

Troops watch activity on Omaha Beach as their LCVP landing craft approaches shore on D-Day, June 6, 1944 (U.S. Army Signal Corps/U.S. National Archives)



Why Normandy Still Matters

Seventy-Five Years On, Operation *Overlord* Inspires, Instructs, and Invites Us to Be Better Joint Warfighters

By Bryon Greenwald

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The 50-mile stretch of French coastline running from midway up the Cotentin Peninsula east to the Orne River is hallowed ground for all who cherish democracy and the rule of law and the freedom and eco-

nom ic prosperity those values permit. There, on June 6, 1944, Allied forces conducted an enormous amphibious invasion across five beaches—Utah, Omaha, Gold, Juno, and Sword—that caught the Germans by surprise and

initiated the end of Nazi reign over Europe. The invasion not only enabled American, British, Canadian, French, and other forces to join the Russians in defeating Germany, but it also allowed them to advance far enough east to prevent Soviet suzerainty over most of Western Europe after the war. In its success, Operation *Overlord* ushered in an open, democratically based economic system that has since expanded beyond its meager beginnings and improved the lives of hundreds of millions of Europeans.

This article celebrates the success and sacrifice of Operation *Overlord* on its 75th anniversary, acknowledges both the achievements and mistakes made in planning and execution, and asks readers to compare the abilities of the current joint force with those of World War II. Geared to those who are familiar with, but not expert in, the critical components of the operation, this article reviews key aspects of the invasion and offers insight into the difficulty of orchestrating such a complicated joint and multinational endeavor at a time when radio communications were in their analog infancy. The article also provides teaching points for emerging military strategists and planners and critiques the operation. Finally, the article asks the reader to question whether today's joint force could achieve something similar, not in size or scale, but sophistication, even with the benefit of global digital command and control suites.

As anniversaries go, the 75th anniversary of Operation *Overlord* holds special significance. As with all the major battles of World War II, it will certainly be one of the last major anniversaries where any of the participants are still living.¹ As such, their sacrifice in that mighty endeavor should not go unnoticed. And although it occurred almost a lifetime ago, the Allied effort to plan and execute the invasion still provides an extraordinary opportunity to examine the difficulty of planning and conducting integrated, all-domain, and joint and combined forced-entry operations against a lethal enemy whose antiaccess/area-denial preparations were immense—something that today's joint force is just now

reexamining after spending nearly a generation in counterinsurgency operations. Finally, as Russia and China continue to act aggressively on the world stage, this anniversary may turn out to be one of the last to occur during the relatively peaceful interregnum in Great Power competition the world has enjoyed since the end of the Cold War. Thus, 75 years after airborne troops leapt into the dark French night and thousands of aircraft and hundreds of warships protected dog-faced soldiers as they spilled from plywood landing craft on to fire-swept beaches, the efforts of our forefathers to plan and conduct Operation *Overlord* should inspire us, instruct us, and invite us, as a joint force, to improve our ability to plan and execute all-domain operations.

An Inspiration for All

The invasion of Normandy inspires us by its sheer audacity, its enormous size and scale, and, of course, the personal courage of those involved. To describe the invasion as audacious, however, understates the precarious, one-shot, roll-of-the-dice nature of the event. At the tactical level, the Allies prepared for the attack almost within eyesight of German forces. At their closest points, Britain and the European coast are a mere 20 miles apart. Many of the 120 German radar sets clustered from Calais to Guernsey could easily spot ships and aircraft moving in the English Channel.² Portsmouth and Southampton, two of the main ports from which British forces would sail, are only 100 miles from Normandy. In today's strategic environment, that would be the same as launching an invasion from an intermediate staging base like Taiwan toward mainland China or from Kaliningrad to Sweden.

At the operational level, the Germans expected the attack, but could not pinpoint exactly where or when it might occur. Many suspected the Allies would attack across to the Pas-de-Calais, continue through the German industrial base in the Ruhr, and on to Berlin. This avenue offered the most direct route and gave Allied aircraft the greatest amount of loiter time over the invasion area,

but it also meant capturing a heavily defended port and fighting through the majority of German forces, including Panzer divisions, in the west. Some senior German leaders, however, suspected that the attack might come elsewhere. The failed Anglo-Canadian attempt to attack the heavily defended port at Dieppe in August 1942 proved just how difficult that approach would be in the future and hinted at an over-the-beach invasion.

Generalfeldmarschall Erwin Rommel, in charge of all western defenses from the Bay of Biscay to Denmark, initially leaned toward Calais, but considered a Normandy invasion likely. He focused his attention on what the Allies would call Omaha Beach because its long concave waterfront resembled Salerno, which the Allies had assaulted in September 1943. Even Adolf Hitler had a premonition of an attack in Normandy, but hedged his bet by predicting the Allies would invade in both places.³ Fortunately, in doing so he unwittingly supported the Allied deception plan designed to make the attack on Calais appear as the operational main effort.

Finally, the assault was strategically audacious. Other amphibious assaults during the war were no less daring, difficult, or deadly, but they were essentially “away games” for both sides, fought by the Allies against second-tier or lesser forces that were unprepared, undersupplied, isolated, or retreating. With Operation *Torch* in North Africa, the Allies conducted an error-filled assault on Vichy French forces in a secondary theater and later defeated Rommel's beleaguered army in Tunisia.⁴ In Operation *Husky*, the successful yet flawed amphibious landing on Sicily, the Allies learned the difficulty of transitioning from ship to shore and air to ground against a wounded but deadly enemy.⁵ Even in the Pacific, as ferocious as the fighting from Tarawa to Okinawa was, the Americans isolated the Japanese, cut their air and naval support, and pounded them relentlessly with naval gunfire, artillery, and aviation.⁶ Victory in those battles was bloody, but never in doubt. Moreover, while all those amphibious assaults carried tactical and operational risks,

their outcome was not in question, and beyond North Africa, even their failure could not derail Allied strategy.

The invasion of Normandy, however, was fought on German ground, although their lease on French territory was only 4 years old. And while Hitler's boasts of *Festung Europa* (Fortress Europe) and the impenetrable Atlantic Wall were largely just that, once he placed Rommel in charge in early 1944, the defenses improved dramatically. With characteristic energy, Rommel revitalized languid units and layered the coast with hundreds of pillboxes and tank traps, thousands of obstacles, and millions of mines, many deviously placed to be underwater at high tide.⁷ And unlike in other amphibious assaults, the Germans could reinforce the assault area with Panzer and other units from as near as the Pas-de-Calais and as far away as the Eastern Front.

Beyond all of these tactical and operational factors, Normandy posed the likelihood of strategic and political failure. If Rommel had succeeded in throwing the Allies back into the Channel, the chance of a follow-on Allied attack within a year or two was extremely remote. While General George Patton's Third Army was sitting in England in reserve, it would take time to reconstitute losses in landing craft. Besides, not only was Prime Minister Winston Churchill already antsy and given to visions of a repeat of Gallipoli, the Somme, and Passchendaele, with Allied blood filling the Channel, but the British were also running out of men and had started cannibalizing divisions for infantry replacements even before the invasion started.⁸ There was simply no more ink in the British well to spill on a second attempt. Operation *Overlord* was their only opportunity.

Exacerbating an initial defeat in France, any Allied pause to regroup would have allowed Hitler to expand his V-weapons campaign, which was already ravaging London. The combination of the two might have caused Churchill's government to fall and resulted in a negotiated peace. Finally, an Allied defeat in Normandy would have freed the majority of German units to turn back to the east, where they might battle Russia to a

stalemate and possibly a negotiated peace as well. *Overlord* really was a one-shot effort.

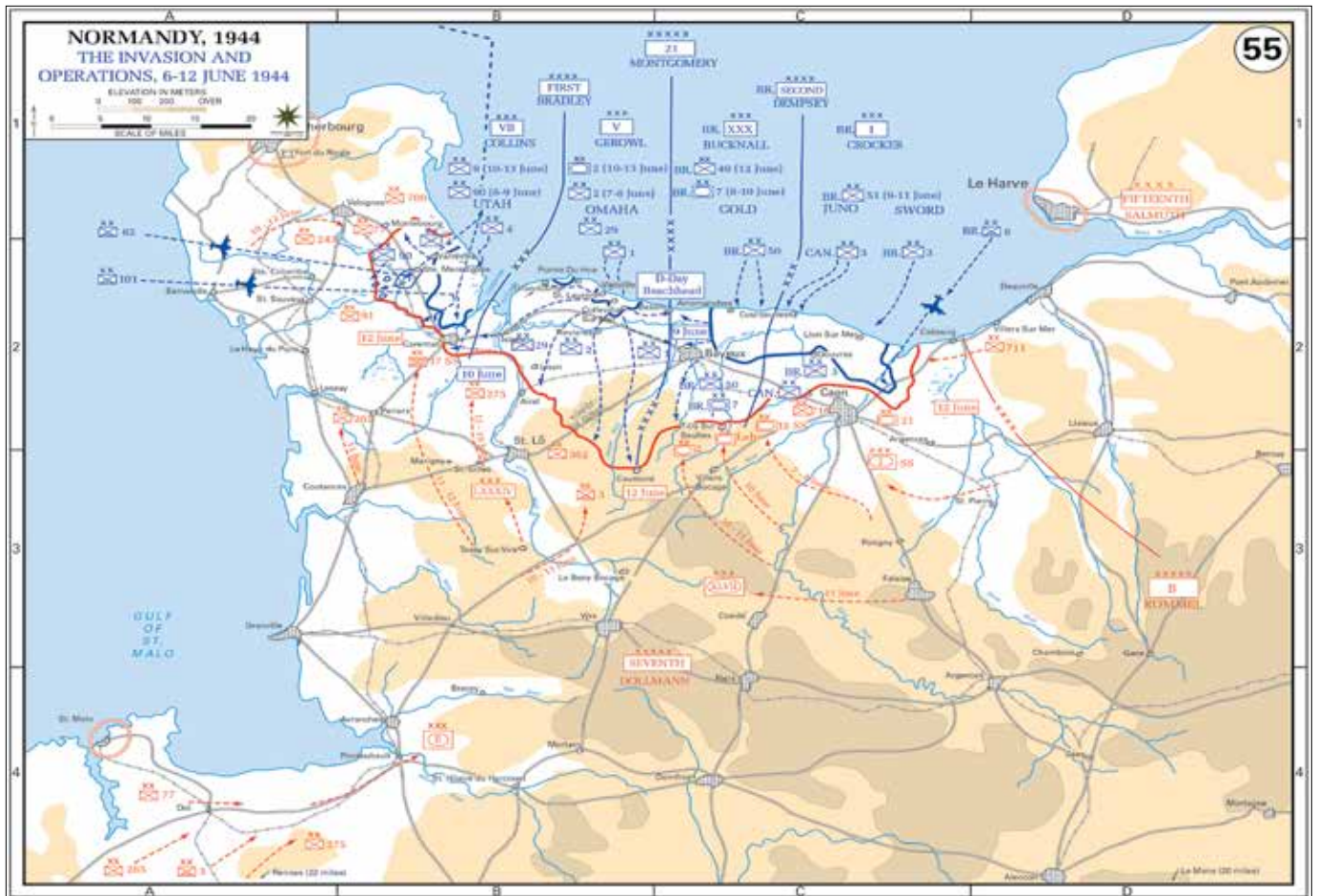
Despite a shortage of British manpower and barely enough transport to conduct the invasion, the size and scale of the operation was breathtaking. Today's strategists and operational planners can only begin to fathom the magnitude of the combined force and complexity involved in marshalling, moving, and synchronizing its effects in a world where analog communication was difficult and digital technology nonexistent. Crammed into England at over 2,000 camps and airfields were over 1.5 million American and 600,000 British servicemen organized into 20 U.S. and 16 British, Canadian, and Polish divisions as well as scores of other ground, sea, and air forces. Another 37 U.S. divisions were to follow, either through England or directly from America.⁹ The initial invasion launched five divisions destined for four nearly contiguous beaches running east to west—Sword, Juno, Gold, and Omaha—and one outlier on the Contentin Peninsula closer to the port of Cherbourg near Utah Beach. Three other divisions followed in trail.

Transporting these forces across the Channel from 171 British ports at night under radio silence were nearly 7,000 vessels operated by almost 200,000 sailors, coastguardsmen, and merchantmen in Operation *Neptune*, a supporting operation to *Overlord* that focused on the crossing and beach landings. This armada included 138 destroyers, cruisers, and battleships. These warships provided this fleet's seapower, but the landpower needed to retake Europe arrived on 46 different types of landing craft, approximately 4,200 in all, including the critically short landing ship tank or "long slow target" capable of carrying half an armor battalion and depositing it on the beach via its massive bow doors.¹⁰ This enormous and diverse force rendezvoused about 13 miles south of the Isle of Wight, in Area Z, or as it was called "Piccadilly Circus," and led by 300-odd minesweepers, chopped across the Channel in 5 and then 10 lanes averaging about 800 yards wide in search of the midget submarines

that marked the boundaries of the invasion area. Ahead of these forces, two U.S. and one British airborne division, 23,400 troops in all, dropped at night to secure key points behind Utah Beach and seal the eastern flank along the Orne River from counterattack. Moving these men were almost 1,400 transports and over 760 gliders (416 with U.S. forces and at least 250 with British). Blasting the far shore and sweeping the skies over this force were nearly 4,500 bombers and 4,000 fighters. By sunset at 10:06 p.m. local time, the Allies had placed over 155,000 men, 1,550 tanks, and 12,500 vehicles ashore.¹¹

Beyond its size and scope, what one soldier in the German 716th Static Infantry Division described as a "gigantic city at sea," the force contained several specialty vehicles that spoke to the value of innovation and organized industrial strength.¹² Operating with the invasion force were Duplex Drive tanks that could swim ashore albeit under the right conditions; Crocodiles, tanks turned into tracked flamethrowers; Crabs, flail tanks fitted with heavy chains on a rotating cylinder that cleared minefields; Bobbins, tanks that rolled out a reinforced canvas road to drive on as they moved forward; Armored Ramp Carriers (ARKs), tanks that carried deployable ramps instead of turrets; and Ducks (DUKWs), 6-wheeled amphibious vehicles for moving men, 105-mm howitzers, and supplies ashore.¹³ Finally, chugging along just behind the force were a flotilla of tugs hauling three miracles of modern industry—two artificial floating harbors and a pipeline under the ocean (PLUTO).

Given the difficulty expected in seizing a heavily defended deep-water port intact, the Allies, largely through British initiative, decided to bring two enormous ports with them. While logisticians intended to protect all five invasion beaches with "gooseberries" or artificial breakwaters, two beaches—Omaha and Gold—would serve as sites for the Allies two artificial floating harbors, codenamed Mulberries. Consisting of several unique elements, including floating steel pier heads and roadways and massive hollow concrete breakwaters



Following three Allied airborne divisional drops, five U.S., British, and Canadian divisions assaulted the Normandy beaches (Courtesy West Point Department of History)

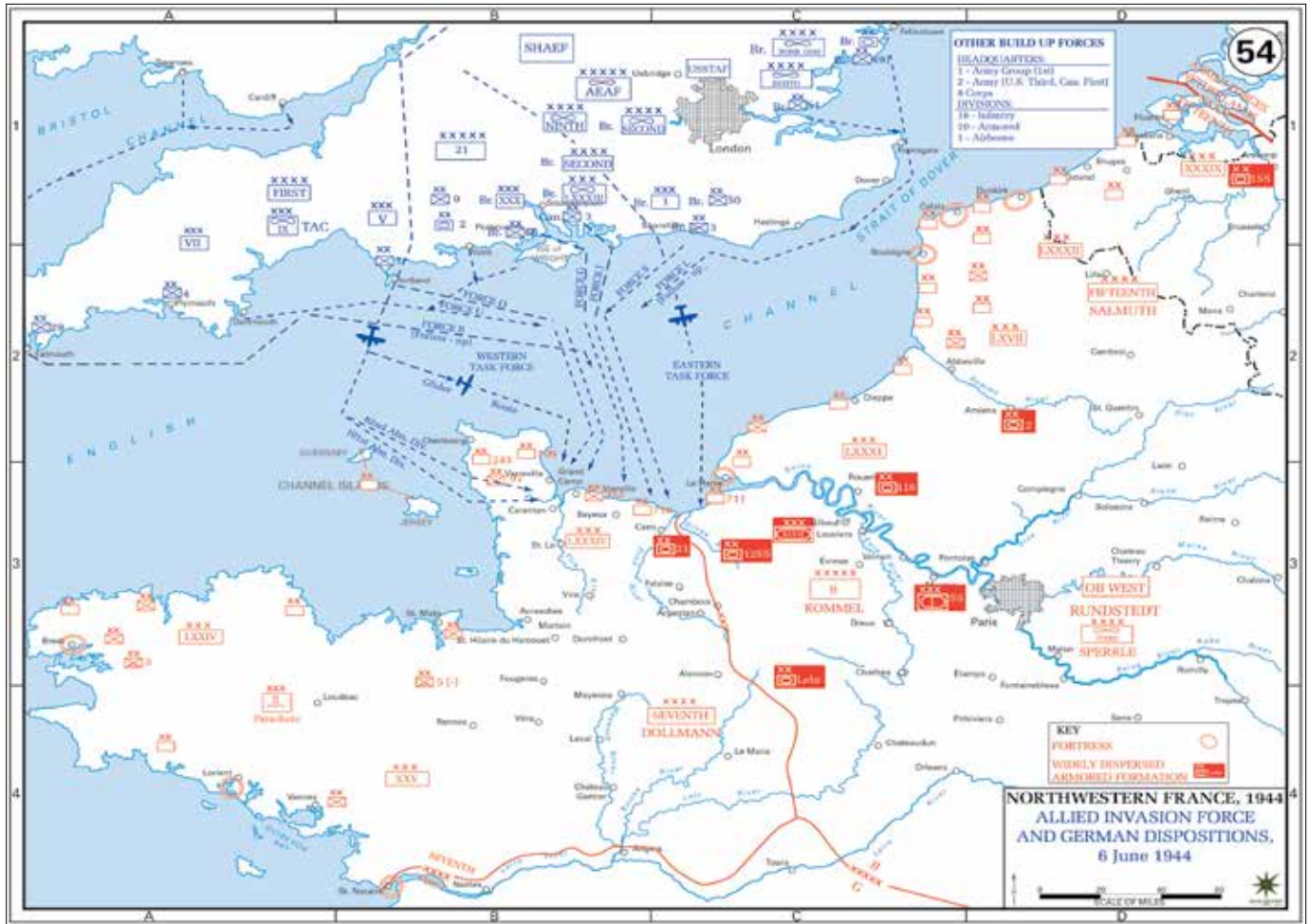
for the inner harbor, these structures consumed about 661,000 U.S. tons of concrete and 100,000 U.S. tons of steel and took 45,000 men 8 months to construct. Although a tremendous storm (June 19–22) destroyed the American Mulberry at Omaha, the British port at Gold Beach survived and proved useful throughout the Normandy campaign.¹⁴ Lastly, if 19th-century armies marched on their stomachs, modern armies motored forward on petroleum. To keep their highly motorized and mechanized armies moving, the Allies developed and laid hundreds of miles of steel PLUTO. Unfortunately, while engineering marvels, these pipelines suffered from accidents with ships' anchors and breakage that limited their timely transport of fuel. This shortfall led to an early adaptation of existing transport capacity, the Red Ball Express, as supply officers commandeered 7,000 2.5-ton trucks to transport 4,000

tons of fuel, mostly in 5-gallon jerricans, on one-way highways to supply points in the First and Third U.S. Army areas.¹⁵

Notwithstanding the countless acts of bravery noted over the last generation of conflict in Afghanistan and Iraq, the personal courage demonstrated during Operation *Overlord* by men at all levels still inspires and serves as an example to us all. From Supreme Allied Commander General Dwight D. Eisenhower through component commanders and senior leaders, to the engineers, Seabees, medics, and infantrymen that first landed in Normandy, their actions and level of personal responsibility represent our better selves even in the darkest of times.

Consider Eisenhower's example of humble strategic leadership. At 4:30 a.m. on June 4, he postponed the invasion for 24 hours due to extremely bad weather, knowing that there were only 4 days—the 5th, 6th, 19th, and 20th—in

June that provided the right combination of a late rising moon and early morning rising tide to create the opportunity for a successful assault. Seventeen hours later, as wind and rain lashed the windows of his temporary headquarters at Southwick House near Portsmouth, Eisenhower received a forecast update indicating a mild break in the weather for June 5 and 6. After polling his commanders, he calmly assessed the situation, wondering aloud, "How long can you hang this operation on the end of a limb?" He committed to launch the assault with a final go/no-go weather update at 4:15 a.m. on June 5. At that meeting, after receiving confirmation that the weather break would hold, he announced without any pomp, "Okay, we'll go." He then returned to his private trailer where he handwrote a note taking complete and personal responsibility for the invasion if it failed and stuffed it in his wallet. Finally, he visited Greenham



While fixing German attention on Dover, England, Allied forces consolidated and sailed toward Normandy. Hours earlier, paratroopers and glider forces took off to seize key objectives on the Orne River and Cotentin Peninsula (Courtesy West Point Department of History)

Common airfield to meet paratroopers from the 101st Airborne Division, staying to watch the last of their aircraft take off, saluting with tears in his eyes and knowing that by dawn many of those he met would be dead.¹⁶

Then there was the calmness and clarity of men under fire, men like Rear Admiral John Leslie “Jimmy” Hall, Jr. Known in modern joint parlance as the Commander, Amphibious Task Force, Hall directed the assault on Omaha Beach from the USS *Ancon*. In the midst of the assault, he cautioned a very anxious Major General Clarence Huebner, Commander of the 1st Infantry Division, to be patient and let the stalemated situation on Omaha develop further, thereby preventing Huebner or First Army Commander General Omar Bradley from issuing what would have been a disastrous order to evacuate the beach.¹⁷ Another

example is Brigadier General Theodore Roosevelt, Jr., the Assistant Commander of the 4th Infantry Division, who landed 2,000 yards off course with the first wave at Utah Beach and calmly decided that “we’ll start the war from here.”¹⁸ Brigadier General Norman “Dutch” Cota, Assistant Division Commander of the 29th Infantry Division, on landing in the second wave at Omaha Beach, found the men leaderless and not moving. Walking westward under fire, he admonished troops to “get off the beaches,” encouraged the “Rangers to lead the way,” and then, after machine gun fire had stalled an attack, personally led a charge through a gap in the wire and up the bluff east of Vierville-sur-Mer that enabled men from the 116th Regimental Combat Team (RCT) to outflank German defensive positions at the D-1 (Vierville) draw. Regimental commanders

like Colonels Charles Canham (116th RCT) and George Taylor (16th RCT) similarly led from the front and exhorted men to advance.¹⁹

The Rangers scaled the 100-foot cliffs of Pointe du Hoc while dodging German grenades and rifle fire, and lieutenants, sergeants, and privates led platoons, squads, and confused groups of men forward—always forward. Finally, any of the thousands of frightened men who, scrambling to exit their Higgins boats, “tumbled out just like corn cobs off a conveyor belt” and were hit by fire from German machine gun nests covering “Bloody Omaha.”²⁰ One only has to read the names on the 29th Infantry Division and Engineer Special Brigade monuments or walk up the slopes behind Omaha Beach about 500 yards to a great granite obelisk engraved with the names of the 627 men from the 1st Infantry

Division who died that day, including 3 names etched in gold signifying that they won the Medal of Honor, to realize that uncommon valor was a common occurrence on June 6, 1944.

Instruction for Today

Despite the passage of time, Operation *Overlord* continues to offer valuable lessons across a range of critical topics. Chief among these lessons is the importance of getting the overarching war policy correct through coherent and clear-eyed national security policy planning. To paraphrase Carl von Clausewitz, senior leaders should avoid turning the purpose of war into something alien to its nature—a mistake many contend the United States made in Iraq. Other lessons include the need to align strategic goals with higher policy ends, the criticality of determining and sequencing of essential tasks, and the value of developing an operational approach to achieve strategic and operational objectives and then planning in reverse from the point of success to ensure forces and actions are arranged, sequenced, and supported appropriately in time and space.

Lessons on Policy Planning and Strategic Alignment. Against the backdrop of the Vietnam War and the wars in Afghanistan and Iraq, Operation *Overlord* stands as an example of what coherent policy, grand and theater strategy, all-domain operational design, and organizational acumen can achieve. At the level of Allied policy, in late summer 1940, with Germany having conquered most of Western Europe and now bombing and preparing to invade Great Britain, U.S. Army and Navy leadership shrugged off decades of planning for a potential war with Japan and came to the conclusion that the survival of Great Britain and its Empire was in the best interest of the United States. As the now historic memorandum sent by Chief of Naval Operations Admiral Harold Stark to President Franklin D. Roosevelt in November 1940 stated, “If Britain wins decisively against Germany, we could win everywhere; but . . . if she loses the problem confronting us would be

very great; and while we might not *lose everywhere*, we might, possibly, not *win anywhere*.”²¹ Thus, despite planning for a war with Japan since 1907, the national security apparatus recognized the greater threat and adjusted its overarching policy accordingly. That the Nation would remain committed to this policy after the Japanese attack on Pearl Harbor speaks to the quality of analysis and the strength of its conclusion.

This tectonic shift in policy quickly led the United States and Britain to expand senior military staff talks on global strategy and resulted in a series of Allied decisions over the next few years that framed the overall strategic direction for the rest of the war. As they applied to Normandy, these decisions were to avoid negotiated settlements and seek the complete defeat of the Axis nations; defeat “Germany First”; invade North Africa in 1942 instead of attempting a cross-channel attack; resource the Combined Bomber Offensive to attack German forces, resources, and cities; and invade Northwest Europe in 1944.²² All these decisions demonstrate to contemporary officials, as Clausewitz notes, the importance of understanding the political purpose of war and the need to work hard to get the policy and strategy aligned as correctly as possible. For as the Germans learned, no amount of operational or tactical virtuosity can rescue a military force from bankrupt strategic direction.²³

Lessons on Determining and Sequencing Essential Tasks. Before tackling any of its strategic objectives, however, the United States had to complete a series of essential tasks. It needed to raise, organize, train, and equip the military forces of all four Services (Army, Army Air Forces, Marines, and Navy) to a level where they could fight and sustain a series of global campaigns for years.²⁴ Before contemplating an attack on Europe, the Americans needed to sustain the British, who were rebuilding their own military after Dunkirk and suffering a 60 percent decrease in foodstuffs and fuel due to the success of the German U-boat campaign against commercial shipping in the Atlantic.²⁵ Thus,

American and British forces needed to win the Battle of the Atlantic before they could ever reasonably consider beginning the necessary logistical buildup to support an invasion of the continent. Finally, the Allies had to win control of the air to allow any invasion force a modicum of freedom of maneuver.

In 1942, Army Chief of Staff General George C. Marshall and his Chief of War Plans, Brigadier General Dwight D. Eisenhower, pressed for a direct attack on the Germans as soon as possible, and certainly not later than 1943. Thus, prior to the decision to invade Normandy, the most instructive decision from both a geopolitical and strategic perspective was Roosevelt’s July 1942 decision to invade North Africa, which he made against the wishes of his military advisers. Hailed by some today as an example of the value and need for civilian control of the military, the decision makes complete sense in hindsight. Roosevelt wanted American troops in combat against the Germans in 1942, but neither the British nor the American militaries were ready to conduct a contested amphibious landing against the Germans on the coast of France.²⁶ The British, who had already lost several battles to the Germans and who at that point would have to provide the majority of forces, were accordingly reluctant. And as the clumsiness of American operations in North Africa indicated, U.S. troops and their leaders were simply not ready to take on German forces in an amphibious assault.²⁷ Even Marshall later intimated that the idea of landing 25 divisions in Europe in 1942 might have been “suicidal.”²⁸ Moreover, as much as General Eisenhower lamented about “wasting resources all over the world,” the fact remained that shipping and amphibious craft, two important resources for globally integrated operations, were in short supply—so much so that in 1944, Eisenhower, as Supreme Allied Commander, requested a 1-month delay in launching Operation *Overlord* in order to obtain more “long slow targets.”²⁹

Eventually, the Americans and British overcame their collective difficulties in North Africa and began to prepare for an invasion of Europe. In February

1943, they formed an integrated planning headquarters under the Chief of Staff to the Supreme Allied Commander (COSSAC), British Army Lieutenant General Frederick Morgan, and selected Normandy as the site of the invasion. In May 1943, as American and British soldiers defeated the Germans near Tunis and captured 275,000 soldiers, their leaders met in Washington, DC, at the Trident Conference and set the date for Operation *Overlord* as May 1944. In the meantime, they would attack through Sicily and on to Italy with the goal of knocking Italy out of the war and forcing the Germans to send reinforcements to stop the Allies. This decision meant the Allies, in a supporting effort to the overall campaign in Europe, would fight a determined German enemy up the mountainous Italian boot on something of a shoestring as the British and Americans withdrew units and diverted supplies to begin the buildup for the invasion of France.³⁰

Lessons on Operational Design and Arranging and Sequencing Forces in Space and Time. Although not without issues, the quality of the operational design and joint/combined planning for Operation *Overlord* offers today's leaders and planners an excellent example of integrated all-domain operations.³¹ As for operational art and design, Allied planners developed an operational approach that envisioned the arrangement of real and fake forces in England such that the Germans viewed the area near Calais as the main objective and reinforced it accordingly with the bulk of their Panzer units. If successful, this action would give the Allies a better chance to get ashore as a coherent fighting force; to defeat a smaller, less powerful German reaction force; and to win the race to build up more combat power than the Germans could bring to bear in the assault area. Then beginning with the strategic guidance to "enter the continent of Europe and . . . undertake operations aimed at the heart of Germany and the destruction of her Armed Forces," the COSSAC staff developed a concept of operations that integrated the multifaceted deception story with a three-division assault

between the Orne and Vire rivers. In late 1943 and early 1944, Eisenhower and his ground commander, British General Bernard L. Montgomery, assessed the plan and found the force too weak. They drove further refinement and expanded it from three to five divisions, increased the airborne forces from less than one division to three, and added Utah Beach as an objective in order to facilitate capturing the vital port of Cherbourg.³²

Appropriately, the staff identified the key component of the German defense in the west as the Panzer divisions and corps. Known in today's doctrine as the operational center of gravity, the Panzers were the only force with enough mobility and power to threaten the Allied landings; they were the glue that held the German defense together. The foot-mobile infantry had neither the speed nor the punch to stop the Allies, and the Luftwaffe could not provide significant air support because it was defending the skies over Germany from the Combined Bomber Offensive. To protect the landing sites from armored counterattack, the planners used a combination of information, intelligence, joint fires, and maneuver to fix Panzer units near Calais and impede the movement of other Panzer units into the assault area.³³

First, they reinforced the Fortitude South deception plan by deploying live units to mix with fake ones in eastern England and Scotland and broadcast scripted radio traffic to support the cover plan and augment the action of those units.³⁴ Second, planners assigned electronic warfare assets, ships, and bombers to execute tactical deception plans (Operations *Taxable* and *Glimmer*) on the night of June 5–6 to trick German radar operators, shore lookouts, and intelligence personnel into believing the Allies were attacking north and east of Le Havre.³⁵ Third, using Ultra decrypts, overhead imagery, agent reports, and radio intercepts they identified the general locations of several Panzer units and targeted them for bombing, both before and after the assault.³⁶

Fourth, as part of the Transportation Plan, the Allies used bombers as part of their operational fires to drop the bridges

over the Seine and the Loire rivers, essentially carving out a section of France and isolating it from German units to the east and south of the rivers. Fifth, they used air interdiction to destroy railheads and marshalling yards across France to force Panzer units on to roads, where they would consume precious fuel and could be hit by air or subject to sabotage by the French Resistance. In all these air attacks, the British and American air forces were careful to spread out their attacks, striking twice as many targets outside the Seine/Loire area as in it, to mask their intent to land in Normandy. Sixth, to create a tactical deception and assist inbound airborne forces, planners in Operation *Titanic* dropped special operations forces with amplifiers and recorded combat noise, thousands of rifle and machine gun simulators, and 200 dummy half-sized paratrooper "dolls" or, as the Germans called them, *Explosivpuppen*, in key areas throughout Normandy to confuse the Germans and draw off anti-paratrooper reaction forces.³⁷

Finally, planners dropped the 6th British Airborne Division to the east of the Orne River and Caen Canal to blow up bridges over the Dives River, destroy an artillery battery capable of hitting Sword Beach, and capture the bridges at Bénouville and Ranville, which they did with an amazing glider assault.³⁸ On the west end of the assault area, the 82nd Airborne Division secured the key road junction at Sainte-Mère-Église and two bridges over the Merderet River, while the 101st Airborne Division captured critical elevated causeways and provided the 4th Infantry Division with a way across the flooded lowlands and off of Utah Beach.

In the end, the combined effect of these actions did indeed delay and impede the movement of Panzer and other units. Even after the Normandy landing, Ultra decrypts confirmed that Hitler remained convinced the main attack was still to come in the area of Calais and would not release the Panzer units there until early August. Closer in, the destruction of the bridges over the Dives River and the defense at the bridge at Ranville forced the 21st Panzer



Panoramic view of Omaha beachhead after it was secured, mid-June 1944 (U.S. Coast Guard/U.S. National Archives)

Division to endure countless air attacks while driving around Caen to attack British and Canadian units from the south instead of more directly from the east. Operation *Titanic* succeeded in dispersing elements of the first-rate 352nd Infantry Division and delayed Task Force Meyer (915th Infantry Regiment) from counterattacking forces struggling ashore at Omaha Beach.³⁹ Finally, the interdiction of bridges and railheads forced the 2nd SS Panzer Division, *Das Reich*, located near Montaubon in Brittany, to travel north toward Normandy intermittently by rail and road. At great risk, the French Resistance blew up fuel dumps, sabotaged rolling rail stock, destroyed rail lines, and organized small ambushes. All

told, the *Das Reich* division took 17 days to move the 350 miles from Montaubon to Normandy, a journey that should have taken just 3 days.⁴⁰

Not Everything Will Go According to Plan, Failures to Anticipate and Prepare Will Occur, and Mistakes Will Happen. Despite its ability to deceive, delay, and disrupt the Germans, the Allied assault was not a complete success. As darkness fell on Normandy, the Allies had achieved none of their D-Day objectives other than getting ashore. At Utah, the 4th Infantry Division had yet to link up with the 82nd or 101st airborne divisions. At Omaha, the beachhead was barely a mile deep and the beach itself was a disaster. At Gold, the 50th British

Division after a tough fight had failed to take either Port-en-Bessin-Huppain or Bayeux or link up with the Americans at Omaha. At Juno, the 3rd Canadian Division advanced farther than any other unit, but failed to secure the high ground near the Carpiquet airfield west of Caen. And finally, at Sword Beach, the British 3rd Division failed to take Caen.

At the tactical level, the tail end of the storm that initially delayed the invasion and caused the Germans to believe that nothing would happen on June 6 made bombing by sight difficult and sailing in small craft treacherous. But beyond the weather, errors in judgment cost lives and wasted tactical efforts, particularly on hard-fought Omaha Beach. B-24



Equipment and armored vehicles, some damaged, stretch across sands in Normandy where Allies seized beachhead, June 6, 1944 (Courtesy AP Photo)

Liberator pilots forced to bomb using radar and flying perpendicular to Omaha feared hitting the approaching landing craft. As a result, the lead pilots held their fire for an additional 5 to 20 seconds and 450 bombers ended up dropping their 13,000 bombs harmlessly on crops and livestock miles behind the German defenders. At sea, 6,000 meters (more than 3 miles) off Omaha, Army lieutenants and Navy and Coast Guard ensigns discussed the sea state with its 4-foot chop. Some considered it too dangerous to launch their Duplex Drive swimming tanks and artillery-carrying DUKWs that far out. Others debated and made the fateful decision to launch anyway. In one case, 27 of 32 Duplex Drive tanks and most of the artillery foundered and sunk. A number of Soldiers drowned and the Americans lost a great deal of the firepower they needed to suppress the 35 German pillboxes, 8 huge bunkers, and 85 machine gun nests guarding Omaha Beach.⁴¹

Exacerbating these tactical errors were organizational decisions made by First U.S. Army Commander General Bradley that limited the amount of naval gunfire support or specialized armored vehicles available to the troops on Omaha. In the spring, Army Chief Marshall sent Bradley

one of the Army's experts in amphibious warfare, Major General Charles Corlett, from the Pacific. Despite a wealth of advice, Bradley and Eisenhower displayed no interest in learning from Corlett, viewing efforts in the Pacific as "bush league." Corlett warned Bradley that he did not have enough naval gunfire to support the landings properly or enough ammunition for the upcoming land battles, both of which were ultimately proven correct. Moreover, despite Montgomery's encouragement, Bradley dismissed the value of flail and other types of tanks offered by the British—only to wish later that he had them at Omaha.⁴²

At the operational level, intelligence failures influenced events on D-Day and beyond. First, Allied intelligence completely missed or "lost" the location of the 352nd Infantry Division, a first-rate unit initially thought to be near St. Lô, but which the Germans moved forward in May. On D-Day, it stretched from the Vire River to Arromanches, with at least two infantry battalions and a light artillery battalion bolstering the defense of elements of the second-rate static 716th Infantry Division at Omaha Beach. Second, the Americans utterly misunderstood the nature of the *bocage* country that filled the Normandy region south

of the immediate beach area. With thick, impenetrable Norman hedgerows and sunken ox-cart tracks bordering thousands of small farm fields, the area was superb defensive terrain that armor could not breach, traditional artillery could not hit, and infantrymen could not enter without coming under withering machine gun and mortar fire.⁴³ The terrain provided such a series of natural obstacles that a two- or three-man team could defeat a platoon, a platoon might defeat a company, and a company could slay a battalion. The Allies had over 1 million photographs of the Normandy area and hundreds of intelligence reports, including one from April 1944 by Bradley's First Army that warned that fighting there "be given considerable study." As Bradley later stated, "I couldn't imagine the bocage until I saw it." It was "the damndest country I've ever seen."⁴⁴ One battalion commander was more succinct, noting later that "we were rehearsed endlessly to attack the beaches, but not one day was given to the terrain behind the beaches."⁴⁵ This failure to recognize and react to the potential difficulties posed by the bocage country cost the U.S. Army dearly as divisions were bled white fighting south to the St. Lô-Périers Road, the jumping off point for the "breakout" on July 25.

On D-Day, U.S. forces suffered approximately 12,000 casualties, including 8,230 Americans. From D-Day until July 31, Bradley's First Army took 100,000 casualties, including 9,939 in the 29th Infantry Division and 7,876 in the 4th Infantry Division, both of which fought through the bocage. Eighty-five percent of the casualties were infantrymen.⁴⁶

Finally, perhaps the greatest failure in planning and leadership was Montgomery's inability to take Caen, his D-Day objective for the 3rd British Infantry Division at Sword Beach. Montgomery and his army, corps, and division commanders failed to plan backward from their objective. They did not factor in likely confusion on the beach, consider the likely exhaustion and culmination of their initial and follow-on forces, anticipate German counterattacks by elements of the 21st Panzer Division, and provide for additional forces to

pass through and take Caen. While the Germans certainly had a role to play with their staunch defense at the Hillman strongpoint and along Périers Ridge, it is clear that the 3rd British Infantry Division faced too many tasks and suffered too many diversions that frittered away its combat power.⁴⁷ In essence, Montgomery, Lieutenant General Miles Dempsey, Lieutenant General John Crocker, and Major General T.G. Rennie ignored the timing and tempo of operations, did not mitigate known risks, and failed to arrange their forces such that they would have the staying power necessary to seize their admittedly ambitious objective in the face of likely opposition.⁴⁸ Despite relentless Allied air and *résistant* attacks, the Germans managed to reinforce the area with Panzer forces. In some of the largest tank battles of the war, Montgomery and Dempsey would spend the next 45 days attempting to envelop Caen and capture the key operational terrain on Hill 112 that opened the path to Paris and beyond.⁴⁹ Meanwhile, the Americans, due to their own failures to anticipate and prepare for fighting in the bocage, would slog forward, grinding through divisions and wearing down German forces until their own breakout in Operation *Cobra* on July 25.

The study of Operation *Overlord* teaches today's commanders and planners that designing an all-domain operational approach that keeps the enemy off balance and synchronizes the integrated joint and combined actions of thousands of aircraft and ships and hundreds of thousands of men under the watchful eyes of the enemy is excruciatingly hard to do, let alone do well. It requires an uncommon level of operational understanding and joint knowledge. *Overlord* also warns us to expect that our adversaries may be both lucky and good, and as well-equipped and trained as we are. It cautions those conditioned by decades of all-domain dominance against less than first-tier opponents to expect that even the best plans will go awry and, unlike the Americans in the bocage, we should plan and train for that eventuality as well.

In the end, success in Operation *Overlord* was "a close run thing."⁵⁰ It

succeeded in part because of America's overwhelming ability to build and deploy a vast array of ships, landing craft, aircraft, tanks, and artillery; in part because of the individual and collective courage of the Allied servicemembers who fought it on the ground, on the sea, and in the air; and in part because the operational design and combined planning for the invasion synchronized all aspects of Allied capability sufficiently enough to provide the slimmest of margins when it mattered most.

An Invitation to Improve

More than answers, Operation *Overlord* invites us to ask questions of ourselves and our ability to operate jointly. Specifically, could we do it again? Not in size, but in effect? Could the United States or NATO repeat an operation as complex as *Overlord*? Are our generals and admirals, colonels and captains, and perhaps most important, the iron majors and commanders who sweat out the critical details, educated and savvy enough to conceptualize, organize, and synchronize an integrated joint/combined operation of *Overlord*-like complexity against a peer competitor?

Beyond our ability to conceive, plan, and synchronize such a complex event, the legacy of Operation *Overlord* invites us to consider if we are ready in unit manpower, equipment, and training readiness to execute combined operations of similar sophistication against Russia, China, or Iran as described in recent discussions of globally integrated operations. Is the Navy seaworthy? Can the Air Force get more than 60 percent of its aircraft airborne at any one time? Are the Army and Marine Corps robust enough to field full-up brigades and divisions without cutting late deploying units to the bone? Are we practiced enough in our Service-based skills that we can even attempt to integrate jointly?

For the joint force, this calls into question whether we can integrate seamlessly above Service level, on the fly, at night, under radio silence, without GPS, just as the forces did in approaching Normandy. Are we resilient enough to take a punch on the chin (like our

forefathers did at Bataan, Kasserine Pass, or Anzio) and recover? Or are we too fragile—too unprepared intellectually, too thin in necessary force structure, or too technologically dependent—to win the battles, campaigns, and wars we portend with Great Power competition?

Finally, do we have the requisite mental and command flexibility, organizational diversity, and depth to recover from an adversary's first bloody surprise moves and fight back to tactical, operational, and strategic positions of dominance? Do we have, as the Capstone Concept for Joint Operations 2030 asks, the "strength, agility, endurance, resilience, flexibility, and awareness" to recover and adapt? Today, are we in a joint "Boxer's stance" ready to react, punch, and counterpunch, just as the men in Normandy did 75 years ago? Will we be a "globally integrated, partnered joint force that is designed and able to out-think, out-maneuver, and out-fight any adversary under conditions of disruptive change"?⁵¹ Or will we be like the French in 1940, who had none of those qualities and subsequently lost so overwhelmingly that their first battle became their last?

In 1946, General Eisenhower and Chief of Naval Operations Admiral Chester Nimitz established the Armed Forces Staff College in Norfolk, Virginia, to capture and teach the joint lessons of World War II—lessons that the Army and Navy (as well as the Air Force and Marines) learned the hard way in the Pacific, North Africa, and Normandy, and sadly have relearned in numerous campaigns since then. Eisenhower later commented that "separate ground, sea and air warfare is gone forever. If ever again we should be involved in war, we will fight it in all elements, with all services, as one single concentrated effort."⁵² In the current era of Great Power competition that demands coherent policy and strategy and excellence in all-domain integrated operations, we can ill-afford to relearn the hard lessons that Eisenhower and Allied forces learned so expensively during Operation *Overlord* 75 years ago. We must not only continue to teach the

joint lessons of World War II and other conflicts, but we must also improve our Service and joint readiness and prepare leaders from all Services to think, act, and behave jointly so that we can plan and execute the next *Overlord* with some anticipation of success. JFQ

Notes

¹ Figures from the U.S. Department of Veterans Affairs displayed by the National World War II Museum indicate that of the 16 million World War II veterans, fewer than 400,000 are alive in 2019, down approximately 100,000 from 2018. Available at <www.nationalww2museum.org/war/wwii-veteran-statistics>.

² Winston S. Churchill, *The Second World War*, vol. 6, *Triumph and Tragedy* (Boston: Houghton Mifflin, 1953), 10.

³ Antony Beevor, *D-Day: The Battle for Normandy* (New York: Viking, 2009), 34, 36.

⁴ See Rick Atkinson, *An Army at Dawn: The War in North Africa, 1942–1943* (New York: Henry Holt, 2002).

⁵ See Carlo D’Este, *Bitter Victory: The Battle for Sicily, 1943* (New York: Harper Perennial, 2008); Rick Atkinson, *The Day of Battle: The War in Sicily and Italy, 1943–1944* (New York: Henry Holt, 2008). For a personal perspective of both Sicily and the airborne assault into Normandy, see James M. Gavin, *On to Berlin* (New York: Bantam Books, 1984).

⁶ See Williamson Murray and Allan R. Millett, *A War to Be Won: Fighting the Second World War* (Cambridge, MA: Belknap Press, 2001), chapters 9, 13, 17.

⁷ See Murray and Millett, *A War to Be Won*, 412; Beevor, *D-Day*, 36–37; and Carlo D’Este, *Decision in Normandy: The Real Story of Montgomery and the Allied Campaign* (New York: Penguin, 2004), 85, for similar opinions on German preparations.

⁸ Winston S. Churchill, *The Second World War*, vol. 5, *Closing the Ring* (Boston: Houghton Mifflin, 1951), 582–583, 710–711; D’Este, *Decision in Normandy*, 29–30, 252–270; and Rick Atkinson, *The Guns at Last Light: The War in Northwest Europe, 1944–1945* (New York: Henry Holt, 2013), 15.

⁹ Atkinson, *The Guns at Last Light*, 18, 21. U.S. forces alone occupied 1,200 camps and 133 airfields.

¹⁰ The total force included 138 warships, 1,100 other combat ships, 4,200 landing craft, 221 escorts to protect the convoy, 805 cargo ships, and 59 obsolete craft to be used as breakwaters off of Omaha and Gold beaches. For example, a Landing Ship Tank could carry 20 Sherman tanks, 30 heavy trucks, 40 jeeps, and 350 men.

¹¹ Figures and information compiled from Atkinson, *The Guns at Last Light*, 15, 36–37;

Murray and Millett, *A War to Be Won*, 420; Craig L. Symonds, *Neptune: Allied Invasion of Europe and the D-Day Landings* (New York: Oxford University Press, 2014), 225–226, 305; and Ken Ford and Steven J. Zaloga, *Overlord: The D-Day Landings* (New York: Osprey Publishing, 2009). For a detailed description of landing craft, see Symonds, *Neptune*, 146–170.

¹² Beevor, *D-Day*, 92.

¹³ For more on Field Marshal Percy Hobart’s tank inventions, see Patrick Delaforce, *Churchill’s Secret Weapons: The Story of Hobart’s Funnies* (London: Robert Hale, 1998). For more on the DUKW, see the U.S. Army Transportation Museum, available at <www.transchool.eustis.army.mil/Museum/DUKW.htm>.

¹⁴ Debate exists as to the cost-benefit of the Mulberries. Craig Symonds contends that the Allies transported just as much over the open shore at Omaha after the storm wrecked the American Mulberry as the British did using the Mulberry at Gold Beach/Arromanches. See Symonds, *Neptune*, 319–328. The British Mulberry provided service until Christmas 1944 when workers began dismantling it. For a succinct history, see Alain Ferrand, *Arromanches: A History of a Harbour* (Bayeux, France: OREP Editions, 2007).

¹⁵ PLUTO and Red Ball Express info from Atkinson, *Guns at Last Light*, 240–241.

¹⁶ Timeline and passage from Atkinson, *Guns at Last Light*, 32–36, 40. Atkinson does not mention the 4:30 a.m. final meeting, but it is confirmed in Symonds, *Neptune*, 240–242; and Dwight D. Eisenhower, *Crusade in Europe* (Baltimore: Johns Hopkins University Press, 1997). Salute and tears mentioned in Beevor, *D-Day*, 28. As Symonds (pg. 241) and others note, Eisenhower’s decision was fortuitous as the storm that wrecked Mulberry A at Omaha Beach came on the evening of June 18 and lasted through June 22 and produced weather far worse than that of June 4–5. It is likely that had Eisenhower not launched the invasion, it would not have occurred under any of the conditions desired, at least not in June. This type of delay risked the entire plan as it would have been increasingly likely that the Germans would have picked up on the Allies’ increased preparations as well as deduced the location. Moreover, with the V-1 attacks starting on June 12, it is possible that the Germans may have shifted their targeting from London and focused on the marshalling and port areas, causing, as Eisenhower stated, the invasion to be possibly “written off.” Eisenhower, *Crusade in Europe*, 260.

¹⁷ Symonds, *Neptune*, 284–289. Bradley confirms that he considered the diversion of follow-on forces. See Omar N. Bradley, *A Soldier’s Story* (New York: Henry Holt, 1951), 220; Omar N. Bradley, *A General’s Life*, with Clay Blair (New York: Simon & Schuster, 1983), 251. For current doctrine, see Joint Publication 3-02, *Amphibious Operations*

(Washington, DC: The Joint Staff, 2019), available at <www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp3_02.pdf>.

¹⁸ Beevor, *D-Day*, 118.

¹⁹ *Ibid.*, 100–103; Atkinson, *Guns at Last Light*, 73–75; Ford and Zaloga, *Overlord*, 89.

²⁰ Atkinson, *Guns at Last Light*, 65–66.

²¹ For strategists, the entire 26-page “Plan Dog” memorandum is worth reading. It is one of the most clear-eyed strategic assessments of the 20th century. It is referred to as “Plan Dog” because the option Stark recommended, with Army Chief of Staff General George Marshall’s concurrence, was option “D” or “Dog.” Emphasis in original. See Harold Stark, “Memorandum for the Secretary,” Navy Department, Chief of Naval Operations, November 12, 1940, President’s Safe Files, available at <<http://docs.fdrlibrary.marist.edu/psf/box4/a48b01.html>>.

²² The other key strategic decisions were to begin limited offensive operations in the Pacific following the victories at Coral Sea and Midway, begin deliberate offensive operations against Japan, and invade Japan—this last decision made unnecessary by the Japanese surrender following the dropping of two atomic bombs in August 1945. For a short primer on all eight decisions, see Kent Roberts Greenfield, *American Strategy in World War II: A Reconsideration* (Malabar, FL: Krieger Publishing Company, 1982), 3–48.

²³ Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1989), 88, 605–608. For a thorough analysis of the integrated nature of policy, strategy, operations, and tactics, see Allan R. Millett, Williamson Murray, and Kenneth H. Watman, “The Effectiveness of Military Operations,” *International Security* 11, no. 1 (Summer 1986), 37–71.

²⁴ While not the point of this article, the man, train, and equip tasks for all Services were immense and required creation from an almost dead stop. For example, the Army in 1939 numbered approximately 190,000 men. At its peak in World War II, it would reach 8.3 million. The 1940 draft and the beginnings of some rearmament as early as 1938 allowed the Navy and Army to begin to grow, but both departments would quickly become overwhelmed with the organizational requirements of fielding enormous ground, air, amphibious, naval, and air forces for a global war.

²⁵ See Richard Leighton, “U.S. Merchant Shipping and the British Import Crisis,” in *Command Decisions*, ed. Kent Roberts Greenfield (Washington, DC: U.S. Army Center of Military History, 1960), 202, available at <https://history.army.mil/html/books/070/70-7-1/CMH_Pub_70-7-1.pdf>.

²⁶ Stalin was also pushing Roosevelt for relief from pressure following the German attack on Russia that began with Operation *Barbarossa* in June 1941.

²⁷ Atkinson, *An Army at Dawn*.

²⁸ Minutes, 81st Meeting of the Joint Chiefs of Staff, May 14, 1943, cited in Maurice Matloff, *Strategic Planning for Coalition Warfare, 1943–1944*, U.S. Army Center of Military History Pub 1-4 (Washington, DC: Government Printing Office, 1959), 131.

²⁹ Maurice Matloff, *Strategic Planning for Coalition Warfare, 1941–1942* (Washington, DC: U.S. Army Center of Military History, 1980), 156, available at <https://history.army.mil/html/books/001/1-3/CMH_Pub_1-3.pdf>.

³⁰ For more on the invasions of Sicily and Italy, see Atkinson, *The Day of Battle*.

³¹ Operation *Overlord* was the codename for the overall invasion of Normandy from D-Day, the day of the first landing, until approximately D+90, when the Allies were to have expanded the beachhead, built up supplies and men, and pushed the Germans back to the Seine River. Operation *Neptune* was the codename for the all-important landing phase of *Overlord* in the Cotentin-Caen area.

³² For the strategic direction, see Eisenhower, *Crusade in Europe*, 225. For an outline of the original three-division plan, its issues, and the changes made, see Albert Norman, *Operation Overlord: Design and Reality* (Westport, CT: Greenwood Press, 1970), 110–113; D’Este, *Decision in Normandy*, 55–70.

³³ In analyzing this portion of the operation, this paragraph purposely discusses five of the seven joint functions to show their interaction and interdependence. The other two are logistics and command and control.

³⁴ For more on Operation *Bodyguard* and Operations *Fortitude North* and *Fortitude South*, see Anthony Cave Brown, *Bodyguard of Lies* (New York: Harper & Row, 1975); Roger Hesketh, *Fortitude: The D-Day Deception Campaign* (New York: Harry N. Abrams, 2000); and Ben Macintyre, *Double Cross: The True Story of the D-Day Spies* (New York: Crown Publishers, 2012).

³⁵ Brown, *Bodyguard of Lies*, 660–662.

³⁶ *Ibid.*, 690. Ultra decrypts indicated that Rommel appointed *General der Panzertruppen* Leo Baron Geyr von Schweppenburg to command the growing Panzer army in Normandy once assembled. This could potentially include the 1st, 2nd, 9th, and 10th SS Panzer Divisions, the 17th SS Panzer Grenadier Division, the 21st Panzer Division, and the Panzer Lehr Division. Accordingly, Montgomery decided to find Schweppenburg’s headquarters and destroy it, which the Royal Air Force did on June 9. As James Gavin notes in *On to Berlin*, it was not hard to locate German senior headquarters. They were usually in a chateau surrounded by trees, and the roads leading into them had dug-outs into the banks on the sides of the road for command and staff cars to park. It seems most Frenchman in Normandy in 1944 had bicycles, not motor vehicles. Gavin, *On to Berlin*, 87.

³⁷ *Ibid.*, 647–648; Beevor, *D-Day*, 54.

³⁸ The best book on the glider raid on the

twin bridges at Bénouville and Ranville is Stephen E. Ambrose, *Pegasus Bridge: June 6, 1944* (New York: Simon & Schuster, 1988).

³⁹ Brown, *Bodyguard of Lies*, 665–666.

⁴⁰ The Das Reich Division was particularly ruthless in dealing with French citizens and partisans. For more on the Das Reich Division and the French Resistance, see Beevor, *D-Day*, 165–167; and Max Hastings, *Das Reich: The March of the 2nd SS Panzer Division Through France* (New York: Henry Holt, 1982).

⁴¹ Atkinson, *The Guns at Last Light*, 65, 68; Symonds, *Neptune*, 254–256, 266.

⁴² Murray and Millett, *A War to be Won*, 419; Nigel Hamilton, *Master of the Battlefield: Monty’s War Years 1942–1944* (New York: McGraw-Hill, 1983), 598, 623; and Bradley, *A Soldier’s Story*, 221. For Corlett’s opinion, see Charles H. Corlett, *Cowboy Pete: The Autobiography of Maj Gen Charles H. Corlett* (Santa Fe, NM: Sleeping Fox Publishing, 1974).

⁴³ Traditional artillery had a longer trajectory or arc that made it unsuitable for firing into the less than 8-foot-wide sunken cart paths where German gunners would hide. The small size of each field, usually no larger than 2 acres, meant that the friendly artillery observer calling in fire from the other side of the field had an equal chance of being hit by his own artillery. High-angle mortars were the preferred indirect fire weapon. Finally, the hedgerows themselves, measuring 1 to 4 feet wide and from 3 to 15 feet high, with thick roots and a tangle of branches and brambles, were formidable obstacles. For more on the *bocage* and U.S.

Army efforts to adapt its tactics and technology to the terrain, see Michael Doubler, *Busting the Bocage* (Fort Leavenworth, KS: Combat Studies Institute, 1988), available at <www.armyupress.army.mil/Portals/7/combats-studies-institute/csi-books/Doubler-Bocage.PDF>; and his *Closing with the Enemy: How GIs Fought the War in Europe, 1944–1945* (Lawrence: University Press of Kansas, 1994).

⁴⁴ Atkinson, *The Guns at Last Light*, 111; Beevor, *D-Day*, 252–253.

⁴⁵ Charles Cawthon, *Other Clay: A Remembrance of the World War II Infantry* (Boulder: University Press of Colorado, 1990), 76, cited in Atkinson, *The Guns at Last Light*, 111.

⁴⁶ See Doubler, *Busting the Bocage*, 4–5; *Closing with the Enemy*, 60; Beevor, *D-Day*, 242, 258. The 4th ID lost 2,400 casualties from July 6–24 after joining the fighting in the *bocage*. D-Day casualty figure from Atkinson, *The Guns at Last Light*, 85.

⁴⁷ The Périers Road (U.S. zone of attack) and Périers Ridge (British zone of attack) are two separate and distinct locations. Renie’s 3rd Division attacked on a single brigade front with the 8th Infantry Brigade. The 185th Infantry Brigade was to pass through and attack toward Caen, supported by elements of the 27th Armored Brigade. Portions of the armored brigade became backed up on the beach as the tide moved in, delaying their arrival to pick

up the infantry. The 9th Armored Brigade was held in reserve, but when landed was directed by Lieutenant General George Allen Crocker, the corps commander, to support the airborne forces in the vicinity of Pegasus Bridge. See D’Este, *Decision in Normandy*, 120–150.

⁴⁸ Ever since the failure to seize Caen on D-Day, Montgomery, some of his subordinates, and some military historians have argued that it was not Montgomery’s intention to do so, but instead to pull all of the German armored forces in against the British near Caen so that the Americans could “break out.” While that is essentially what happened *after* Montgomery failed to take Caen, it was not his original intent. D’Este categorically proves this point in *Decision in Normandy*.

⁴⁹ Montgomery finally succeeded in pushing beyond Caen in Operation *Goodwood*, July 18–20, 1944. The British Second Army began the battle with 1,370 tanks. It lost over 400 in the battle. The Germans had 230 tanks and 600 assault guns and lost 75 tanks or guns total. See Atkinson, *The Guns at Last Light*, 133–137. The Battle of Kursk in western Russia, July–August 23, 1943, was the largest tank battle of the war with approximately 3,000 tanks involved.

⁵⁰ The original reference was made by Arthur Wellesley, the Duke of Wellington, about his defeat of Napoleon at Waterloo. However, it has been used frequently by participants and several authors to describe the nearness with which Operation *Overlord* came to failure.

⁵¹ Department of Defense, *Capstone Concept for Joint Operations 2030*, November 1, 2018, Classified, portion cited is unclassified, 1.

⁵² Dwight D. Eisenhower, “Special Message to the Congress on Reorganization of the Defense Establishment,” April 3, 1958, cited in the *New York Times*, April 3, 1958.