compared to that of other members of the coalition, and the changes in US force structure that had occurred in the previous decade. American forces after Vietnam had been reconfigured to place a large portion of the maintenance, logistics, transportation, medical, and other support units in the reserves. Consequently, due to the massive size of the American commitment, there was no alternative but to involve reserve forces. Reserve forces deploying to the Gulf ultimately numbered more than 100,000 personnel, about 20 percent of the American forces in theater. While no other coalition member would employ reserve units in the Gulf, the question of their use is of critical importance to the civil-military relationship in each country and to successful force planning.

The decision to activate individual or unit reserves is a political choice that makes it extremely difficult for planners to

predict at what phase of a deployment or when during hostilities they might be available. The British made no attempt to activate their Territorial Army, though certain specialists (linguists, doctors, etc.) were allowed to volunteer. British units that deployed to the Gulf were augmented by personnel and equipment from other units not deploying. Consequently, an increase in British forces beyond the single division deployed would have been extraordinarily problematic. French forces had a similar problem. The political leadership in France decided that only professional soldiers, sailors, and airmen would be sent to the Arabian Peninsula. Consequently, almost the entirety of the French army, navy, and air force was scoured to find the roughly 16,500 professionals required. This precedent of using only professionals--that is, refusing to send draftees outside the country--has serious implications for the ability of France to deploy significant numbers of troops for operations that do not entail the defense of French territories or citizens. As a result the French have begun consideration of a volunteer force despite its increased cost.

The decision on 8 November to substantially increase forces suggested several emerging realities and presented significant new challenges. By the middle of October, allied forces in the region numbered roughly 300,000 (220,000 US and European, 40,000 Saudi, and 42,000 non-Saudi Arab). Still, most of the Western ground forces in Saudi Arabia were light forces. At the same time, Iraqi forces in Kuwait had grown to an estimated 400,000^[24] and were constructing massive defenses along the border. While allied ground forces, supported by overwhelming coalition air and naval superiority, could undoubtedly successfully defend Saudi Arabia, initial estimates suggested that an attack with these forces to drive the Iraqis from Kuwait might be risky and lead to high casualties. The resulting deployment of additional forces from Europe (particularly the US VII Corps) posed inordinate problems. While contingency planning had been done by CENTCOM for the units that were part of XVIII Airborne Corps coming from the United States, no such planning had been done involving the movement of forces already deployed to Europe. Furthermore, the fact that VII Corps was in Europe meant that this movement could be accomplished efficiently only with the close cooperation of the German government and other allies in order to gain exclusive use of highways, railways, canals, and ports. Finally, the adoption of UN Resolution 678 on 29 November authorizing members to use "all means necessary" to force the withdrawal of Iraqi forces--if Iraq did not voluntarily leave Kuwait by 15 January--imposed an implicit deadline for when reinforcements had to be in Saudi Arabia and prepared to launch an offensive.

Though much had been learned in October and November about deploying to Southwest Asia, the size of VII Corps and the fact that it was exclusively a heavy armored corps made the deployment unprecedentedly difficult. The movement of the corps required 465 trains, 312 canal barges, and hundreds of separate road convoys to get equipment to the ports. This was orchestrated primarily by four NATO nations (with the Germans being the most important), using both civilian and military agencies. It took an additional 578 aircraft and 140 ships to complete the deployment and move the corps to Saudi Arabia.^[25] By early December it became clear that a significant percentage of the forces coming from Germany would not be in theater by 15 January. The deployment suffered from a lack of preliminary planning, shortages of railway cars, bad weather in Germany, and ships that broke down on the high seas. Some estimates suggested that at least 20 percent if not more of the reinforcements would not be in Saudi Arabia by the UN deadline.^[26] Even after they arrived additional time would be required to marry up troops with their equipment, repaint vehicles in desert camouflage, move to tactical assembly areas, and train for the attack. Many military experts suggested that these forces would require at least 30 days to acclimatize, accomplish preliminary tasks, and prepare for a complex offensive operation. While it was obvious that the coalition would likely take military action shortly after the UN-imposed deadline of 15 January, the actual start of the ground campaign would be delayed until forces had arrived in theater and prepared for the attack.

Operation Desert Storm

The ingredients that were essential to allied success once the war began were a result of the accomplishments during Desert Shield and various supporting factors including logistics, C3I, technology, and the training that separate national organizations had undergone during Operation Desert Shield and for many years before. A German general during World War II is reported to have described the desert as "a tactician's dream and a quartermaster's nightmare." This observation held true during Operation Desert Storm. As suggested earlier, the coalition had overcome sizable challenges in transporting forces to Saudi Arabia, but it was confronted with additional problems in moving the mammoth amount of supplies necessary to sustain a heavy armored offensive over several hundred miles of desert from the ports. To solve this problem, logistical bases were constructed along "Tapline Road," which stretched northeast across Saudi Arabia roughly parallel to the Saudi border with Iraq. These sites were designed to stockpile

supplies for the attack, but for reasons of operational security their construction was not begun until the air campaign started on 16 January.

The logistical bases were critical to the operation because of the increased complexity of modern warfare, the austere desert environment, and the growth in the amount of materiel modern formations require. In 1914, for example, a typical infantry division drew less than 100 tons of supplies daily, much of which was locally procured fodder for horses. By 1940-41 a German panzer division required 300 tons daily, while an American division in 1945 consumed twice that much.[27] Unlike its World War II forebears, an American armored division in the Gulf required roughly 600,000 gallons of fuel per day (roughly 120 truckloads) during the actual attack.[28] One logistical goal for the campaign was to assemble sufficient supplies forward to sustain units for a minimum of 30 days. General Schwarzkopf required his senior logistician to publicly sign his plan indicating this feat could be accomplished in three weeks. To support the operation, 29.6 million meals, 36 million gallons of fuel, and 114.9 thousand tons of ammunition were moved forward. US VII Corps alone marshaled 1.5 million meals, 5.6 million gallons of fuel, 3.3 million gallons of water, and 56,000 tons of ammunition,[29] not to mention such necessities as medical supplies and repair parts, into the forward logistical sites. The task required tens of thousands of support vehicles to move the supplies from the ports forward into the desert.

This was, of course, not solely an American problem, and in fact the challenge facing allied divisions was in some ways even more difficult. Once the plan for offensive operations was completed, British Lieutenant General de la Billiere requested that the British division be moved from attacking in the east with the American Marines in a supporting role to fighting alongside the US VII Corps during the main attack in the west. This severely complicated the logistical requirements for the British 1st Armored Division. The American divisions had a divisional rear boundary delineating responsibility for resupply, with the task of getting the materiel from the ports to that point residing with the corps support command. But because of its different equipment maintenance requirements, the British division's supply lines stretched all the way back to the Port of Al Jubayl, regardless of where they were committed. As the division commander noted, "By attacking [with VII Corps] I was going to make my problems worse." [30] This was one of the primary factors in the decision to place the British division on the right flank of the VII Corps attack--so that their supply line would be as short as possible.

As the air campaign progressed, logistical problems were not confined to tactical difficulties in Saudi Arabia. Strains were also uncovered in several areas of the industrial base. American planners were reminded of their dependence on Japanese microchips, which would have been a serious problem had Japan decided to remain neutral in the conflict. Despite an intense production effort, selected ammunition was in short supply at war's end, particularly precision-guided munitions for aircraft. The military food industry in the United States could not keep up with the demand for rations, and the sole producer of atropine (a nerve agent antidote) never produced the supply demanded by military planners.[31] In an effort to alleviate similar problems in other industries (particularly heavy engineering), President Bush issued an Executive Order in early January compelling American manufacturers to give the military first priority in production. The strains of even a limited war had pushed the United States to implement some aspects of a controlled economy.[32]

Command, control, communications, and intelligence-gathering, while key to the success of any military operation, are especially critical in a multilateral operation in which the capabilities of all contributing nations must be knit together to create an effective combined combat capability. One of the keys to the coalition's success lay in the fact that Western commanders at the highest levels had a deep understanding of the Middle East and an appreciation of Arab culture. General Schwarzkopf had spent time in the area as a boy and had visited it regularly as the Deputy Chief of Staff for Operations and later as CENTCOM commander. His daily meetings with his Saudi counterpart were essential to the continued good relations between the Arabs and the West and to their close cooperation in planning and executing the campaign. In like manner, Lieutenant General de la Billiere also had spent significant periods of time in the region, most often with the British Special Air Service in Oman and elsewhere, and he had a close personal relationship with key Arab leaders. In addition, the value of the C3I Cell (previously mentioned) cannot be overstated. As the possibility of war increased, this organization grew to include Western liaison officers with nearly every Arab battalion. They not only assisted in training and the integration of new pieces of equipment but also reported on the combat preparation of these units. During the ground offensive the liaison officers were essential to preventing friendly fire incidents between Western and Arab forces--none of which occurred despite the prior concerns of many nations.

Several lessons can also be gleaned in the area of intelligence. The allies enjoyed enormous advantages in intelligence-gathering over the Iraqis. Indeed, the attack on Khafji, ordered personally by Saddam Hussein, might have been the result of the Iraqis' desire to gather information on coalition formations, capabilities, and intentions. Two interrelated problems did occur, however, which likely will arise in the future. First, despite the enormous quantities of strategic intelligence gathered by aircraft, satellites, and other means, ground commanders at division level and below complained continually about the lack of information on enemy forces along their route of attack. The reasons may have included poor distribution of available information, an inability of intelligence-gathering mechanisms at higher levels to rapidly focus on areas deemed critical by tactical commanders during the rapid tempo of the advance, or a lack of assets at lower levels that commanders could use to gather their own information. It is also worth remembering that even the best satellite imagery can provide only a picture of enemy force positions, but not his intentions. Additionally, commanders at all levels seem convinced that more human intelligence-gathering is required for future operations. After the massive bombing campaign, coalition planners had no clear sense of the morale or cohesiveness of the Iraqi army at the start of the ground offensive.

European members of the coalition have shown a keen interest in C3I improvement based on their experiences in the Gulf at both the strategic and tactical levels. In France military planners point out that success in the Gulf demonstrates that ad hoc military alliances can be successful, and that in the future more emphasis needs to be placed on peacetime joint and combined exercises and interoperability in such basic areas as fuel, ammunition, communications, and intelligence-gathering, with less dependence on formal alliance structures. The French also were concerned over their total dependence on the United States for strategic intelligence. Some now argue that an independent capability for the collection and processing of battlefield intelligence will become the new symbol of France's aspiration for political "rank," much in the way nuclear weapons were in the 1960s. The French Defense Ministry has made the acquisition of satellites perhaps the highest priority for the future and proposed to give military intelligence the status of an official branch of the armed services.[33]

Due in large measure to the overwhelming media coverage of the Gulf War and the highly publicized successes of advanced aerial weaponry, future technology is an area of fascination for most students of the Gulf War. Military planners, however, must soberly evaluate the role that technology played in order to recommend future research, development, and acquisition policies for their respective states. Such analyses must reflect budgetary limitations and perceived threats. Still, several general comments are appropriate about the effects of advanced technologies on combat operations in the air, on land, and at sea.

Allied success during the air campaign was achieved in large measure by the ability to penetrate Iraqi air defenses and deliver ordnance with precision guidance on targets gathered from a plethora of intelligence sources. Penetration of air defenses was permitted by such advancements as stealth technology, electronic warfare improvements, and the ability to target and neutralize Iraqi air defense assets. This included not only direct attacks and electronic "spoofing," but even an attempt to infect an Iraqi command and control computer with a virus. Cruise missiles, because of their advanced guidance and low-level flight, also made a significant contribution to the coalition's ability to bypass Iraqi air defenses and continue attacks even in bad weather. As US Vice Admiral Stanley Arthur noted, "The pinpoint accuracy and resulting low risk of collateral damage were what kept [the cruise] system in the air when others were diverted to secondary targets." [34] Despite cruise technology, however, these attacks could not have occurred without vast improvements in airspace management and the command and control system. The ability of AWACS to control the massive number of aircraft involved--which included not only bombers but also fighter escorts, refueling airplanes, and electronic warfare aircraft--was essential to insure that targets were struck, aircraft refueled, and fratricidal attacks avoided. The airspace was described as busier than that over Chicago's O'Hare Airport. Controlling the air traffic was fundamental to overall success.

Some problems, of course, occurred. Analysts and military staffs disagreed fairly openly about the methodology for accurate (or at least acceptable) battle damage assessment. Disputes between various intelligence agencies in theater and elsewhere on the effectiveness of the air campaign made it difficult for planners not only to assess what targets needed to be struck again but also when the campaign should move on to a new stage or when the ground attack should commence. The need for improved capabilities in various aspects of force structure was also highlighted. For example, French air planners could not employ aircraft at night because the only attack aircraft in the French inventory with night-vision capabilities were the Mirage 2000N planes, which were equipped only for nuclear strikes and could

not be adapted quickly enough for use in the Gulf War.

Controversies still continue over the effectiveness of the Patriot air defense missile system in defeating the threat of Iraqi Scud attacks on Israel and Saudi Arabia. Despite wide differences of opinion on this subject, several points seem clear. First, the Scud missile--even given its advanced age--posed a remarkable threat to the coalition in political terms, far outweighing its military value. Second, the coalition overestimated its ability to find, attack, and destroy Scud launchers. As a result, a significant portion of air sorties was diverted to this mission, which may have lengthened the overall air campaign. Third, whether one accepts or rejects the value of the Patriot, the requirement for tactical air defense in the future was certainly underscored.

For ground forces, advancements in technology that were fundamental to allied success appear a bit subtler. The illustrious German armored commander General Heinz Guderian is reported to have been a strong proponent of placing radios in all tanks because of the improved control and maneuver flexibility it gave combat formations, in the face of opposition from many force planners in the German General Staff. An analogous technological advance, the Global Positioning System, not only allowed coalition forces to move rapidly through the desert but also wrought dramatic improvements in such functions as resupplying advancing formations and employing artillery and aircraft accurately. Captured Iraqi commanders stated that one reason they had discounted the possibility of a coalition attack in the west was their belief, based on experience, that allied units would become lost and disorganized in the featureless desert. In addition, dramatic improvements in night-vision devices allowed the attack to continue relentlessly after sunset. The coalition controlled the darkness in a manner Iraqi forces could not imagine. This ability, coupled with accurate fire control, meant that American and British tanks could engage and destroy Iraqi armor at ranges in excess of 3,000 meters at night, while the Iraqis could not even see them coming.

The rapid success of the ground campaign pointed out requirements for improved tactical resupply. Units must be logistically supported in a fashion that matches the pace and round-the-clock capability of attacking formations if an offensive is to be sustained. By the time coalition forces halted their attack, serious shortages of fuel and water were starting to concern ground force commanders.

As previously suggested, ground force commanders expressed a desire for improved intelligence-gathering means at every level. The problem posed by tactical intelligence requirements may be a result of the nature of modern combat. At least since the American Civil War (with the advent of the telegraph), intelligence has outpaced the movement of armies, and its volume has increased to the degree that it cannot be digested by one man.[35] The amount gathered, of course, cannot be equated to the value of the intelligence acquired or whether it meets the requirements set by the commander. The British divisional commander, Major General Rupert Smith, observed that in the Gulf War he was "to a large degree dependent on collection systems held at levels [above] us. I found it difficult to gather the data I needed to make my own analysis." Furthermore, the only system he found useful in solving this problem was the aerial drone, which could be focused by the ground commander on the offensive operation at hand and rapidly collect information needed on the enemy's rear. Thought must also be given to the idea of holding intelligence-gathering units in reserve so that they can be employed as a combat multiplier to exploit successes in the attack.[36]

At first glance the role of naval forces may seem the least significant in the overall success of the Gulf War coalition. That assessment, however, ignores the value of naval forces in rapidly asserting a presence in the region as the crisis built, which in this case may have contributed to the Iraqi decision not to follow up their invasion of Kuwait with an attack on Saudi Arabia. In addition, as previously described, sealift remains the principal means of moving the vast amounts of supplies required by even a relatively small force. The rapid and wholesale destruction of the Iraqi navy suggests that naval forces unable to operate in a hostile air environment are of little use against forces led by the United States. Mines and submarines may then become the enemy's only options. Still, the US Navy is not designed to counter every Third World naval threat; thus as in all force structure decisions, our mix will never be ideal.[37] There can be no doubt that the coalition was weak in rapid and effective mine-clearing capabilities due in large measure to a naval strategy that had once envisioned large-scale combat against the Soviet Union on the high seas.

One other area of technology must be considered in determining future force structures and possible deployment plans--the chemical and biological threat. Although these weapons were not used by Iraq, they had a significant effect on allied force planning in many ways. The deployment of chemical decontamination equipment and units was a high

priority for the initial force buildup in theater. The choice of timing for the attack during the colder months of January and February was made partly because of the belief that coalition soldiers could operate better in cooler weather while wearing the bulky chemical protective clothing, which they all did in fact wear during the ground attack. Dispersion of ground formations prior to the attack and the targeting of Iraqi artillery in the last few weeks before the ground assault were based on a desire to reduce coalition vulnerabilities while destroying the only remaining means the Iraqis had for delivering chemical weapons. The intention of allied commanders to maintain a rapid advance was due in part to the obvious difficulty this presented Iraq in using its chemical and biological weapons effectively. The creation of a massive coalition medical infrastructure was partly based on the belief that if Iraq used such weapons mass casualties would result, and those would have to be handled separately from conventional casualties to avoid contaminating medical facilities and personnel. Lastly, ground force commanders knew from the onset that should their unit be struck by chemical weapons, their ability to rapidly decontaminate would be circumscribed by the amount of water such an operation requires.

Despite the obvious value of the coalition's overwhelming advantage in military technology, it cannot be viewed as a panacea for a quick, dramatic improvement in force capabilities. As noted by Martin van Creveld in his study on war and technology, "Technology does not just represent an assemblage of hardware but a philosophical system. It affects not only the way war is conducted but the very framework that we use for thinking about it." This framework is a product of specific national historical circumstances which remain in flux at all times. Thus it may rapidly become out-of-date or even harmful in a subsequent set of circumstances.[38] Consequently, the acquisition of new technologies does not translate into immediate improvements in force capabilities and may, in fact, initially introduce "friction" or reduced capabilities until units can be adequately trained in their use. New technologies may also provide greater benefits in simpler environments--such as at sea or in the air--while being least effective in more complex environments such as densely populated areas.[39]

In addition to highlighting technological factors that are traditionally associated with military operations, the Gulf War underscored the enormous importance of the high-tech news media in terms of sustaining public support for the war as well as its effect on allied strategy. There is no doubt that the media (particularly television) are of increasing technological sophistication, and they played a critical role in engendering and maintaining public support. The Gulf War was the first conflict in which the initial shots were covered live on television, and innumerable people became CNN junkies as they eagerly awaited the latest report on military operations. This phenomenon was not confined to the United States. European leaders remarked on the tremendous role that television played in the war, linking it to sharp divisions in public opinion. A British brigade commander's assessment that high casualties might occur, subsequently widely reported in the British press, almost resulted in his removal from command. As a very senior British officer observed, "The Battle of the Somme would not occur today due to the intense media coverage. The British public would not stand for it."

This concern about maintaining public support affected strategic thinking in the United States and among the European members of the coalition in several ways. First, UN resolutions condemning Iraq's invasion of Kuwait and sanctioning the use of force to overturn it, plus the presence of Arab forces in the coalition, were fundamental to popular support in the West. Second, leaders in the United States were concerned throughout the crisis and the war over the so-called "legacy of Vietnam," which received widespread press attention. Western leaders in general feared that popular support might dissolve if the war dragged on for a long time or if friendly forces started suffering excessive casualties. There is no doubt that Saddam Hussein counted on this in his assessments and attempted to influence Western public opinion through the media accordingly. The final US decisions to conduct an envelopment of Iraqi defenses rather than a direct assault and to undertake amphibious operations as a deception were due in part to the risk of high casualties and associated concerns about national support. Third, concern over public support in Europe affected the composition and deployments of their forces. As previously mentioned, Great Britain did not activate its Territorial Army, and France decided not to deploy any draftees to the region owing to concerns over public sentiment as well as legal difficulties. Fourth, news reporting had a direct effect on military operations. Following the bombing of a Baghdad bunker containing several hundred civilians, decisions were made to restrict attacks over the Iraqi capital in order not to compromise public support. Lastly, the decision to cease hostilities was largely the result of concern that television pictures of the remains of Iraqi soldiers killed during their retreat would be interpreted as the senseless killing of Arabs who had ceased to offer resistance. Many have come to believe that the combination of the Gulf War's intense press coverage and its rapid success has resulted in an unrealistic public requirement for all future wars to be brief and

bloodless.

Many experts believe that the Western military (particularly that of the United States) was able to convey a much-improved image to the public compared to that of such previous wars as Vietnam and the Falklands. Furthermore, the public perception was that the media were granted wide access in covering military operations, when in reality tight controls were maintained on the movements of press pools. Those controls reignited tensions between the military and the press, particularly in the United States. In the future, as shown during Operation Desert Fox (the US punitive aerial campaign in December 1998 against Iraq over its rebuff of UN chemical-biological inspections), improvements in media technology will only exacerbate this tension between the military's need for operational security and the media's desire for information. The major television networks are making a concerted attempt to develop or acquire new methods to relay film and voice by satellite, which will make their crews independent of military assistance in transmitting reports and therefore almost immune to censorship. Future military operations will be carefully scrutinized by the press as they unfold, and commanders at all levels will have to deal with it.

Finally, the training of coalition forces during Operation Desert Shield and for years before the Gulf War was fundamental to victory and cannot be neglected by any force planner. The Gulf War dramatically illustrated the unpredictability of war and the volatility of the international environment. Few planners would have imagined in early 1990 that such an enormous force would be moved to the Gulf to conduct offensive operations against Iraq a year hence. In any event, the level of training and readiness of the soldiers and units, built through many years of daily effort, provided a significant advantage once the crisis occurred. The value of the five months that coalition forces enjoyed between the Iraqi invasion of Kuwait and the start of the coalition counterattack cannot be overstated. Even those units that arrived in December had time to acclimatize to the desert, adapt established procedures to the new environment, and fully analyze and rehearse the offensive plans. From 2 August to 16 January coalition forces continued to improve while Iraqi forces deteriorated; it is unlikely that any aggressor will ever allow his opponent such an advantage again.

In summary, the cause of Iraq's defeat may be best summarized by General Vorobyev, a retired Soviet military scientist. He observed in an article written shortly after the war that Iraq's overwhelming military defeat was not caused by "any weakness in weapons or combat equipment, but by habit and dogmatism and stereotype and conventionalism in the leadership of troops."^[40] Along similar lines an American general observed, "They could have had our equipment and we theirs and we would have still won."

Conclusions

Since the Gulf War the West has been confronted with several peace support operations and military interventions, in Somalia, Bosnia, Kosovo, and elsewhere around the globe. Whether the effort is a peacetime humanitarian assistance mission or a military engagement like that unfolding in Kosovo at this writing, the essential aspects of military force planning--particularly for coalition operations--are constant. Societal-governmental-military relations within any country are defined by its culture, politics, social conditions, and history. Effective relations within this trinity are fundamental to creating conditions for success in war. The Gulf War remains a useful illustration of these forces at work.

Throughout history the losers in war seem to have learned far more from their failures than have the victors from their successes. The American failure in Vietnam, for example, may well have set the stage for the development of forces and doctrines that were successful in the desert of Kuwait. In like fashion, Iraqi fascination with its success against Iran may have blinded Saddam Hussein and his generals to the evolving nature of modern combat. Frederick the Great stated that the histories he wrote of his campaigns were intended to educate his successors by instructing them in "the reasons that had impelled him to act, his limited resources, and the traps prepared for him by his enemies." This is the challenge in the study of the Gulf War--to avoid the dictum of Frederick that "good fortune is often more fatal to princes than adversity."^[41]

NOTES

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6. *Ibid.*
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11. Peter de la Billiere, *Storm Command* (London: Harper Collins, 1992), p. 56.
12. William G. Pagonis, *Moving Mountains* (Boston: Harvard Business School Press, 1992), pp. 72, 123.
13. US Army Training and Doctrine Command, *Operation Desert Storm* (Ft. Monroe, Va.: TRADOC, 1991), pp. 14-16.
14. *Ibid.*, p. 14.
15. Allen et al., p. 96.
16. US Department of the Navy, *The United States Navy in Desert Shield/Storm* (Washington: Office of the Chief of Naval Operations, 1991), p. 29.
17. François Heisbourg, "France and the Gulf Crisis," in *Western Europe and the Gulf*, ed. Nicole Gnesotto and John Roper (Paris: Western European Union, Institute for Security Studies, 1992), p. 25.
18. De la Billiere, pp. 7-8 and 44. It is also reported that the one large British-flagged container ship, *Atlantic Conveyor*, was deployed only after significant political pressure was placed on the government. See "Gulf: Sealift Made Minimal Use of UK-Flagged Ships," *NAVINT*, 29 March 1991, p. 2.
19. US Department of Defense, *Conduct of the Persian Gulf War*, pp. 56-64.
20. *Ibid.*, p. 69.
21. Schwarzkopf, pp. 321-22.
22. Allen et al., pp. 118-20.
23. US Department of Defense, *Conduct of the Persian Gulf War*, p. 103.
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28. 1st Armored Division, "Operation Desert Storm After Action Brief (Unclassified)," p. 62.
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41. Luvaas, p. 69.

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