NO TAIL FOR THE STRATEGIC DOG: MARGINALIZATION OF LOGISTICS DURING OPERATION TORCH, INVASION OF NORTH AFRICA

A Monograph

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Operation Torch, invasion of North Africa, was the United States military's first major offensive campaign in the European Theater during World War II. It demonstrated the consequences of an Army marginalizing logistics. The operation included an amphibious assault, followed by a ground attack to seize Tunisia. Three factors limited its success. By marginalizing logisticians, leaders failed to achieve unity of effort in conducting operations. The negative bias towards logisticians influenced planners and senior leaders who controlled the troop basis to reduce allocations and minimize the inclusion of service units in operations. Finally, because planners and senior leaders did not value logisticians' interpretation of data, which constricted tactics and strategy, they excluded them from planning efforts. As a result, during both the amphibious assault and subsequent attack on Tunis, United States forces lacked necessary equipment and services to sustain operations. This exclusion resulted in the early culmination of Allied forces 16 miles short of Tunis. After the operation, Army leaders made changes to achieve victory and win the war. The Army needs logisticians to anticipate strategic requirements and overcome constraints and shortfalls. The Army needs service units to sustain its combat forces.

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

NO TAIL FOR THE STRATEGIC DOG: MARGINALIZATION OF LOGISTICS DURING OPERATION TORCH, INVASION OF NORTH AFRICA, by MAJ Richard J. Matson, 85 pages.

Operation Torch, invasion of North Africa, was the United States military's first major offensive campaign in the European Theater during World War II. It demonstrated the consequences of an Army marginalizing logistics. The operation included an amphibious assault, followed by a ground attack to seize Tunisia. Three factors limited its success. By marginalizing logisticians, leaders failed to achieve unity of effort in conducting operations. The negative bias towards logisticians influenced planners and senior leaders who controlled the troop basis to reduce allocations and minimize the inclusion of service units in operations. Finally, because planners and senior leaders did not value logisticians' interpretation of data, which constricted tactics and strategy, they excluded them from planning efforts. As a result, during both the amphibious assault and subsequent attack on Tunis, United States forces lacked necessary equipment and services to sustain operations. This exclusion resulted in the early culmination of Allied forces 16 miles short of Tunis. After the operation, Army leaders made changes to achieve victory and win the war. The Army needs logisticians to anticipate strategic requirements and overcome constraints and shortfalls. The Army needs service units to sustain its combat forces.

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I wrote this monograph in memory of my grandfather, Ralph A. Matson, who commanded a quartermaster transportation company in North Africa during Operation Torch. The information, collected and presented from a logistician's perspective, provides context to understand some of the situations he described to his wife in his 1942-1943 personal letters.

Several librarians and archivists assisted me with collecting data. Kevin M. Bailey, Dwight D. Eisenhower Presidential Library, always had the requested information available prior to my arrival, saving me precious time; he also recommended some additional sources that proved invaluable in writing the monograph. Aaron P. Higby and Joanne E. Knight, Combined Arms Library, assisted my initial research, suggesting and emailing numerous documents and books that allowed me to refine my topic. Susan L. Fowler, also at the Combined Arms Library, provided me peace of mind by verifying that I did not violate copyrights.

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ACRONYMS

AGF	Army Ground Forces
CGSC	Command and General Staff College
OPD	Operations Division
SoS	Services of Supply
WSA	War Shipping Administration

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INTRODUCTION

> Dear Tom: I think the best way to describe our operations to date is that they have violated every recognized principle of war, are in conflict with all operational and logistic methods laid down in text-books, and will be condemned, in their entirety, by all Leavenworth and War college classes for the next twenty-five years.
>
> —Dwight D. Eisenhower, Letter to Thomas Troy Handy

It is December 1942 and Dwight D. Eisenhower, commander of Allied forces, perceives a very complex situation—Allied forces successfully invade North Africa and control Morocco and Algeria. French forces in the region change their allegiance to support the Allied assault into Tunisia. Although seizure of Tunis is the final objective of Operation Torch, only a small percentage of the total force participates in the offensive. The British First Army (20,000 British soldiers) leads the assault. French forces, 20,000 strong, support them but refuse to fight under British control. Meanwhile, less than 12,000 of the 180,000 American soldiers in North Africa are part of the integrated, British-led assault force.[1] Lack of rail and motor vehicles prohibits eastward movement. The decision to reduce service units and vehicles in the initial convoys, in order to deploy more combat units, breaks the supply system.[2] Equipment and supplies remain unsorted at ports, there are no forward depots, and a general shortage of vehicles limits forward distribution. Supply lines stretch for 560 miles along limited road networks that parallel rivers running through rugged mountains into the coastal flatlands around Tunis.[3] Rail is the primary

[1]Dwight D. Eisenhower, "Eisenhower Report on Torch," *World War II Operational Documents Collection* (Washington, DC: US Army War Department, 2004), http://cgsc.contentdm.oclc.org/cdm/singleitem/collection/p4013coll8/id/110/rec/23 (accessed July 17, 2013), 61; Rick Atkinson, *An Army at Dawn: The War in North Africa, 1942-1943* (New York: Henry Holt and Company, 2002), 237.

[2]Vincent M. Carr, Jr., "The Battle of Kasserine Pass: An Examination of Allied Operational Failings" (Research Report, Air Command and Staff College, Maxwell AFB, AL, 2003), http://www.dtic.mil/get-tr-doc/pdf?AD=ADA424990 (accessed January 25, 2014), 11-12.

[3]Eisenhower, "Eisenhower Report on Torch," 58-66; Charles R. Anderson, Publication 72-12, *Tunisia* (Washington, DC: US Army Center of Military History, 1993), 5.

method for resupplying the 300 tons of supplies required by forward units each day, but it takes seven days to deliver one shipment from Algiers to forward forces.[4]

Service units cannot sustain forward forces that include both American and French forces; French leadership, without informing Dwight D. Eisenhower (Allied forces commander), forward additional combat forces (that are unsupportable) to join the offensive.[5] Failing to receive critical supplies (especially fuel, ammunition, and rations), Kenneth N. Anderson (commander of the British First Army) calls for numerous halts in order to replenish his units.[6] To move basic supplies to forward areas, Eisenhower sends officers into the city Oran with 5,000 dollars' worth of silver to purchase any available trucks and horses.[7] Desperate, he authorizes the use of any available vehicles (including tactical) to move supplies and sustain forward forces.[8]

Along with supplies, Anderson requests more forces and replacement equipment. Besides combat losses, motorized units fear massive equipment failure due to hard use and neglected maintenance.[9] However, there are no tanks or howitzers to replace loss, and no increase in production to provide immediate replenishment for the theater.[10] A motorized infantry brigade

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[4]Atkinson, 171; Conservapedia, "Operation Torch," http://www. conservapedia.com/ Operation_Torch (accessed January 25, 2014).

[5]Atkinson, 247.

[6]General Dwight D. Eisenhower to Harry Ceil Butcher, December 10, 1942, in *The Papers of Dwight David Eisenhower, The War Years: II*, ed. Alfred D. Chandler, Jr. (Baltimore: Johns Hopkins Press, 1970), 822-825; Atkinson, 227; Carr, 3-7.

[7]Atkinson, 171.

[8]General Dwight D. Eisenhower to Combined Chiefs of Staff, Washington, DC, December 3, 1942, in *The Papers of Dwight David Eisenhower, The War Years: II*, ed. Chandler, 791-793.

[9]George F. Howe, *Northwest Africa: Seizing the Initiative in the West, U.S. Army in World War II Mediterranean Theater of Operations* (Washington, DC: Office of the Chief of Military History, Department of the Army, March 15, 1957), 332-344.

[10]Atkinson, 234.

remains in Oran awaiting sufficient service units to join the offensive.[11] Meanwhile, Anderson's two supporting operations, an amphibious assault to the north and an airborne operation to the south of Tunis, both fail since they have no resupply plan.[12] Lacking ammunition and water, and facing fierce German opposition, they both struggle to survive and reunite with Allied forces. The airborne battalion licks split cactus leaves and sucks rainwater from their uniforms to survive, and has less than 100 rifle rounds amongst its survivors.[13]

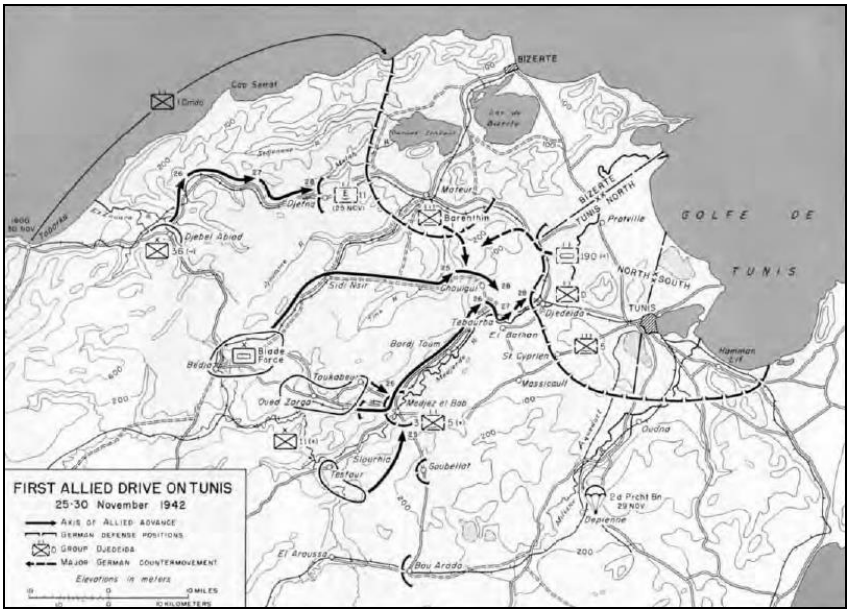

Figure 1. First Allied Drive on Tunis

Source: George F. Howe, *Northwest Africa: Seizing the Initiative in the West* (Washington, DC: Office of the Chief of Military History, Department of the Army), map 5, "First Allied Drive on Tunis," 297.

[11]Eisenhower to Butcher, in *The Papers of Dwight David Eisenhower, The War Years: II*, ed. Chandler, 822-825.

[12]Anderson, Publication 72-12, 10.

[13]Atkinson, 216.

Meanwhile, at El Bathan, the United States Fifth Field Artillery Battalion abandons its supported unit when it runs out of ammunition, providing the Germans with an opportunity to retake the region. The attempt to contract defensive lines fails, and the German counter-offensive drives Allied forces from the Tebourba-Djediada area of Tunisia.[14] Finally, on December 26, after 48 days of operations and seizing a position 16 miles short of the objective, Eisenhower reluctantly concedes that Axis forces won the race for Tunis.[15]

Operation Torch, the invasion of North Africa, was the United States military's first major offensive campaign in the European Theater during World War II. Although Japan attacked the United States at Pearl Harbor, President Franklin D. Roosevelt, in collaboration with Prime Minister Winston Churchill of Great Britain, determined that Germany was the most dangerous threat and required the priority effort.[16] Both leaders feared for the survival of the third member of the alliance, the Soviet Union. Fighting a battle of attrition in the vicinity of Stalingrad, the Soviets desperately required their allies to open a second front and compel Germany to divert forces to the west. The British preferred a peripheral strategy that closed a ring around the Germans to set conditions for a future assault on France.[17] Two factors influenced this approach: the British believed German defenses in France were too strong to break in 1943 and they feared that if nothing changed in Northern Africa, Erwin Rommel's German-Italian Panzer Army Africa

[14]General Dwight D. Eisenhower to Combined Chiefs of Staff, December 12, 1942, in *The Papers of Dwight David Eisenhower, The War Years: II*, ed. Chandler, 830-832.

[15]General Dwight D. Eisenhower to Combined Chiefs of Staff and British Chiefs of Staff, December 26, 1942, in *The Papers of Dwight David Eisenhower, The War Years: II*, ed. Chandler, 867-868; Howe, 90, 277-283 and 344; Mark D. Kitchen, Major, USA, "The North Africa Campaign: A Logistics Assessment" (MMAS thesis, East Texas State University, Texarcana, TX, 1991), http://www.dtic.mil/dtic/tr/fulltext/u2/a257095.pdf (accessed November 17, 2013), 24.

[16]Maurice Matloff, *American Military History Volume 2: 1902-1996* (Conshohocken, PA: Combined Books, 1996), 87, 101-102.

[17]Leo J. Meyer, "The Decision to Invade North Africa," in Kent Roberts Greenfield, ed., *Command Decisions* (Washington, DC: US Army Center of Military History, 1987), 172-175.

would complete its march through Egypt and seize the Suez Canal.[18] Meanwhile, Roosevelt strongly favored the invasion of France–but he also approved an amphibious landing in Vichy (French) controlled North Africa.[19] Concerned with pending elections and achieving a significant offensive victory during the first year of the war, he pushed his military leaders to plan and execute an operation before the end of the calendar year.[20] Because the United States was still mobilizing and equipping its forces, military planners determined that a 1942 invasion of France was unfeasible—the United States could not send sufficient supplies, forces, or even landing crafts to undertake the momentous landing.[21] Americans failed to sufficiently rebuild their military following World War I, and in accordance with the Lend Lease Act of 1941 the British and Soviets had priority for American war equipment production prior to the attack on Pearl Harbor.[22] After a series of debates with British allies, Roosevelt directed his military leaders to plan for the invasion of North Africa.[23] Just as the situation looked bleak for the Allies, luck turned in their favor. The Soviets successfully counter-attacked the Germans in Stalingrad,[24] the

[18]Charles R. Anderson, Publication 72-11, *Algeria-French Morocco* (Washington, DC: US Army Center of Military History, 1993), 4-19; Meyer, 172-175.

[19]Richard M. Leighton and Robert W. Coakley, *Global Logistics and Strategy 1940-1943* (Washington, DC: Office of the Chief of Military History, 1955), 423; Meyer, 183-187. Roosevelt favored the invasion of France because he believed it would bring an earlier termination of the war.

[20]James A. Huston, *The Sinews of War: Army Logistics 1775-1953* (Washington, DC: Office of the Chief of Military History, 1966), 429.

[21]Meyer, 176-179.

[22]Jerome G. Peppers, *History of United States Military Logistics 1935-1985* (Huntsville, AL: Logistics Education Foundation Publishing, 1988), 24.

[23]Gerhard L. Weinberg, *A World at Arms: A Global History of World War II* (New York: Cambridge University Press, 1994), 431-432; Carlo D'Este, *Decision in Normandy* (New York: Harper Perennial, 1994), 26-27; John A. Atilano, LTC, U.S.A, "The Trans-Atlantic Essay Contest and the Planning Principles of the North African Campaign" (monograph, School of Advanced Military Studies, US Army Command and General Staff College, Fort Leavenworth, KS 2013), 5-6 and 11.

[24]Matthew Cooper, *The German Army 1933-1945* (Chelsea, MI: Scarborough House, 1978), 425-427.

British Eighth Army defeated the German Fifth Panzer Army at El Alamein (Alam Halfa), and the British Royal Air Force gained superiority over the German Luftwaffe.[25] The tide was turning on the Axis as the Allies launched the amphibious assault that ushered in Operation Torch.

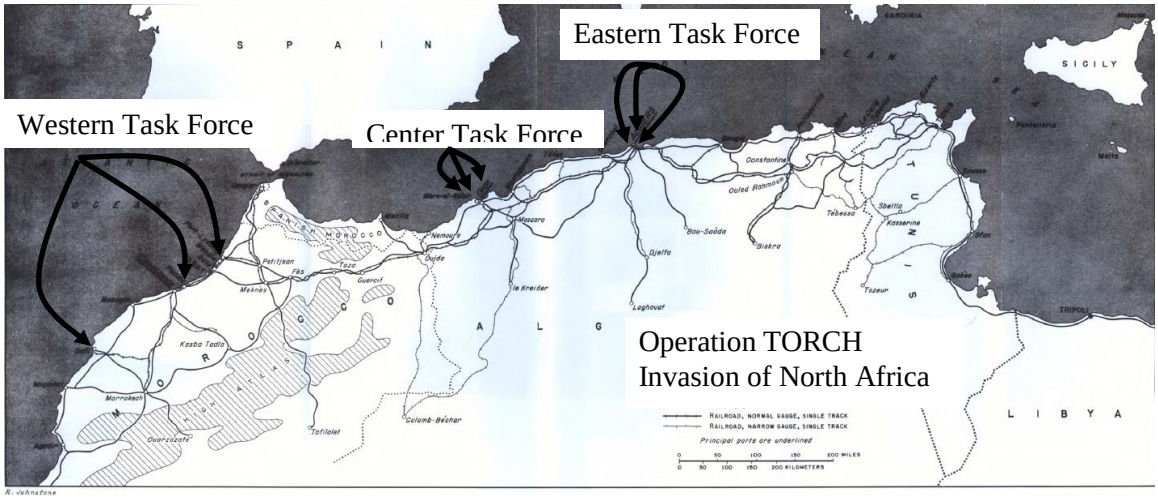

Figure 2. Operation Torch, Invasion of North Africa

Source: Map adapted from Kent Roberts Greenfield, ed., *Command Decisions* (Washington, DC: Center of Military History, US Army, 1987), map 1, "Lines of Communication in French North Africa," 577.

Operation Torch included an amphibious assault on Morocco and Algeria, followed by a ground attack to seize Tunisia. The operation risked antagonizing the two neutral nations that controlled the region—Vichy France and Spain. To achieve success, the Allies needed to avoid antagonizing the French and demonstrate sufficient strength to convince Spain to remain neutral.[26] Because the French were decidedly anti-British, the amphibious assault consisted

[25]Matloff, 133; Cooper, 373-387.

[26]Eisenhower, "Eisenhower Report on Torch," 44-46; Meyer, 188-189.

primarily of American forces.[27] Roosevelt and Churchill appointed Eisenhower as Commander-in-Chief, Allied Expeditionary Force.[28] In accordance with Eisenhower's plan, three task forces simultaneously assaulted their objectives on November 8, 1942: Western Task Force, which departed from the United States, assaulted Casablanca; Center Task Force, which departed from the United Kingdom, assaulted Oran; and Eastern Task Force, which also departed from United Kingdom and included British forces, assaulted Algiers.[29] Although the Allies conducted secret negotiations with Vichy France prior to the assault, French defenders opposed the landings.[30] Despite numerous logistical shortfalls, American forces seized Oran and Algiers through conquest, but gained Morocco only through a ceasefire agreement. By November 11, American forces controlled strategic ports, and French forces within the region joined the Allies—completing the first phase of the operation. Two days later, the British First Army, along with attached American and allied (but separate) French forces, departed for Tunis.[31] However, three factors limited their success. First, due to shipping constraints and concerns over securing lodgments, Eisenhower favored combat over service forces when he organized the occupying

[27]Meyer, 193-194. Within a two-year period, the French went from perceiving the British as allies to viewing them as an enemy. British intervention in Syria and Madagascar (French dependencies), their sinking of the French fleet at Mers-el-Kebir, and their abandonment of France at Dunkerque influenced many Frenchmen to harbor anti-British sentiments.

[28]Combined Chiefs of Staff to Dwight D. Eisenhower, "Directive for Commander-in-Chief Allied Expeditionary Forces," August 13, 1942, in "Outline Plan for Operation Torch to Combined Chiefs of Staff," August 25, 1942, in *World War II Operational Documents Collection* (Washington, DC: U.S. Army, 2003), Combined Arms Research Library Digital Library, http://cgsc.contentdm.oclc.org/ cdm/ compoundobject/collection/p4013coll8/id/1250/rec/113 (accessed July 17, 2013), 38.

[29]Anderson, Publication 72-11, 6-30.

[30]Ibid., 28-30; Eisenhower, "Eisenhower Report on Torch," 51; Arthur R. Wilson, "Report of Operations in North Africa to Headquarters Services and Supply," December 12, 1942, in *World War II Operational Documents Collection* (Washington, DC: U.S. Army, 1946), Combined Arms Research Library Digital Library, http://cgsc.contentdm.oclc.org/cdm/singleitem/collection/p4013coll8/id/61/rec/14 (accessed July 17, 2013), 2-6. Resistance varied by location, with some areas offering little more than token resistance. Low morale and equipment readiness encouraged many French defenders to surrender quickly to the invading American forces.

[31]Eisenhower, "Eisenhower Report on Torch," 57-61; Carr, 3-5.

force.[32] Second, the attacking force lacked sufficient service units to sustain a divided force that was stretched along a broad, thin front. Third, the Allies grossly underestimated German capabilities.[33] As the Allies seized the first three objectives, Adolf Hitler determined that the defense of Tunis was essential to German strategy. Exploiting the Allies' slow advance from Algeria, Hitler diverted forces, critically needed against the Soviets, to build a second army in Africa.[34] Vichy French forces in Tunisia failed to challenge the German build-up of forces, and advantageous shipments of tanks and guns preceded successful counter-offensives launched by the Fifth Panzer Army.[35] The Germans took advantage of interior lines of communication and Allied halts to gain the initiative and force the Allies' withdrawal.[36] Lacking sufficient forces and resources to continue the offensive against a strengthened Axis defense, Eisenhower ordered a halt to facilitate the thorough build-up of Allied forces. Clearing weather permitted freedom of movement and Allied forces gained a position of relative advantage over the enemy. They continued the attack and secured the decisive terrain of Tunis, signaling the end to Operation Torch.[37]

Operation Torch enabled the Allies to establish bases in Western North Africa, and eventually seize lodgments in Europe and defeat the Germans. Because World War II, Operation

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[32]General Dwight D. Eisenhower to Combined Chiefs of Staff, Washington, DC, December 3, 1942, in *The Papers of Dwight David Eisenhower, The War Years: II*, ed. Chandler, 791-793; General Dwight D. Eisenhower to Winston Spencer Churchill, December 5, 1942, in *The Papers of Dwight David Eisenhower, The War Years: II*, ed. Chandler, 801-804; Eisenhower to Handy, December 7, 1942, in *The Papers of Dwight David Eisenhower, The War Years: II*, ed. Chandler, 811-815.

[33]Carr, 6.

[34]Weinberg, 394 and 435.

[35]Eisenhower to Churchill, December 5, 1942, in *The Papers of Dwight David Eisenhower, The War Years: II*, ed. Chandler, 801-804; Weinberg, 432-435.

[36]Weinberg, 394 and 435.

[37]Howe, 320 and 344.

Torch, and military logistics all contributed to the rise of American power and military capabilities in the later twentieth century many authors have chosen to write on the topics. Focusing first on World War II, the Center of Military History's "US Army in World War II Collection" is a great source for detailed and general information on the war. Gerhard L. Weinberg's *A World at Arms* and Maurice Matloff's *American Military History* provide a general history of World War II. Robert M. Citino's *The German Way of War* and Matthew Cooper's *The German Army* offer a German perspective of World War II events. Kent Roberts Greenfield's *The War Against Germany and Italy* and *The Army of Ground Forces* give context for how the United States executed the war. Peter J. Schifferle's *America's School for War* explains how military educational institutions developed and influenced the leaders that fought in World War II. Meanwhile, Alfred D. Chandler's edited *The Papers of Dwight D. Eisenhower* provides a collection of documents that clarify what the previous authors wrote.[38]

Regarding Operation Torch, Charles R Anderson's *Algeria-French Morocco* and *Tunisia*, Rick Atkinson's *An Army at Dawn*, Gordon A. Harrison's *A Cross-Channel Attack*, Howe's *Northwest Africa*, and Leo J Meyer's "The Decision to Invade North Africa" provide detailed, sequenced descriptions of the invasion of North Africa. John A Atilano's 2013 monograph, "The Trans-Atlantic Essay Contest and the Planning Principles of the North African Campaign 2013" and Ryan Lubin's "Operation Torch: The Planning and Performance of Amphibious Operations in North Africa" provide detailed analysis of the general planning principles that drove the development of the operation. Michael Sean Tuomey's three-page 2009 article, "The Culminating

[38]Weinberg; Matloff; Robert M. Citino, *The German Way of War: From the Thirty Years' War to the Third Reich* (Lawrence, KS: University Press of Kansas, 2005); Cooper; Kent Roberts Greenfield, *The War Against Germany and Italy: Mediterranean and Adjacent Areas* (Washington, DC: Center of Military History, 1988); Kent Roberts Greenfield, Robert R. Palmer, and Bell I. Wiley, *The Army of Ground Forces: The Organization of Ground Combat Troops*, United States Army in World War II Collection (Washington, DC: Historical Division, Department of the Army, 1947); Peter J. Schifferle, *America's School for War: Fort Leavenworth, Officer Education, and Victory in World War II* (Lawrence, KS: University Press of Kansas, 2010); Eisenhower, *The Papers of Dwight David Eisenhower, The War Years: I*, ed. Chandler; Eisenhower, *The Papers of Dwight David Eisenhower, The War Years: II*, ed. Chandler.

Point: The Lessons of Clausewitz and Operation TORCH," provides a summary of the Allied forces' two major culmination points during the operation. However, Allied Force Headquarters' "Lessons of Operation Torch," Dwight D. Eisenhower's "Eisenhower Report on Torch" and "Outline Plan for Operation Torch to Combined Chiefs of Staff," and F.J. Reichman's "Report of AGF Observers" provide detailed, firsthand accounts and descriptions of the invasion of North Africa.[39]

Finally, focusing on logistics during World War II and Operation Torch, James A. Huston's *The Sinews of War*, Richard M. Leighton and Robert W. Coakley's *Global Logistics and Strategy 1940-1943*, Jerome G. Pepper's *History of United States Military Logistics*, and Roland G. Ruppenthal's *Logistical Support of the Armies* present an awareness of logistic problems experienced during the operation. John D. Millett's *The Organization and Role of the Army Service Forces* and John Kennedy Ohl's *Supplying the Troops: General Somervell and American Logistics in WWII*, focus on the strategic aspects of logistic support for the operation. Mark D. Kitchen's 1991 thesis, "The North Africa Campaign: A Logistics Assessment," compares logistical efforts during the operation with the United States Army's previous Airland Battle doctrine, focusing on the functional areas of manning, fueling, arming, fixing, and

[39]Anderson, Publication 72-11; Anderson, Publication 72-12; Atkinson; Gordon A. Harrison, *Cross-Channel Attack, the European Theater of Operations* (Washington, DC: US Government Printing Office, 1951); Howe; Meyer; Atilano; Ryan Lubin, "Operation Torch: The Planning and Performance of Amphibious Operations in North Africa" (senior thesis, Georgia College and State University, Milledgeville, GA, 2011), http://www.gcsu.edu/history/docs/geog_cap/geog4970_thesis_lubin_2011.pdf (accessed January 25, 2014); Michael Sean Tuomey, "The Culminating Point: The Lessons of Clausewitz and Operation TORCH," *Translog*(Fall 2009): 10-13, http://go.galegroup.com/ps/i.do?id=GALE%7CA215842032&v=2.1&u=97mwrlib&it =&p=AONE&sw=w (accessed October 25, 2013); Allied Forces Headquarters, "Lessons of Operation Torch," January 19, 1943, in *World War II Operational Documents* (Washington, DC: U.S. Army, 2003), Combined Arms Research Digital Library, http://cgsc.contentdm.oclc.org/cdm/singleitem/collection/p4013coll8/ id/63/rec/6 (accessed July 17, 2013); Eisenhower, "Outline Plan for Operation Torch to Combined Chiefs of Staff;" Eisenhower, "Eisenhower Report on Torch;" F.J. Reichman, "Report of Army Ground Force Observers, December 24, 1942-January 15, 1943," in *World War II Operational Documents Collection* (Washington, DC: U.S. Army, 1999), Combined Arms Research Library Digital Library, http://cgsc.contentdm.oclc.org/cdm/ singleitem/collection/p4013coll8/ id/3385/rec/27 (accessed July 17, 2013).

transporting. However, Arthur R. Wilson's "Report of Operations in North Africa to Headquarters, Services of Supply" and War Department's "History of Planning Division, ASF" provide detailed, firsthand accounts of logistical problems that service units, operational commanders, and strategic planners encountered in supporting the operation.[40] Together, these sources provide multiple perspectives of the dynamic situation American forces dealt with during Operation Torch.

Operation Torch provides a unique perspective of how a nation rebuilding its military successfully conducted a joint expeditionary operation. It also demonstrates the consequences of an Army marginalizing logistics. Following World War I, budgetary cuts reduced the size of the Army and limited equipment development, production, and soldier training. Biases that developed during World War I, and that senior leaders perpetuated through military education and doctrine, influenced the allocation of forces and participation of logisticians in operations. In accordance with Army Field Manual 100-5, *Field Service Regulations, Operations*[41] and the Navy's *Sound Military Decision*,[42] military leaders valued heroic[43] traits of discipline, knowledge,

[40]Huston; Leighton and Coakley; Peppers; Roland G. Ruppenthal, *Logistical Support of the Armies, Vol. I: May 1941-September 1944* (Washington, DC: Center of Military History, US Army, 2000); John D. Millett, *The Organization and Role of the Army Service Forces*, United States Army in World War II Collection (Washington, DC: Center of Military History, US Army, 1985); John Kennedy Ohl, *Supplying the Troops: General Somervell and American Logistics in WWII* (DeKald, IL: Northern Illinois University Press, 1994); Kitchen; War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 1 - 4," in *World War II Operational Documents Collection* (Washington, DC: War Department, 1945), Combined Arms Research Library Digital Library, http://cgsc.contentdm.oclc.org/cdm/compoundobject/collection/p4013coll8/id/ (accessed July 17, 2013); Wilson

[41]US War Department, FM 100-5, *Field Service Regulations, Operations* (Washington, DC: US Government Printing Office, 1941), 18-19.

[42]US Naval War College, *Sound Military Decision* (1942; repr., Fort Leavenworth, KS: School of Advanced Military Studies, US Army Command and General Staff College, 1987), 8-9.

[43]Brian McAllister Linn, *The Echo of Battle: The Army's Way of War* (Cambridge, MA: Harvard University Press, 2007), 1-9. According to Linn, there are three types of leader personalities in the military: Guardians, Heroes, and Managers. Guardians focus on laws and principles. Heroes glorify military genius, experience, courage, and discipline. Managers apply logic to warfare, seeking the best method to adapt and overcome problems to achieve victory now and in future conflicts. Their interaction has developed our military way of warfare; however, each perspective carries a unique bias.

initiative, and decisiveness over more analytical, problem solving approaches to warfare favored by logisticians. The Army preached that "a bold and determined leader will carry his troops with him no matter how difficult the enterprise."[44] Meanwhile, the Navy advocated that "a true concept of the art of war will insist that the necessity for the achievement of a high standard of technical and administrative skill not be permitted to outweigh the need for maximum development of other mental attainments, and of the moral components of fighting strength."[45] As a result, when the United States entered the war in 1941, its senior political and military leaders emphasized building combat power. They excluded logisticians from planning, and relegated them to subservient positions. This bias remained prevalent while planning Operation Torch. Because leaders did not adequately plan for logistic requirements and ensure appropriate equipment was available, logistics limited combat operations. Why did leaders fail to plan for sufficient logistic assets and how did that planning affect Operation Torch?

Students of history can trace the causes and effects of marginalizing logisticians prior to World War II, through the initial planning and execution of Operation Torch, and note a shift in thinking by key leaders, including Eisenhower and Marshall, after the Allied advance halted in December, 1942. According to documents published before, during, and immediately after the operation, Allied forces ignored three key principles of their doctrine. By marginalizing logisticians, they failed to achieve Unity of Effort in conducting operations. The lack of unity fostered competition between the branches which consistently struggled over limited resources. The bias against logisticians influenced planners and senior leaders controlling the Troop Basis to reduce allocations and minimize the inclusion of service units in operations, creating an imbalance in the force. Finally, because planners and senior leaders did not value logisticians'

[44]US War Department, FM 100-5, 19.

[45]US Naval War College, 9.

interpretation of data, which tended to constrict tactics and strategy, and marginalized their importance in operations, they excluded logisticians from Planning efforts. As a result, during both the amphibious assault and subsequent attack on Tunis, United States forces lacked necessary equipment and services to sustain operations.

UNITY OF EFFORT

> No one arm wins battles. The combined action of arms and services is essential to success. The characteristics of each arm and service adapted to the performance of its special function. The higher commander coordinates and directs the action of all, exploiting their powers to attain the ends sought.
>
> —US War Department, FM 100-5, *Field Service Regulations, Operations*

After World War I, General John J. Pershing[46] appointed his former Chief of Staff, Major General James G. Harbord,[47] to head a board of officers to reorganize the military. Harbord focused on the Army organizational structure and supply operations. During World War I, the Army learned that it could no longer distance itself from civil institutions and that it needed to cultivate civil-military relations to ensure adequate production. Numerous bureaus and the general staff in Washington, DC could not sustain the American Expeditionary Force, so the US Army remained dependent on allies for support; the majority of its weapon systems came from either Britain or France.[48] The board also identified the Army's incompetence in handling large formations and planning operations.[49] As a result of the Harbord Board's recommendations, the Army instituted major changes designed to improve operations and support unity of effort. First, it reorganized the War Department (WD) General Staff into five sections: personnel (G1), military intelligence (G2), operations and training (G3), supply (G4), and war plans (responsible

[46]All personality biographies came from Wikipedia, "John J. Pershing," "James G. Harbord," "Joseph T. McNarney," "Albert C. Wedemeyer," "Lesley James McNair," "Mark W. Clark," "Thomas T. Handy," "George S. Patton," "Arthur R. Wilson," and "Peter Jan Schoomaker," https://wikipedia.org/ (accessed February 2, 2014). John J. Pershing, a cavalry officer, commanded American forces during the Punitive Expedition to Mexico and World War I. Following the war, he was the United States Army Chief of Staff for three years. Many generals who served during World War II considered him their mentor.

[47]James G. Harbord served as part of Pershing's Army during the Punitive Expedition in Mexico, became his chief of staff during World War I, and later commanded the Expeditionary Army's SoS.

[48]David E. Johnson, "From Frontier Constabulary to Modern Army: The U.S. Army Between the World Wars," in *The Challenge of Change: Military Institutions and New Realities, 1918-1941* (Lincoln, NE: University of Nebraska Press, 2000), 165; Millett, 13.

[49]Schifferle, 15 and 17.

for strategic level planning). Second, to maximize industrial output and build confidence in logistic capabilities, an Assistant Secretary of War would supervise the supply bureaus to control production and procurement (the military no longer controlled all phases of supply).[50] Third, the Army instituted selective higher military education to improve officer competence and identify the best candidates for promotion. Fourth, branch chiefs reported directly to the chief of staff and had broad authority over all issues affecting their branch, from formulating tactical doctrine to assigning and classifying personnel.[51] However, these changes, formalized by the National Defense Act of 1920, did not solve the Army's problems.

Instead of demonstrating the "spirit of unselfish cooperation" mentioned in FM 100-5,[52] the separate branches fought over the severely constrained resources. Branches, led by self-interest, adopted institutional biases and failed to cooperate. Mobilization and supply efforts, now directed by civilian-led agencies, failed to meet Army requirements and create an integrated supply system.[53] Anti-logistician biases, developed during the previous war, perpetuated marginalization of the service branches. Instead of an integrated body of arms and services, the Army consisted of 61 self-serving individual branches; to make matters worse, each organization answered directly to the Army Chief of Staff (General George C. Marshall).[54] In 1940, Roosevelt appointed a new Secretary of War (Henry L. Stimson) and Assistant Secretary of War (Robert P.

[50]Millett, 16-18; Paul A.C. Koistinen, *Planning War, Pursuing Peace: The Political Economy of American Warfare, 1920-1939* (Lawrence, KS: University Press of Kansas, 1998), 10, 202-203.

[51]Johnson, 170-171; and Millett, 15.

[52]US War Department, FM 100-5, 20.

[53]Millett, 24-26.

[54]Johnson, 163, 198-199, and 203; Peppers, 77; Allan R. Millett and Williamson Murray, eds., *Military Effectiveness, Volume II: The Interwar Period* (New York, NY: Cambridge University Press, 2010), 88.

Patterson), directing them to streamline Army procedures.[55] However, upon receiving a private consulting firm's analysis, Patterson ignored many recommendations because they returned decision-making authority and control to the military.[56] Frustrated with inefficiency, Marshall directed Major General Joseph T. McNarney[57] to develop a comprehensive plan to reorganize the WD. Wanting Patterson to remain ignorant of the situation, he directed McNarney to plan in secret. Marshall sought a new structure promoting order, collaboration, and effective control of mobilization and operations. Like the Harbord Board, this plan focused on the Army organizational structure and supply operations.[58] Roosevelt approved the final product, which went into effect in March 1942. The reorganization divided the branches and bureaus into three separate, subordinate commands: Army Air Forces, Army Ground Forces (AGF), and Services of Supply (SoS); each command managed subordinate branches and assisted with strategic planning to provide theater commanders with broad directives and the means to conduct war.[59] Meanwhile, the War Plans section, renamed Operations Division (OPD), remained with the WD

[55]Koistinen, 205; Kent Roberts Greenfield, Robert R. Palmer, and Bell I. Wiley, *The Army of Ground Forces: The Organization of Ground Combat Troops*. United States Army in World War II Collection (Washington, DC: Historical Division, Department of the Army, 1947), 133.

[56]Millett, 24-26. Booz, Frey, Allen, and Hamilton management consultants identified three major points in their report: individuals lacked sufficient decision-making authority, training, and ability to perform their jobs; civilian defense agencies and the WD needed to integrate efforts and overlapping functions between offices needed to be eliminated in order to reduce confusion and friction; and the assistant secretary of war should have a lieutenant general assigned as the single executive responsible for directing the supply and services branches.

[57]Joseph T. McNarney, an Army Air Force officer, served in World War I as commander of Second Army Observation Group and was attached to the American Expeditionary Force Headquarters. He graduated with honors from Fort Leavenworth's CGSC, wrote a manual on air observation, and became an instructor at the Army War College. During World War II he was deputy chief of staff under Marshall, and was later appointed commanding general of the U.S. Army Forces, Mediterranean Theater. Following World War II he served as military governor of occupied Germany.

[58]Johnson, 200; Millett, 24-26, 32-35.

[59]Johnson, 200; Millett, 36-37.

Headquarters.[60] Although these changes improved efficiency, they failed to achieve Marshall's desired unity of effort. Planners' refusal to partner with logisticians to develop feasible operations, constant shortage of resources, and overlapping responsibility and authority between multiple agencies perpetuated competitive self-interest. The reorganization placed SoS at the center of most controversies.[61] OPD competed for strategic planning and control authority. AGF, which generally gained the support of like-minded combat arms officers in OPD, competed over limited resources. Meanwhile, SoS competed with civilian-led government organizations to control mobilization and supply operations. The WD rarely intervened to adjudicate the rival claims, despite their strategic importance and necessity to attain maximum efficiency.[62] This lack of unity contributed to the problems experienced during Operation Torch.

Following the 1942 reorganization, OPD became the most important agency for the WD during World War II. Marshall used it as a command post to coordinate policy and planning operations. It formulated Army strategic plans, and participated on the joint planning committees that directed war efforts. OPD also directed education at military colleges. It had over 300 civilian and military personnel—double the size of the other combined G1-4 staffs.[63] Although OPD considered SoS a separate, subordinate command to the WD, it did not consider SoS equal to itself or the other subordinate commands (AGF and Army Air Forces). It considered logistic information—critical to identifying capabilities and limitations—subordinate to tactical information. Operational planners believed they worked best without logisticians creating

[60]Millett, 23-24.

[61]Millett and Murray, 80-81; Peppers, 77-78.

[62]Greenfield, Palmer, and Wiley, 258-259.

[63]Millett, 111-113; Johnson, 200.

unnecessary constraints.[64] Their devaluation of logistics negatively influenced military college curriculum, affecting the quality and quantity of service officers during the war. It also caused them to reject SoS requests to participate in planning committees and gain more control over service forces.

During the interwar period, the Army's educational institution perpetuated disunity by subordinating logistics to maneuver training.[65] The Harbord Board designated two schools to train the Army's future leaders: the Army Industrial College and the Command and General Staff College (CGSC). The Army Industrial College focused on mobilization and logistics with American industry. Although considered a rough equivalent to Fort Leavenworth's CGSC, it lacked the prestige to advance careers—officers with promotion potential attended CGSC. Although open to officers from all Army branches, because the Chief of War Plans branch (OPD) supervised Leavenworth, the school focused primarily on the combined use of all arms at division and corps level, and marginalized logistics.[66] Officers became competent at handling large formations, problem-solving, and decision-making. Leavenworth's curriculum included logistics and technical instruction, but emphasized the tactical level (ignoring higher level logistical fundamentals of modern combat) so students generally viewed logistics as less important than tactical knowledge and problem-solving.[67] During the interwar period, CGSC faculty consisted mainly of combat veterans who failed to appreciate the complexity and impact of logistics in

[64]War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 1," 19-23; Peppers, 77-78; Millett, 39-42.

[65]Thomas T. Handy, General, donated by Mary Handy Parker, December 18, 1975, OH-486 (3 of 4), oral history interview transcript, Dwight D. Eisenhower Library, Abilene, KS, 218.

[66]Service, Supply, and Procurement Division, War Department General Staff, *Logistics in World War II, Final Report of the Army Service Forces* (Washington, DC: Center of Military History, US Army, 1993), 159; Schifferle, 35, 78-79.

[67]Schifferle, 62-64, 84-85, 169.

modern warfare. Doctrine, reflecting their World War I experiences, influenced the next generation of officers to neglect and undervalue logistics.[68]

As the United States entered World War II, senior leaders realized CGSC graduates were unprepared to mobilize and sustain the growing Army. Upon reflection, they recognized that the Leavenworth education, which sufficed for maneuver officers, was woefully inadequate for service officers. Because both the faculty and the War Plans branch still marginalized the importance of logisticians, they instituted changes slowly. Not until the summer of 1942, did Leavenworth institute an eight-week Service of Supply Staff Course to familiarize officers with installation, mobilization, and theater-level supply logistics. However, due to its late inception, the course did not meet the growing demand for trained logistic officers. Initially, combat arms branches did not appreciate CGSC shifting resources to support service branch education, but after Operation Torch they recognized the value of trained logistics officers who could plan and manage support operations.[69]

Although combat arms branches improved their opinions of logisticians, existing controversies between OPD and SoS led planners to retain a negative perception of logisticians throughout the war. Personality conflicts between key leaders likely added friction to a dynamic relationship. OPD refused to include SoS logistics planners in strategic planning, failed to share information, and assumed authority over common responsibilities.

The reorganization of the WD made OPD the collective planning body. Its representatives participated on the strategic planning committees. Operational planners, valued logisticians' technical and logistical data, essential for strategic decision-making, but rejected

[68]Schifferle, 193; Johnson, 185.

[69]Schifferle, 159, 169, 187, 193; Peppers, 77-78.

logisticians' data interpretation or guidance that limited options.[70] Conversely, logistics planners believed it was their responsibility not only to forecast support requirements and capabilities, but also to remove obstacles and present feasible courses of action.[71] Had both national mobilization and the preparation for North Africa proceeded smoothly, OPD would have maintained an unchallenged monopoly on strategic planning. However, operational planners demonstrated their ignorance while planning the operations and made many costly logistical mistakes. In their rush to increase combat forces, planners mobilized units before projected equipment was available (logisticians repeatedly warned that equipment fielding required 18 to 24 months); their haste meant that units trained and deployed without essential equipment. Planned troop movements did not match current availability of ships (shipping was limited not only by number of vessels, but also by number of convoys available); this caused a logistical backlog.[72] Finally, in order to increase the deployment of combat forces to the United Kingdom, planners cut projected service forces beyond operating levels; as a result, thousands of tons of undocumented supplies and equipment received at British ports were shipped and stored in unidentified warehouses scattered across the United Kingdom.[73] These failures caused significant problems within Operation Torch. Taking advantage of the situation, SoS contended that it was in the WD's best interest for logistics planners, who understood current capabilities and requirements, and could directly implement necessary changes, to have equal representation on joint planning committees. OPD

[70]Millett, 118.

[71]Ohl, 6-7; and Millett, 54-55.

[72]General Dwight D. Eisenhower to George Catlett Marshall, August 30, 1942, in *The Papers of Dwight David Eisenhower, The War Years: I*, ed. Chandler, 514-515; General Dwight D. Eisenhower to George Catlett Marshall, August 31, 1942, in *The Papers of Dwight David Eisenhower, The War Years: I*, ed. Chandler, 515; War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Volume 1," 4; Leighton and Coakley, 304-311, 422, 462-463.

[73]Millett, 59-60; General Dwight D. Eisenhower to George Catlett Marshall, Washington, DC, September 19, 1942, in *The Papers of Dwight David Eisenhower, The War Years: I*, ed. Chandler, 565-566; Ohl, 187.

vehemently opposed this proposal because it allowed logistics planners from SoS to bypass its influence with the joint chiefs. They feared that logistical recommendations and production schedules would modify and direct strategy.[74]

Fearing that SoS was trying to unduly influence strategic planning, OPD began withholding information. This action violated specific guidance provided in the 1942 version of FM 100-15, *Field Service Regulations, Large Units* which states:

> It [WD] must take into its confidence those subordinate commanders from whom preliminary studies and tentative plans are required. An accurate and sound estimate of the means necessary to accomplish a desired objective is a requisite of great importance to the War Department General Staff.[75]

For logisticians to accurately compute requirements, analyze movement tables, and coordinate activities, they needed time to review information and understand the planned operation.[76] But in one instance, a planner pleaded to withhold information from SoS simply because he feared they would meddle.[77] In another case, SoS had to obtain operational information from the British War Office in order to identify requirements and coordinate delivery of essential supplies.[78] When

[74]Millett, 113-116, 119-122.

[75]U.S. War Department, FM 100-15, *Field Service Regulations, Large Units* (Washington, DC: US Government Printing Office, 1942), 1-4.

[76]Millett, 111-113.

[77]Ibid., 123.

[78]T.B. Larkin, "Lessons from Operation Torch, Mediterranean Base Section" January 4, 1942, in Allied Forces Headquarters, "Lessons of Operation Torch," 65-69.

Brehon B. Somervell,[79] commander of SoS discovered that OPD was withholding information, he requested a copy of all secret papers for any planning action that required support.[80]

As tensions rose over sharing information, the OPD continued to alienate the SoS by limiting control over service forces and assuming a more active role in directing support operations. SoS objected when OPD rejected supply officers recommended to fill overseas positions.[81] OPD later endorsed Eisenhower's request for authority to assign service officers within his command.[82] This decision violated the prescribed duties and responsibilities for SoS, outlined in WD Circular 59, "War Department Reorganization" (posted 1942).[83] Instead, it conformed to guidance provided in the 1940 version of FM 100-10, *Field Service Regulations, Administration,* which delegated that authority to the theater commander.[84] Similarly, when OPD began overseeing logistical operations which it viewed as strategic decisions, SoS perceived it as overstepping its authority.[85] As the Western Task Force loaded at the docks to deploy for North Africa, planners came to ensure there were no problems with the plan. Lacking shipping

[79]Ohl, 3. Lieutenant General Brehon Burke Somervell, an engineer, was the Army's principle logistician during World War II. Marshall personally selected him for the position of commander, SoS, based on his stellar accomplishments during the interwar period (he directed many of Roosevelt's construction projects, including the Pentagon) and the fact that he worked with McNarney on drafting the WD reorganization plan. Abrasive by nature, his approach to resolve issues sometimes created additional conflicts that his subordinates had to resolve.

[80]Millett, 113-116.

[81]Ibid.

[82]Thomas T. Handy, "Diary, Operations Division, March 29-July 31, 1942," in *World War II Operational Documents Collection* (Washington, DC: U.S. Army, 2008), Combined Arms Research Library Digital Library, http://cgsc.contentdm.oclc.org/cdm/compoundobject/ collection/p4013coll8/ id/2296/rec/49 (accessed July 17, 2013), 333.

[83]War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Volume 1," 20. "The assignment of officers of the Services of Supply including Army Air Forces and Army Ground Forces personnel on duty therewith."

[84]US War Department, FM 100-10, *Field Service Regulations, Administration* (1940; repr., Washington, DC: US Government Printing Office, 1942), 114-115.

[85]Millett, 118.

expertise, they created confusion with the deploying forces, agitated the civilian agencies running the docks, and interfered with SoS representatives working multiple issues.[86] These actions escalated distrust between the two organizations. SoS perceived that OPD was supporting AGF and its effort to obtain additional troops, resources, and control over operations.

The struggle over resources, both personnel and equipment, prevented AGF and SoS from achieving unity of effort in anything other than operations. After the reorganization, AGF directed the infantry, cavalry, field artillery, and coast artillery branches. It also controlled all divisional support and service units. AGF sought balance within the total force. It believed that non-divisional units (medical, engineer, ordnance maintenance companies, quartermaster, signal, and military police) should not exceed WD allotted ratios of units per division, based on mission and environmental requirements. According to AGF calculations, service support consistently exceeded its allotment; in 1942, SoS exceeded their allotment by 385,752. AGF recommended that OPD immediately institute control measures to prevent the dissipation of manpower essential for the war, from combat branches.[87]

The AGF claim that SoS robbed them of resources stemmed from two sources. First, during the interwar period, combat arms officers directing the Army restructure had negative experiences during World War I regarding service forces, and marginalized their importance by cutting their allocation. They presented a concept which future generations of combat arms officers embraced—auxiliary elements should be as low as possible to maximize allocation of combat forces. The new structures limited infantry divisions to two support companies, while armor divisions had one service company per battalion. Since infantry divisions comprised the

[86]Leighton and Coakley, 472.

[87]Greenfield, Palmer, and Wiley, 175, 206-208, 213-214. The WD G3 officer in charge of Troop Basis defended his authorizations by noting that theater commanders requested a great variety of service units to perform specific functions. He also claimed that without most of these service units, deployed soldiers would need to live like the Japanese, consisting mainly on rice.

majority of the Army, service and support personnel were minimized.[88] Second, during the summer of 1941, Albert C. Wedemeyer,[89] from War Plans (OPD), proposed the force structure for United States involvement in World War II. Although a highly qualified combat arms officer, he had no logistical experience; as a graduate of CGSC, he understood only basic logistical theory. According to his Victory Plan, the United States required 215 divisions, along with adequate service and support units. His numbers were not feasible; by 1943, the United States could man only half of the allotted divisions and required four times the number of service personnel. Wedemeyer erroneously used a ratio of one to one (1:1) comparing division combat strength to support troop strength. His lack of knowledge, the influence of the WD G3 Staff, and his CGSC experience led him to marginalize service forces and create a troop ratio that caused serious challenges and controversy throughout the war.[90]

Lieutenant General Lesley J. McNair,[91] commander of AGF, embraced the concept, concerning service forces, developed during the interwar period and attempted to build a combat force that supported the Victory Plan. However, one roadblock impeded his efforts—SoS received additional allocations, which decreased the number of combat forces. As requirements increased for more service units, McNair argued that there were two ways to fix the problem—the wrong way and his way. The wrong way involved adding forces to perform what he viewed as additional duties. According to McNair, a better solution was to maximize utilization of personnel

[88]Greenfield, Palmer, and Wiley, 307-308; Huston, 517-519.

[89]Schifferle, 168; Wikipedia. After graduating from Fort Leavenworth's CGSC in 1936, Albert C. Wedemeyer attended the German War College (Kriegsakademie) in Berlin, and became the United States military's premier authority on German tactical operations and thinking. Ironically, during the World War II, after he left OPD, he served primarily in the Asian theater.

[90]Schifferle, 168.

[91]Lesley James McNair, a field artillery officer, served in both the Punitive Expedition to Mexico and World War I, with the First Infantry Division. During the interwar years he was a professor of military science and tactics at Purdue University, the Commandant at CGSC, and served in the General Headquarters, G3 Staff. He was killed during World War II by friendly fire during Operation Cobra.

already assigned to the units; soldiers could always work harder. Instead of requiring engineer units to do basic construction, signal units to establish communication systems, quartermaster units to perform supply and distribution operations, and ordnance units to provide first and second echelon maintenance, infantry and artillery soldiers could perform these functions with minimal guidance and supervision. Regarding service equipment, McNair advocated the pooling of vehicles at senior headquarters (division, corps, and army levels) and increased use of trailers to maximize use of motor vehicles which could perform multiple deliveries and operations. Corps service units should bypass divisions and deliver supplies directly to forward units from designated supply points. To enhance speed and maneuverability, he favored use of smaller vehicles instead of the two and a half-ton trucks preferred by logisticians. McNair incorporated these concepts into Army doctrine when he helped revise the 1942 version of FM 100-10, *Field Service Regulations, Administration*.[92]

McNair perceived the rapid activation of additional service units to support Operations Bolero and Torch as grossly excessive. However, in October (1942), when the WD directed the subordinate commands to review their tables of organization and identify excess personnel and vehicles, he planned to use that opportunity to re-balance the force. McNair established a reduction board to cut vehicles by the desired 20 percent and personnel by 15 percent. According to McNair, the current equipment tables excessively allocated motor transport vehicles for service units. He recommended reducing each ordnance (maintenance) company to only nine motor transport vehicles and three trailers, removing a quarter of the two and a half-ton trucks from artillery units, and 25 motor transport vehicles from each infantry regiment (because units did not need to move simultaneously, but could move by echelon). McNair recommended eliminating the division's supply battalion (corps service units could pool their resources to deliver directly to

[92]Greenfield, Palmer, and Wiley, 282-284, 307-308, 332.

forward units) and reducing divisional quartermaster companies to 152 soldiers (combat troops could perform basic labor). Although OPD and the WD G3 approved the changes and prepared to adjust the 1943 Troop Basis, Marshall disapproved them after receiving explicit feedback from Eisenhower and his commanders about the problems experienced during the initial stages of Operation Torch. They explained that any reduction in service forces was unfeasible, as it would seriously impair future operations. Although McNair lost this battle, he retained his bias regarding the necessity of service forces and continued to fight with SoS over troop allocations until his death during the Battle for Normandy.[93]

The SoS was at the center of this mess—it was a huge organization with a broad scope of duties and responsibilities, and a unique relationship with both military and civilian agencies.[94] The 11 branches and various agencies comprising SoS remained autonomous, often competing for resources.[95] The organization failed to embody the "centralized control and decentralized operations" concept directed in FM 100-10.[96] Instead, it had huge responsibility, but limited influence since both internal and external agencies and parallel organizations (AGF and OPD) only listened when it was in their interest.[97] Also, SoS authority (not responsibility) ended at the

[93]Greenfield, Palmer, and Wiley, 223, 284-288, 311, 314-318, 332.

[94]War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 1," 19-20. According to WD Circular 59, "War Department Reorganization," SoS provides integrated supply and service, including research, development, procurement, storage, and distribution of supplies, equipment, and services to the WD. They were responsible for transportation and traffic control, and developing tactical and training doctrine, tables of organization and basic allowances, and characteristics of weapons and equipment peculiar to service and support units. They also assigned personnel to SoS, AGF, Army Air Forces, theaters of operations, task forces, and overseas units.

[95]Millett, 21, 36-42. Besides the six supply arms and services (engineers, signal, chemical, ordinance, quartermaster, and medical), SoS became the catchall organization for all the departments that did not fit with the combat arms organizations; this included judge advocate general, adjutant, military police, finance, chaplain, and special services.

[96]US War Department, FM 100-10, 22.

[97]War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 1," 3.

port of embarkation; theater commanders controlled supply operations for overseas forces. Adding to the complexity of the situation, SoS had to please two bosses. Somervell answered to Patterson (Assistant Secretary of War) for all procurement and supply related matters and to Marshall for military matters. To satisfy both bosses, Somervell modified his organization to include both a section for day-to-day operations and a planning division that evolved into the Strategic Logistics Division. The logistical planners who received their authority from SoS Circular 53 (not a WD document) assumed greater planning responsibilities, causing conflict with operational planners in OPD. The restructuring, meant to bring greater integration, actually caused more disunity. [98] Because Somervell encouraged his officers to ignore red tape, they challenged both military and civilian agencies to establish an efficient integrated supply system.[99]

As previously stated, one of the two major reasons Marshall reorganized the WD was to improve supply operations. Senior military leaders believed civilian-led agencies had too much influence over production and shipping of equipment and supplies. The National Defense Act of 1920 transferred authority to purchase, produce, and inspect equipment to the Assistant Secretary of War.[100] However, due to lack of direction and competing interests, these civilian agencies took advantage of the leadership void to set their own priorities, which did not always coincide with military requirements.[101] Both the War Production Board and War Shipping Administration (WSA) sought economic efficiency. Meanwhile, Somervell's philosophy on expenditures conflicted directly with those of the agencies; he believed that during war, speed and results

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[98]War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 1," 1-17.

[99]Ohl, 65. "Somervell wanted new leaders filled with vigor and energy and not willing to accept the red tape . . . his philosophy was to get it right fifty-four percent of the time and you're doing okay, mistakes will happen."

[100]Millett, 16-18.

[101]Ohl, 78-79 and 86-87.

outweigh costs and efficiency.[102] He also argued that the "military could not be held responsible for fighting a war if it did not have the authority to guarantee that it was adequately supplied."[103]

Somervell worried that the War Production Board appropriated the authority to determine whether to make canons, tanks, airplanes, or battleships. He recognized the military's dependence on civilian industry to fight the war. Projected production was critical because it could take six to 24 months to produce equipment. Despite what some operational planners believed, Somervell understood that equipment availability determines strategy and tactics (for instance, it is hard to conduct an amphibious operation if you only have half of the required landing craft).[104] The supply system needed to synchronize production with military strategy to ensure that lend-lease[105] requirements did not impede fielding equipment to new units or interfere with projected replacements for combat losses.[106] After its reorganization, the WD regained priority setting authority. It also authorized SoS to engage the civilian-led organizations with the "use of judicious shortcuts in procedure to expedite operations."[107] SoS focused on all phases of supply distribution, including production. In order for logistical planners to forecast when forward units

[102]Millett, 46-49.

[103]Ohl, 88-89.

[104]War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 1," 2; Koistinen, 2-3; Ohl, 78-79, 86-87.

[105]Peppers, 23-24. Besides providing the Soviets, British, Chinese, and French with equipment and materials to continue the war, the Lend-Lease Act of 1941 prepared the United States for the war by expanding American industry and establishing the transportation network. It provided a level of standardization of equipment between Allied forces and supported the forward deployment of American military in North Africa, Europe, Asia, and the Pacific by accepting payment in kind, property, or any other direct or indirect benefit. This permitted American forces to use French facilities in North Africa, procure local supplies from the British, and Theater commanders to obtain foodstuffs, clothing, equipment, labor, and services from the areas they controlled.

[106]Millett, 38-39, 54-55.

[107]War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 1," 19.

would receive their supply requirements, they needed to know production plans and schedules. Friction developed between SoS and the War Production Board, which felt that the military overstepped its authority by interfering with production.[108] A bitter debate began over roles and responsibilities between the two organizations, which eventually included the joint chiefs and required Roosevelt to settle the dispute. Somervell wanted military control over production and standardization[109] of parts and equipment. On November 26, 1942 they reached a preliminary agreement that the military would say what they wanted and when, and a production executive committee would determine how much could be produced within a given amount of time.[110]

Although production was important, distribution was critical to support operations. Shipping was a major problem restricting Allied strategy. During World War II, the WSA controlled all United States shipping. SoS challenged WSA over three major points—maximizing shipping space, cargo pooling of vessels, and control over shipping schedules. As a result of increased German submarine warfare, the Allies had a vessel shortage. Losses created a shipping capability deficit that production could not fill.[111] The Allies lost 1,200 ships, with a capacity for 4,500,000 tons of cargo, in 1941.[112] In 1942, they lost 13 of 75 cargo ships in June, suspended

[108]War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 1," 31, 46-49; Peppers, 77.

[109]Peppers, 78. Multiple manufacturers produced similar, but not the same equipment. Parts were not interchangeable, which increased the amount of spare parts depots needed to store and transport, further constraining the existing supply system.

[110]Ohl, 78-79, 86-87.

[111]Weinberg, 374, 380; Eisenhower, "Eisenhower Report on Torch," 47-50. Vessel production took six to 24 months, depending on the item.

[112]Peppers, 19, 86, 104-107. A fully loaded Liberty craft carried about 9,200 tons of cargo. It was a slow and dependable vessel, traveling about 11 nautical miles per hour; the updated Victory craft traveled at 17 nautical miles. The Landing Ship Tank was slower than the Liberty craft, averaging about 10 nautical miles; it could carry 60 tanks, along with personnel and additional cargo. Each fuel tanker carried 100,000 barrels of fuel, along with limited amounts of compact cargo and food; by the beginning of 1943 the Navy had 234 tankers.

shipping in July (until the military determined how to approach the war in Europe), and lost over 720,000 tons of cargo in November.[113]

When scheduling loads, the WSA considered more than just the shipping of military forces and supplies. Competing interests included the movement of lend-lease equipment, resources for Allied nations (which had political considerations), humanitarian cargo, and regular commercial movement of goods. The WSA lacked sufficient vessels to support conflicting demands and scheduled movements based on priorities they received from the Roosevelt Administration. To support competing demands, the WSA wanted to bulk load shipments, mix military and civilian loads, and create shipping schedules with multiple delivery destinations.[114]

Meanwhile, to support strategic plans and emergent requirements, the military needed to control what went where, when, and in what configuration. Somervell challenged the WSA to gain control over all military shipping and wanted to keep military and commercial shipments, including lend-lease, separate. The configuration was important because it affected equipment download following debarkation.[115] Units landing on hostile shores required combat loading of their vessels, which did not maximize space but sequenced equipment debarkation to coincide with the battle; equipment needed for the first echelon of attack was available first to unload. Combat loading was essential for the invasion of North Africa. For regular movement of forces, the Army preferred unit loading, ensuring that units and their equipment remained on the same vessel—this method did not always maximize space. Meanwhile, strategic loading massed

[113]Leighton and Coakley, 373-374; Weinberg, 374, 380. The November losses were the heaviest Allies suffered in a single month during the war.

[114]Ohl, 100-105.

[115]Ibid.

supplies and equipment essential to sustain forward operations. Somervell also argued that theater commanders required the authority to keep vessels in port to support subsequent operations.[116]

Gaining the joint chiefs support, Somervell approached Roosevelt for control over military shipping; control would enable SoS to develop a shipping formula and establish definite shipping cycles.[117] Somervell argued that in wartime, maximizing cargo space must be sacrificed to support the needs of troops and commanders. Meanwhile, the War Shipping Board provided Roosevelt with specific examples of Army inefficiency in conducting shipping operations, which added to the backlog of overall shipments. Although Roosevelt was sympathetic to Somervell's position, he denied SoS control over military shipping and authorized mixed loading on ships; however, Roosevelt directed that combat loads be protected and that service advisors be present to assist with loading of military cargo. The continued struggle between SoS and the WSA over shipping control impaired efficient distribution operations for the remainder of the war.[118]

Marginalization of logisticians, and the struggle for control over planning, resources, and operations, perpetuated disunity between SoS and other agencies during World War II. To their detriment, OPD successfully excluded SoS from strategic planning and subordinated logistics to tactics in higher military education. In order to limit SoS influence, both AGF and Army Air Forces joined OPD to block its inclusion on joint planning committees.[119] Meanwhile, AGF disputed over personnel and resources; its emphasis on developing combat forces and reducing service units, led it to limit logistics capabilities, making divisional organizations less self-

[116]Huston, 509.

[117]War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 2," 206.

[118]Ohl, 100-105.

[119]Millett, 122.

sufficient.[120] Finally, the struggle between SoS and civilian agencies hampered production and created conflicts over available shipping. Marginalization of logistics prevented the unity of effort necessary to synchronize mobilization (including Troop Basis allocations and training) and conduct effective planning and execution of Operation Torch.

[120]Greenfield, Palmer, and Wiley, 393-395.

TROOP BASIS

> A full appreciation by a commander and his staff of capabilities and limitations of each service is essential not only to efficient administration but to success in combat operations. A study of operations of large units in former wars shows that frequently failures initially attributed to faulty strategical or tactical plans were in reality caused by administrative deficiencies.
>
> —Geroge C. Marshall, FM 100-10, *Field Service Regulations, Administration*

Besides causing disunity between the subordinate commands, the struggle between AGF and SoS over troop allocations created a perpetual deficit of competent service forces during World War II, limiting their ability to support the war effort. In order for SoS to maintain the efficiency and morale of combat forces, it required trained units specializing in multiple essential services.[121] The WD authorized the number, type, and size of units (ground combat, air, and service) in the annual Troop Basis report. Prior to its publication, each branch proposed the number of units and soldiers it projected the Army needed based on operations. After publication, each subordinate headquarters determined its strategic approach to the war based on the capabilities this list outlined. The Troop Basis list was updated periodically based on current events and requirements for both training and overseas activities.[122] Because WD planners and senior leaders marginalized the importance of service units, the Troop Basis consistently favored

[121]US War Department, FM 100-10, 2-3, 15-17; Ohl, 64. The ordnance department provided supply, mechanical maintenance, distribution of ammunition, reclamation of captured ordnance supplies, and dissemination of technical information; based on mission requirements, it organized separate maintenance, ammunition, and depot units; it monitored ordnance units assigned to divisions, corps, armies and communications zone. The quartermaster corps procured, stored, and issued all supplies, real estate, and facilities (including land, buildings, peers, docks, or wharves); it ensured standard manufacture of all supplies common to two or more arms and services; it maintained operational all quartermaster transportation units, docks, and facilities and arranged for the movement of troops and supplies transported by military railways and waterways; it provided a general service pool of labor, graves registration service, and bakeries. Special non-divisional logistical units included: truck, car, light maintenance, heavy maintenance, depot, gasoline supply, service, bakery, sales, laundry, water and fuel distribution, salvage collecting, railhead, refrigeration, shoe repair, and port headquarters units. Somervell created the transportation corps, in the summer of 1942, to streamline distribution; many of the transportation, distribution, and port units transferred to the new command, decreasing the plethora of assigned tasks to the quartermaster corps—however, the quartermaster corps still retained some distribution companies throughout the war.

[122]Greenfield, Palmer, and Wiley, 221-222.

greater allocations toward combat units. To balance the force structure with actual requirements, the WD belatedly approved changes that added necessary service units. OPD published weekly updates to the Troop Basis mapping current and projected allocations. Numbers fluctuated greatly, causing confusion in the system. Any projection outside two weeks was suspect.[123] Because the WD marginalized service units, it allowed a deficit to grow that limited mobilization. Its negative perception carried over into planning and resourcing for Operation Torch, creating a shortfall of service units and limiting operations. Finally, the resultant deficit of service units forced Army commanders, SoS, and the WD to experiment with alternative options to sustain the force, all of which created more problems. The 1942 Troop Basis limited the amount and quality of logistic support to forward troops, and the task force's ability to continue the war.

Troop Basis allocation shortfalls for SoS began shortly following the organization's creation. The WD and each subordinate command held a series of conferences to determine the Army's future force structure. On April 17, 1942 SoS submitted its request for units, and 13 days later the WD promptly reduced the list by 157 units and about 100,000 soldiers (see table 1). To make matters worse, SoS could not activate units since they were approved only for planning purposes. Activation required WD approval, and could not fill a perceived shortage of personnel.[124] As a result, although the Victory Plan called for a 1:1 ratio of combat to service forces,[125] due to McNair's successful efforts to influence the WD and marginalize service forces, the ratio was 2:1 in favor of combat forces at the beginning of 1942.

[123]Leighton and Coakley, 296-298.

[124]Brehon Somervell, "Analysis of Requirements for ASF Units," January 28, 1944, in War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 3," 85-88.

[125]Schifferle, 168.

Table 1. Analysis of SoS Troop Basis, 1942

Type of Unit	Requested 17APR42	Approved 30APR42	Difference
ORDNANCE			
Maintenance Battalion, Headquarters	10	5	-5
Maintenance Company	125	72	-53
Ammunition Battalion, Headquarters	7	4	-3
Ammunition Company	73	41	-32
QUARTERMASTER			
Regimental Headquarters	2	2	0
Battalion Headquarters	27	25	-2
Service Battalions	24	13	-11
Bakery Company	24	24	0
Car Transport Company	7	6	-1
Depot Company	13	13	0
Gas Supply Company	36	18	-18
Laundry Company	25	21	-4
Mobile Refrigeration Company	4	4	0
Railhead Company	13	9	-4
Salvage Collection Company	14	10	-4
Truck Transport Company	56	36	-20

Source: Data adapted from Brehon Somervell, "Analysis of Requirements for ASF Units," January 28, 1944, in War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol.3," *World War II Operational Documents Collection* (Washington, DC: War Department, 1945), Combined Arms Research Library Digital Library, http://cgsc.contentdm.oclc.org/cdm/compoundobject/collection/p4013coll8/id/1806/rec/82 (accessed July 17, 2013), 96.

Table 2. Troop Basis Distribution, 1942

	Beginning of 1942, % of Total Force	End of 1942, % of Total Force
Combat Branches (Infantry, Cavalry, Field Artillery, Armor, and Coastal Artillery)	52.4%	35.9%
Service Branches (Engineers, Signal, Chemical, Military Police, Adjutant) (Ordinance, Quartermaster, Transportation, and Medical)	26.3%	34.4%
Air Corps	16.3%	23.5%
Others (Women's Army Corps, Flight Officers, and unassigned)	5%	6.2%

Source: Data adapted from Kent Roberts Greenfield, Robert R. Palmer, and Bell I. Wiley, *The Army of Ground Forces: The Organization of Ground Combat Troops*, United States Army in World War II Collection (Washington, DC: Historical Division, Department of the Army, 1947), Table Number 3, "Growth of the Army by Branch, 1941-45," 203.

However, Operation Torch and mobilization operations demonstrated the necessity of service units. As a result, service forces increased drastically so that by the end of 1942, the ratio was almost 1:1 (see table 2).[126]

To balance available resources, the WD reduced AGF allocations. McNair retaliated by attacking SoS requests for units and individual initiatives. For instance, when SoS assigned maintenance officers to each division and higher headquarters, including 11 to AGF Headquarters, McNair immediately protested to Marshall. He claimed they were unnecessary and created cushions of service troops. However, when Marshall informed him that Somervell had not initiated the directive and that it was in response to a perceived motor maintenance problem the dispute ended.[127] In retrospect, McNair's streamlining of divisional maintenance units caused the problem that Marshall was trying to remedy, since his cuts in personnel and vehicles created a reduction in the overall allowance of spare parts, and distribution and maintenance capabilities.[128]

As the WD and theater and task force commanders assembled the invasion force for Operation Torch, they continued to marginalize service units. From the build-up of forces in the United Kingdom to the echeloned invasion of North Africa, they inaccurately determined the composition of combat and service units constituting the deployed force.[129] In particular, OPD failed to appreciate the complex service requirements necessary to handle the massive movement, distribution, and sustainment of large forces in a foreign theater.[130]

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[126]Greenfield, Palmer, and Wiley, 203 and 210.

[127]Ibid., 282-284.

[128]Leighton and Coakley, 302-303.

[129]US War Department, FM 100-15, 7. "A task force is a tactical grouping composed of one or more arms or services constituted for a specific mission or operation. The composition and strength and the special training, equipment, and weapons required can be determined only after a careful estimate of the mission, the area of operations, including the routes of communication and climatic conditions, and the kind of resistance to be expected."

[130]Greenfield, Palmer, and Wiley, 258-259.

The United States first built-up forces in the United Kingdom with the intention of invading Western Europe (this plan was postponed en lieu of invading North Africa). In order to properly receive, unload, sort, transport, distribute, and issue supplies to United States forces in the United Kingdom, SoS estimated that service troops needed to constitute at least 48 percent of the total force. OPD estimated them at 35 percent of the total force. However, because OPD prioritized shipping combat forces to theater, service units comprised only 12 percent of the total force in April 1942—peaking at 21 percent by the end of September, shortly before Operation Torch. Since Somervell originally planned for the service units in the United Kingdom to accompany the Eastern and Center Task Forces, the shortage forced him to alter the support plan. [131] Per Eisenhower's request, Somervell planned to ship service troops to the United Kingdom in time to accompany the Oran expedition.[132] However, after Somervell allocated the requisite shipping, Eisenhower disrupted the revised plan by requesting supplies instead of service forces. Although SoS convinced Eisenhower to rescind the change, due to later priority shifts, they still arrived in later echelons, following the initial invasion of North Africa.[133]

As the United States prepared for Operation Torch, Somervell and Eisenhower developed their own distinct composition of service units within the assault, and follow-on forces. Initially, while planning for Operation Bolero (invasion of Western Europe), Eisenhower estimated that service forces needed to comprise 30 percent of the total force. His support concept included 7,200 SoS soldiers accompanying the assault force, and the remaining force echeloning in subsequent convoys. Upon reassessment, Eisenhower increased the ratio to 48 percent service

[131]Ohl, 187-191; Leighton and Coakley, 308-374 and 427.

[132]General Dwight D. Eisenhower to George Catlett Marshall, August 30, 1942, in *The Papers of Dwight David Eisenhower, The War Years: I*, ed. Chandler, 514-515.

[133]Leighton and Coakley, 428-429.

forces to sustain operations.[134] Meanwhile, as political decisions shifted emphasis from Bolero to Torch Somervell received little guidance for assessing the new requirements. OPD told him to plan for six to 12 divisions. Using Bolero planning figures, Somervell estimated that the operations required a total force of 250,000 soldiers.[135] In August 1942, Somervell developed a broad concept of support and earmarked 233 service units for North Africa, with approximately 60,000 service troops.[136] This figure was slightly lower than Eisenhower's initial assessment. However, these plans became moot on September 27, 1942 when OPD presented Mark Clark,[137] Eisenhower's deputy commander, with two operational choices based on shipping constraints. The first option reduced the fighting force by either 67,000 men or 50 percent of their equipment. The second option significantly cut service forces and reduced the total number of trucks available for landing operations.[138] Not surprisingly, Clark chose to marginalize logistics and emphasize combat forces, relegating non-divisional service units to subsequent convoys. To be fair, Clark's choice was likely influenced by Churchill's pressure on Marshall to weed out all non-essential vehicles and Roosevelt's emphasis on stripping resources to facilitate the controversial landing at Casablanca.[139] Regardless, this decision, above all others, resulted in

[134]Eisenhower, "Outline Plan for Operation Torch to Combined Chiefs of Staff," 29-32; Greenfield, Palmer, and Wiley, 202-203.

[135]Ohl, 190-191; Anderson, Publication 72-12, 4. "By the end of November the allies would have 253,213 troops in North Africa."

[136]Leighton and Coakley, 424-430.

[137]General Mark W. Clark, an infantry officer, served as a company commander in World War I. During the interwar years, he was an aide to the assistant secretary of war and graduated from CGSC in 1935. After Operation Torch he commanded the Fifteen Army Group, in the Italian campaign; he was criticized for ignoring orders and allowing the German Tenth Army to escape, so that he could be first to enter Rome.

[138]Chas W. Ryder, "Lessons of Operation Torch, Eastern Assault Force," December 26, 1942, in Allied Forces Headquarters, "Lessons of Operation Torch," 7-9; Millett, 60-62.

[139]Leighton and Coakley, 376, 423, 449-455.

Allied forces failing to seize Tunis in 1942, since they did not have the capacity to sustain forward operations. It failed to adhere to doctrine, which recommended to echelon in service elements with the supported force. FM 100-15, *Field Service Regulations, Large Units* clearly explains that "It is of the utmost importance that service elements necessary to administer the combat echelons arrive sufficiently early to perform their tasks effectively."[140]

Divisional standard operating procedures supported Clark's decision to marginalize logistics, because they prioritized assigning tactical instead of service units for an operation.[141] Following higher headquarters' example, they relegated the majority of divisional service units (assigned directly to the division) to the last waves of the initial or subsequent convoys.[142] As a result, at Fedala (the Western Task Force's main effort) the lack of logistical support delayed seizure of the ports and debarkation of the remaining force. On D-Day, Third Infantry Division landed only 39 percent of its troops, 16 percent of its vehicles, and one percent of its supplies. The next day the situation slightly improved to 55 percent of its troops, 31 percent of its vehicles, and three percent of its supplies. Although the high loss of landing craft contributed to the problem, the lack of service elements forced them to halt six miles short of Casablanca, and prevented them from silencing coastal batteries and seizing the ports.[143] All of the task forces recognized this decision as a mistake when they submitted their lessons learned from Operation

[140]US War Department, FM 100-15, 20. "When active operations are to be initiated before all the troops can be concentrated, elements of all arms necessary to form the task forces needed for the initial operations should arrive immediately after the reconnaissance and security elements. Necessary service elements must arrive in the area at this time. Service elements can usually be brought in by echelon. It is of the utmost importance that service elements necessary to administer the combat echelons arrive sufficiently early to perform their tasks effectively."

[141]Reichman, 35-36.

[142]Leighton and Coakley, 428-429.

[143]Anderson, Publication 72-11, 18-19.

Torch.[144] The decision not to properly echelon service units prevented support for subsequent operations.

After seizing the initial objectives of Casablanca, Oran, and Algiers, Clark's choice to improperly echelon service forces and the overall lack of available service units prevented Eisenhower from successfully seizing Tunisia.[145] Besides Clark's decision, many of the problems encountered during Operation Torch can be traced back to the disapproval, belated approval, and late activation of service units. When mobilizing a military, the Army must activate service units first to receive, train, move, and sustain the force. Service forces must grow incrementally with the supported forces otherwise the deficit permanently handicaps operations. Because the WD failed to address the problem early in 1942, SoS could not furnish sufficient numbers of trained units to overseas theaters. Theater commanders and SoS resorted to less efficient measures to sustain forward operations.[146]

One method open to forward deployed commanders was to create internal ad hoc service units. Thomas T. Handy[147] explained that whenever commanders had trucks and unassigned men, they created new motor transport companies to fill logistical requirements. Although a temporary fix, it only addressed a symptom and not the problem—lack of service units.[148] Furthermore,

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[144]George S. Patton, "Lessons from Operation Torch, Western Task Force," December 30, 1942, 44-63; J.A. Dabney, "Lessons of Operation Torch, Center Task Force," December 29, 1942, 18-25; Ryder, 9-10; Larkin.

[145]US War Department, FM 100-5, 264 and 276. "The service echelon assures prompt supply, evacuation, maintenance, and administration of the division. . . This plan must include provision for both supply and motor maintenance during the subsequent operations."

[146]Brenon Sumervell, "Analysis of Requirements for ASF Units," January 28, 1944, in War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 3," 85-88; War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 2," 209.

[147]Thomas T. Handy, a field artillery officer, followed Eisenhower as director of operation's division. He served the majority of World War II in Washington. As acting chief of staff, he issued the order to use the atomic bomb.

[148]Handy, OH-486 (3 of 4), 215-216.

these ad hoc (unapproved) units lacked the ability to sustain operations since they could not receive replacement personnel, equipment, or even basic supplies.[149] To fix the problem, the Troop Basis incorporated some of these units ex post facto.[150]

Another method commanders utilized to continue operations without service units, was to use combat forces or local labor to perform service functions. McNair advocated using combat soldiers. This option reduced the requirement for service units and protected the allocation of combat forces. Marshall advocated using local labor to supplement existing service forces. This option adhered to existing doctrine,[151] provided a venue to pay for lend-lease equipment through supplies and services, and gave a large number of North African civilians employment opportunities, with the intent of making them happy with American pay.[152] Although in concept, both methods seemed feasible, in reality neither proved successful. Untrained soldiers did not understand how to properly sort and move supplies. Soldiers assigned to offload supplies simply dumped them on the docks, rails, and beaches and wandered off when unsupervised.[153] Clogged docks prevented the further discharge of supplies and troops, which were "needlessly moved from

[149]Handy, OH-486 (3 of 4), 215-216; US War Department, FM 100-10, 107-108. "Special requisitions are submitted as necessary. Requisition show number and kind of specialist required in each grade to fill authorized vacancies. Replacement requisitions include requests for replacements for all of the organic unit's current organization whether or not any units are detached. Requests for replacements for both officers and enlisted men are contained on the first requisition submitted following the absence of the individual . . . When demand for replacement exceeds supply, necessary allocations are established by proper authority."

[150]Greenfield, Palmer, and Wiley, 256.

[151]US War Department, FM 100-10, 136. "Exploitation of local resources . . . local resources particularly to be exploited are utilities, transportation, supplies, and services."

[152]General Dwight D. Eisenhower to George Catlett Marshall, Washington, DC, October 31, 1942 in *The Papers of Dwight David Eisenhower, The War Years: I*, ed. Chandler, 648.

[153]Leighton and Coakley, 451-452; Larkin; Patton, 38-63, 65.

one location and back wasting time and effort."[154] Combat soldiers were incapable of conducting the rail and port operations necessary to move supplies to forward forces.[155]

Meanwhile, local labor could provide both common supply and distribution functions, along with the more technical services of managing port and rail operations. However, use of local labor required military contracts and governmental consent, which took time to establish.[156] Ironically, early in 1942 the Army terminated contract labor, switching to military organizations performing all service functions.[157] Because of shipping and personnel shortfalls, and the desire to maximize allocations for combat forces while marginalizing service forces, Marshall later advocated using local labor both in the United Kingdom and in North Africa.[158] British dock workers handled the majority of United States supplies and equipment arriving in the United Kingdom. Although trained, British labor concentrated more on clearing the docks to avoid congestion and they did a poor job receiving, identifying, and recording items before shipping them off to numerous warehouses and sorting sheds scattered throughout the countryside. As a result, United States forces lost accountability for hundreds of thousands of tons of supplies and equipment that the invasion force required for Operation Torch.[159] Responding to Eisenhower's pleas for assistance, SoS, with the assistance of the WSA, diverted scheduled shipping to deliver

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[154]Wilson, 25, 27, 32.

[155]Ibid.

[156]Ibid., 25-26; Allied Forces Headquarters. "Agreement with French, November 22, 1942," *World War II Operational Documents Collection.* Washington, DC: U.S. Army, 2003. Combined Arms Digital Library, http://cgsc.contentdm.oclc.org/cdm/singleitem/ collection/p4013coll8/id/2906/rec/3 (accessed July 17, 2013), 3-4.

[157]Memorandum for the Adjutant General from Brehon Somervell, February 15, 1942, Army Records and Papers – 1942 (1), Box 2, Edwin N. Clark Papers, 1933-81, Dwight D. Eisenhower Presidential Library, Abilene, KS.

[158]Eisenhower to Marshall, October 31, 1942 in *The Papers of Dwight David Eisenhower, The War Years: I*, ed. Chandler, 648; Leighton and Coakley, 472 and 480.

[159]Ohl, 187; Leighton and Coakley, 429-430.

131,000 tons of replacement cargo, and they added another eight fully loaded cargo ships to convoys departing for the invasion of North Africa.[160] Meanwhile, in North Africa, Eisenhower reported nothing but problems from using local labor; they ran away at the first sign of enemy activity, they were lazy and required constant supervision, and they were thieves.[161] However, the French military did on a few occasions provide minor assistance with some nondescript trucks and labor to distribute supplies.[162]

The SoS method for sustaining forward forces was to deploy partially trained service units. Somervell felt that a half trained unit short of personnel was better than no unit. In mid-1942, when OPD authorized an increase of 236,000 service troops, SoS revised training programs in order to quickly deploy units.[163] The 301st and 302nd Ordnance Regiments had only six weeks to prepare, prior to deploying.[164] According to Somervell, "to properly prepare Army service units for overseas service, they must be authorized and activated at least six months before the planned date of movement."[165] In addition to deploying untrained new units, many existing units suffered because they lost up to half their senior leaders to training or standing-up new units. Many of the most technically skilled mechanics and officers became instructors, forcing units to

[160]Millett, 60-62.

[161]General Dwight D. Eisenhower to Winston Spencer Churchill, December 5, 1942, in *The Papers of Dwight David Eisenhower, The War Years: II*, ed. Chandler, 801-804; Arthur R. Wilson to General Lutes, Operation Division SOS, "Training of Railroad Battalions," November 30, 1942, in "Report of Operations in North Africa to Headquarters Services and Supply," 50; Leighton and Coakley, 451, 472, 480.

[162]General Dwight D. Eisenhower to Thomas Troy Handy, December 7, 1942, in *The Papers of Dwight David Eisenhower, The War Years: II*, ed. Chandler, 811-815.

[163]Ohl, 188-190.

[164]Memorandum for Commanding Generals by Order of the Secretary of War, March 14, 1942, Army Records and Papers – 1942 (1), Box 2, Edwin N. Clark Papers.

[165]Somervell, 85-88.

promote from within to fill vacancies.[166] As a result, untrained soldiers added to battlefield confusion and perpetuated the prejudicial perceptions concerning the relevance of logisticians.

Finally, the WD's method of correcting the service unit deficit was to belatedly reallocate forces. However, because many senior leaders marginalized service unit contributions and technical competence, they consistently set a lower standard for individuals to enter service forces.[167] To fill personnel shortages, they authorized waivers for non-disabling physical defects for technical specialists.[168] The WD also began converting colored cavalry divisions into service troops.[169] Later the WD presented multiple proposals to Marshall, explaining that because colored soldiers, on average, scored Grade V (inferior) on both the Mechanical Aptitude and Army General Classification tests, that they should either be discharged or reassigned to service units managed by white officers and primarily perform labor functions. They contended that combat arms units required soldiers with higher intelligence, but service units that were critically short personnel would be well served to receive colored soldiers.[170] Colored soldiers were requisitioned separately from white soldiers due to supposed inferior intelligence.[171] Ironically, skills they gained as transporters, mechanics, and engineers made them more technically proficient than

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[166]Memorandum for the Adjutant General, March 5, 1942, Army Records and Papers – 1942 (1), Box 2, Edwin N. Clark Papers.

[167]Huston, 418.

[168]Memorandum for the Adjutant General from Brehon Somervell, February 15, 1942, Army Records and Papers – 1942 (1), Box 2, Edwin N. Clark Papers.

[169]Somervell, 85-88.

[170]Memorandum to Assistant Secretary of War, February 17, 1943, "Utilization of Grade V Negro Personnel;" Memorandum for the Chief of Staff US Army, March 12, 1943, "Employment of Grade V Personnel in the Army;" "Excerpts from Survey and Recommendations Concerning the Integration of the Negro Soldier into the Army," September 22, 1941, all from Harry S. Truman Presidential Library, Record Group 220: Records of the President's Committee on Equality of Treatment and Opportunity in the Armed Services, Desegregation of Armed Forces Folder 1943, http://www.trumanlibrary.org/whistlestop/study_collections/desegregation/large/index.php (accessed November 22, 2013).

[171]US War Department, FM 100-10, 10, 12, 14.

white soldiers who joined combat arms branches. However, assigning colored soldiers predominantly to service units at a time when segregation was still in effect perpetuated negative perceptions toward service units. It also interfered with operations. For example, white military police soldiers on occasion stopped convoys run by black soldiers to provoke racial violence, and resulted in delaying shipment of critical supplies and equipment to forward units.[172]

After Operation Torch, many senior leaders recognized the contributions of service units. They learned that marginalizing service units jeopardized operations, that local labor and combat troops could not easily replace skilled experts, and that service units required trained, higher quality troops to perform their specialized functions.[173] Although logistics alone could not win a campaign, its absence could cause a loss. Eisenhower acknowledged this fact in a letter to Churchill: "It is my personal belief that if we could have had, during the period November 18 to December 1, a half-dozen motor transport companies over and above the forces we actually did have, this battle could have been over."[174] In December he pleaded with OPD and Somervell for a drastic increase of service units and vehicles to sustain the fighting. Somervell again diverted shipping to send Eisenhower nearly 10,000 vehicles by the end of December 1942. In February 1943, he sent an additional 5,400 trucks, 2,000 trailers, 72 tank transporters, 100 locomotives, and railroad stock to repair the North African railroad system.[175] Once service units arrived, the backlogs disappeared. Motor transport and rail companies improved distribution. Port battalions managed the receipt of supplies, equipment, and troops into theater, while specialized units, such

[172]Captain Ralph A. Matson, "World War II Letters," 1980, transcribed by Estelle Smart Matson, Matson Family Personal Records, Salt Lake City, UT; Jacob L. Devers, interview by Dr. Maclyn P. Burg, February 4, 1975, OH-377 (3 of 4), oral history interview transcript, Dwight D. Eisenhower Library, Abilene, KS, 133.

[173]Larkin, 65.

[174]General Dwight D. Eisenhower to Winston Spencer Churchill, December 5, 1942, in *The Papers of Dwight David Eisenhower, The War Years: II*, ed. Chandler, 801-804.

[175]Ohl, 192-193.

as pipeline and water supply provided essential services.[176] However, some leaders never learned to appreciate the importance of logistics. Even as Eisenhower pleaded for more service units, the Western Task Force advocated a further 10 percent reduction of service forces.[177] While his staff advocated echeloning service units with combat forces and increased involvement of logisticians in planning, George S. Patton[178] dismissively wrote:

> It will be noted that practically every branch, except the combat troops, considered itself slighted either in numbers or in vehicles. This will invariably be the case, because in a landing operation, fighting men must take precedence over everything else.[179]

Ironically, when he wrote this comment his task force was stuck in Morocco awaiting receipt of vehicles that had not shipped due to Clark's decision, and the service unit needed to run the port and clear the backlog of supplies was just arriving.[180]

[176]Larkin, 69; Leighton and Coakley, 468.

[177]Arthur R. Wilson to Operations Division, "Service Troops on Succeeding Convoys," December 16, 1942, in "Report of Operations in North Africa to Headquarters Services and Supply."

[178]George S. Patton, a cavalry officer, served in the Punitive Expedition to Mexico and was introduced to tanks during World War I. During Operation Torch, he first commanded the Western Task Force and seized Casablanca, then he commanded Second Corps as it seized Tunisia. He later commanded the Seventh and Third United States Armies in the European Theater.

[179]Patton, 37.

[180]Ohl, 192-193.

PLANNING

> The two fields – operations and administration – into which military activity is divided are obviously interlocking. They are separated in field service regulations only for convenience of discussion. It is the function of command to unite the strategical or tactical plan and the administrative plan into a harmonious whole . . . Not only must administrative plans provide a sound scheme to support the commanders plan of operations, but also alternative procedures must be envisaged in order to obtain the flexibility required to meet the many varying conditions and unforeseen factors of modern warfare.
>
> —Geroge C. Marshall, FM 100-10, *Field Service Regulations, Administration*

The 1942 United States Army doctrine clearly advocated unity of effort in planning between combat and service forces. However, as a result of OPD's struggle with SoS over control of strategic planning and authority over operations, OPD excluded them from planning Operation Torch. Their biases against logisticians led to planners' overdependence on their own interpretation of empirical data, rather than seeking specific technical advice, when forecasting requirements.[181] Their decisions affected how they determined Troop Basis, which constrained and eliminated options, and the overall operational approach for the invasion of North Africa and subsequent race for Tunisia. Although some theorists, such as Michael Matheny[182] and Michael Krause,[183] claim that senior military leaders learned effective logistical planning during the interwar period, firsthand accounts from many leaders[184] tell a different perspective. Leaders such

[181]War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 1," 3.

[182]Michael R. Matheny, *Carrying the War to the Enemy: American Operational Art to 1945* (Norman: University of Oklahoma Press, 2011), 42-78.

[183]Michael D. Krause and R. Cody Phillips, eds., *Historical Perspectives of the Operational Art* (Washington, DC: Center of Military History, US Army, 2007), 342.

[184]Eisenhower, in *The Papers of Dwight David Eisenhower, The War Years: II*, ed. Chandler, 811; Dabney, 26; Wilson, 7.

as Somervell, Eisenhower, and Arthur R. Wilson[185] acknowledged that logistical challenges were often ignored, or that planners approached problems from a best case scenario.[186] This approach assumed that sufficient resources were available, at the right place and time, to accomplish the mission. Ironically, unforeseen problems surprised OPD.[187] Since the Army is a hierarchical organization,[188] subordinate leaders at the operational (theater) and tactical (task force and below) levels mirrored OPD in marginalizing logisticians during planning efforts. Therefore, at the strategic level, OPD's choices undermined many of Somervell's initiatives to sustain the operation. At the operational level, Eisenhower and his subordinates' decisions limited operations and failed to prepare the force to sustain the operation. Finally, at the tactical level, combatant commanders' exclusion of logistics units and planners complicated, confused, and impeded execution of the operation. By not incorporating adequate logistical considerations into the operational plan, planners unduly constrained operations and ultimately prevented Allied forces from seizing Tunis in December 1942.

At the strategic level, two departments struggled over determining logistical requirements and actions to support Operation Torch: OPD and SoS. Since SoS lacked unity, and OPD had final decision making authority, their plans often ran awry. Because the Troop Basis marginalized service units and planners assumed best case scenarios, some SoS plans became unsupportable. As planning commenced for Operation Torch, Somervell and his staff constantly tried to

[185]Major General Arthur R. Wilson, a quartermaster officer, served as the SoS commander supporting the Western Task Force, following the invasion of North Africa. He later served in the Italian Campaign, and in the Pacific Theater during the last year of World War II.

[186]Service, Supply, and Procurement Division, War Department General Staff, 159.

[187]Huston, 419, 421; Ohl, 146-147.

[188]James G. March and Chip Heath, *A Primer on Decision Making: How Decisions Happen* (New York: Free Press, 1994), 117. "Hierarchical organizations use delegation and departmentalization to mobilize diverse individuals into relatively coherent action, to mold preferences and identities in the service of the organization."

anticipate requirements to support the proposed operation. Somervell's first task was to establish an Army Supply System that adequately supported the growing Army as it deployed to foreign theaters of war. This system streamlined production (dealing with the War Production Board), transportation to depots or ports of debarkation (including their holding warehouses), movement by sea to ports of debarkation (dealing with the WSA), transportation to forward depots and forward supply points, and final distribution to forward units. WD Memorandum W700-8-42, October 10, 1942, formalized procedures and established levels of responsibility at the strategic (production, transportation, and storage at depots), operational (ports), and tactical (depots and supply points) levels. It confirmed ordering procedures and methods of supply. To quickly establish a supply basis within a theater of operations, and to limit the forward commanders burden of requesting basic supplies, food and fuel (Classes I and III) shipped automatically.[189] As per FM 100-10,[190] daily strength reports, based on the authorized Troop Basis, provided the foundation for determining required daily quantities.[191] Meanwhile, units submitted requisitions, through their forward port of debarkation, for replenishment and initial issue of the remaining classes of supply, which covered equipment, spare parts, construction materials, and ammunition (Classes II, IV, and V).[192] Requisitions were based on projected requirements (future missions), experience tables (limited availability because of new equipment), and consumption data

[189]War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 2," 189-190; Millett, 54-55; Ohl, 70-71.

[190]US War Department, FM 100-10, 61. "The basis of procurement for rations is the daily strength report of the division into the Army quartermaster."

[191]Peppers, 72-74. Because of the plethora of vehicles which consumed fuel at different rates, and the difficulty in calculating for active versus idle use of vehicles, SoS chose to use the planning factor of one gallon, per man, per day.

[192]Ibid., 38; War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 2," 191-192. SoS attempted to forecast the other classes of supply, but based on the complexity of calculating their consumption, and the high error rate, shortages were filled by requisition.

(accounting for both active and idle usage).[193] In an effort to further streamline support procedures, Somervell developed the Army Supply Discipline and Preventive Maintenance Programs to protect resources and minimize requisitions.[194] Minimizing requisitions was important due to a shortage of distribution capabilities.

Having established procedures, Somervell then developed a support plan. SoS planners determined the availability and condition of overseas ports, facilities, roads, and railway systems.[195] Utilizing doctrine that taught to plan for shortages of infrastructure and facilities[196] he began to procure construction supplies.[197] He established a small cushion in support capabilities, planning for unforeseen contingencies,[198] which was also part of Army doctrine.[199] First, he utilized July's surplus shipments to meet projected requirements, shipping thousands of tons of construction materials, excess equipment, and supplies to the United Kingdom in advance of troops. The WSA failed to understand the rationale complaining that he wasted valuable shipping space with non-essential items. Regardless, supplies and material were lost in the United Kingdom because the Army lacked essential service units to receive, catalogue, and store the

[193]War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 2," 191-192.

[194]Notes on Supply Discipline – Recovery, Salvage, and Maintenance from the Office of the Chief of Ordnance, April 11, 1942, Army Records and Papers – 1942 (1), Box 2, Edwin N. Clark Papers; Ohl, 78-79, 86-87.

[195]Millett, 113-116.

[196]US War Department, FM 100-10, 40-41. "There is usually a shortage of railway rolling stock and of yards and sightings in the theater of operations."

[197]Millett, 113-116.

[198]Leighton and Coakley, 303.

[199]US War Department, FM 100-10, 20. "Administrative details of the plan are made flexible to meet contingencies which may be caused by unexpected changes in the situation. They should be capable of being further developed and expanded to meet, so far as can be reasonably foreseen, future probable operations and conditions."

items. To streamline shipping and compensate for vessel shortages, Somervell proposed shipping unit equipment in advance of forces to the United Kingdom. Commanders opposed being separated from their equipment, complained to the WD, but finally agreed to ship equipment only one month prior to the troops (to give maximum time for training). However, due to the delay and the limited availability of vessels, units did not have all their equipment when they left for North Africa in late October 1942.[200]

Meanwhile, OPD (along with Eisenhower) excluded flexibility in the operation. Instead, they planned for the best case scenario, where the Allies secured all available port anchorages available at Oran, Algiers, and Casablanca. Convoy schedules represented maximum throughput at each location, assuming service units or local skilled labor would support operations.[201] However, only 68 of the 97 port anchorages were serviceable, with some damaged prior to and during the assault (see table 3).

Table 3. Port Plan versus Actual Port Availability

	Number of Ports	Plan for Build-Up of Forces	Actual Ports Available (After 8NOV42)
Casablanca	26	1 x Division/month	12
Oran	34	1 x Division/month	22
Algiers	37	1 ½ x Division/month	34
Total	97	3 ½ x Division/month	68

Source: Dwight D. Eisenhower, "Outline Plan for Operation Torch to Combined Chiefs of Staff," August 25, 1942, in *World War II Operational Documents Collection* (Washington, DC: US Army, 2003), Combined Arms Research Library Digital Library, http://cgsc.contentdm.oclc.org/cdm/compoundobject/collection/p4013coll8/id/1250/rec/113 (accessed July 17, 2013), 1-7; Richard M. Leighton and Robert W. Coakley, *Global Logistics and Strategy 1940-1943* (Washington, DC: Office of the Chief of Military History, 1955), 449-455.

[200]Leighton and Coakley, 308-374.

[201]Eisenhower to Marshall, Washington, DC, October 17, 1942, in *The Papers of Dwight David Eisenhower, The War Years: I*, ed. Chandler, 623-624; Leighton and Coakley, 303.

A bottleneck of vessels emerged as convoys downloaded cargo and troops (see table 4). Constrained by ship shortages, the WSA and SoS adhered to Army doctrine and strictly followed prearranged convoy schedules.[202]

Table 4. Planned Convoy Schedule for Casablanca, 25-day Cycle

	Combat Loaded	Fast Convoy	Slow Convoy
D-Day	31,000 Troops with Equipment		
D+5		31,000 Troops	
D+20			60 Days of Supply for 55,000 Troops Equipment for 24,000 Troops
D+40		30,000 Troops	
D+45			30 Days of Supply for 55,000 Troops Equipment for 30,000 Troops
D+65		36,000 Troops	
D+70			30 Days of Supply for 85,000 Troops Equipment for 34,000 Troops
D+90		36,000 Troops	
D+95			30 Days of Supply for 119,000 Troops Equipment for 36,000 Troops

Source: Data extrapolated from Richard M. Leighton and Robert W. Coakley, *Global Logistics and Strategy 1940-1943* (Washington, DC: Office of the Chief of Military History, 1955), "Table 7-Tentative Convoy Schedule for Western Task Force: 17 September 1942," 431.

Because subsequent convoys used the same ships, delays in downloading affected future resupply shipments.[203] Delays forced planners to prioritize either troops or supplies, as they could not receive both within the short turn-around timeframe. Meanwhile, OPD approved numerous last minute changes to troop strength and equipment listings exacerbating Somervell's poor relations

[202]US War Department, FM 100-10, 24.

[203]Combined Chiefs of Staff to Dwight D. Eisenhower, "Prompt Release of U.S. Naval Forces Assigned to Assault Phase of Operation Torch," October 6, 1942, in "Outline Plan for Operation Torch to Combined Chiefs of Staff," 72, 74; War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 2," 202-206.

with the WSA and causing considerable confusion at the ports.[204] They approved all changes submitted by task force commanders, despite a plea by SoS to restrict the number of modifications. Within a 17-day period, the Western Task Force made 57 modifications.[205] The changes duplicated available equipment, prevented efficient loading of vessels, and almost delayed shipments. Had SoS been included in planning, and its efforts not marginalized, many problems could have been resolved.

At the operational level (linking strategic with tactical), theater and port commands directed logistical activities within their assigned regions. Commanders set priorities and storage levels of supply.[206] As the Allied forces supreme commander, Eisenhower commanded the theater of operations for both United States forces in the United Kingdom and later the combined forces in North Africa.[207] In preparing for Operation Torch, he repeatedly chose to marginalize logistics. He included OPD and Patton, but not Somervell, in planning conferences to determine the best course of action for the invasion of North Africa.[208] Eisenhower's plan outlined the importance of gaining both French support and control over French resources and facilities, and seizing ports to ensure proper discharge of scheduled convoys, but it failed to provide any general logistical guidance.[209] Eisenhower allowed each task force to develop, or not develop, its own logistic

[204]Eisenhower, "Eisenhower Report on Torch," 47-50; Eisenhower to Marshall, Washington, DC, October 17, 1942, in *The Papers of Dwight David Eisenhower, The War Years: I*, ed. Chandler, 623-624.

[205]Huston, 517-519.

[206]War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 2," 195.

[207]J.A. Ulio, "Supply of Oversea Departments, Theaters, and Separate Bases," October 10, 1942, in War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 3," 55-58.

[208]Leighton and Coakley, 426; Millett, 111-113.

[209]Eisenhower, "Outline Plan for Operation Torch to Combined Chiefs of Staff."

support plan. Only after Allied Forces Headquarters moved to North Africa, did he centralize control over theater logistics to economize distribution efforts.[210]

Eisenhower determined that the French, not logistics, were essential to mission success—once they joined the Alliance he desired their combat forces to augment offensive capabilities. To that end, he promised logistic support to French forces that actively engaged the Axis. He offered "fuel and all necessary supplies to enable them to become effective fighting units."[211] However, the focus on combat forces encouraged French forces to overly rely on limited United States service units. Following the American example, they took marginalization to extremes by not developing any service troops for some of their units.[212] As the United States barely had enough service units to sustain itself, this development added strain to the supply system, while limiting unit support and crippling combat operations in Tunisia.

In addition to combat forces, Eisenhower wanted to use French resources and facilities in North Africa. On three occasions, the Allies gained excellent intelligence capable of improving logistical operations. First, prior to Torch, during a secret meeting with a senior Vichy commander in Algeria, Clark obtained maps with key strategic information including troop locations, gas and ammunition caches, and airfields.[213] Later, during the invasion of Fedala, the Seventh Infantry Division discovered classified documents in the Miramar Hotel that identified troop positions, railroad status, and the location and cubic capacities of all warehouses storing war materials. Finally, during the armistice talks, Wilson gathered intelligence on port capacities (including the estimated number of ships that could dock, by type) and French trucking

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[210]General Dwight D. Eisenhower to Combined Chiefs of Staff, Washington, DC, October 9, 1942, in *The Papers of Dwight David Eisenhower, The War Years: I*, ed. Chandler, 602.

[211]Allied Forces Headquarters, "Agreement with French, November 22, 1942," 4.

[212]Devers, OH-377 (4 of 4), 164, 170-172.

[213]Lubin, "Operation Torch," 17.

capabilities.[214] However, because Clark relegated service units to follow-on convoys, there were no trained service units or even individual technical experts to take advantage of the information.

What the Allies needed to sustain offensive operations was port battalions, which included transportation and railroad companies. Ports processed all requisitions, calculated requirements for automatic supply, maintained a record of all supply, and furnished all supplies, equipment, and troops to the theater. Due to Clark's decision, the United States did not control port operations at Fedala until January 1943.[215] Without the critical technical experts to direct shipping, French merchant ships docked ahead of American vessels, dockhands unloaded post exchange items prior to urgently needed supplies, some cargo returned to the United States because it was never downloaded, and some vessels (like the Lakehurst) took excessive time to unload (three days).[216] Delays resulted forcing ships to remain in harbor and vulnerable to submarine attacks. On November 11 and 12, the Hughes, Scott, Bliss, and Rutledge were torpedoed; the Hughes still carried 90 percent of its cargo.[217] Ironically, the Moroccan ports played an important role in Eisenhower's one logistical contingency plan. He planned on creating an auxiliary ground line of communication stretching from ports in Morocco to Oran to compensate for a shortage of port capacity or increase the throughput of supplies to fighting forces in Tunisia.[218] He planned to move 1,500 tons by rail and 6,100 tons by road per day.[219] However, because of the decision to send service units on subsequent convoys, this plan was

[214]Wilson, 4-5, 9-10.

[215]Ulio, 55-58.

[216]Wilson, 11, 27-28; War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 2," 195.

[217]Wilson, 14; Leighton and Coakley, 446.

[218]Dwight D. Eisenhower, "Copy of Letter to Combined Chiefs of Staff," August 23, 1942, in "Outline Plan for Operation Torch to Combined Chiefs of Staff," 35.

[219]Leighton and Coakley, 469.

unsupportable. Had Eisenhower planned appropriately and not marginalized service units, delays would have been minimal and appropriate supplies pushed forward to combat units.

Finally, at the tactical level, task forces and divisions failed to consider logistical requirements beyond the landing of troops on the beach.[220] Like senior headquarters, they marginalized the role of service units during the invasion and subsequent operations. Although task forces and divisions did include some of their service units, they were reduced by 50 percent or more of their personnel and equipment, and generally short spare parts, vehicles, and ammunition. The First Infantry Division field orders for Operation Torch lacked any guidance on logistical activity.[221] Their failure to include logisticians in the planning process demonstrated either an ignorance or refusal to follow doctrine. "Only by advanced planning at each echelon of command and by timely notification of requirements can the supply system be expected to meet the needs of the troops."[222] Units marginalized logistical requirements and failed to adequately plan mobilization activities prior to deployment, which affected amphibious operations. They failed to include logisticians and service units in planning and initial amphibious operations, constraining their ability to support landings and subsequent operations. Finally, by not developing distribution plans, they continued to marginalize logistics as they began supporting offensive operations in Tunisia. All of these actions limited the task forces' ability to conduct combat operations.

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[220]Wilson, 25.

[221]Headquarters First Infantry Division. "Torch Operations: Field Orders," November 17, 1942, *World War II Operational Documents Collection* (Washington, DC: U.S. Army, 2003), Combined Arms Research Library Digital Library, http://cgsc.contentdm.oclc.org/cdm/ compoundobject/collection/ p4013coll8/id/42/rec/77 (accessed July 17, 2013).

[222]US War Department, FM 100-10, 19-20. "Only by advanced planning at each echelon of command and by timely notification of requirements can the supply system be expected to meet the needs of the troops. Staff estimates based on the line of action are prepared for the commander to aid him in evaluating all factors affecting the attainment of the objective. The administrative estimate/administrative plan contains a statement as to whether the desired line of action can be supported, and, if not, what deficiencies will exist and how if it all, they may be remedied."

Beginning with port operations, each unit required a trained and competent transportation quartermaster officer to inventory all equipment and properly combat load the ship. Units also needed combat load plans to identify the order for storing equipment in the ship. Although units knew the requirements, some failed to assign an individual, and give them the requisite authority to complete the mission, and load plans (Western Task Force). Army SoS representatives at the port ensured that equipment was loaded and that the Western Task Force deployed on time. However, because the task force failed to complete its load plans, not all equipment was loaded appropriately: vehicles and their drivers were not always on the same vessel; artillery that should have been front loaded was behind other vehicles (which delayed its offloading and necessary support during the assault); and some troop accompany equipment was on other vessels that delivered to the wrong port. Also, last minute substitutions and additions added confusion to the process. Units did not always understand that space was limited and shipping constraints remained constant—in requisitioning additional troops, equipment, or supplies a unit needed to sacrifice something of equal size that was already allocated on a scheduled convoy. Units generally did not plan for this constraint and made rushed decisions on what equipment was essential.[223]

The units' failure to include logisticians in the planning and execution phases of the amphibious operation limited the service unit's ability to support combat forces, which constrained operations. In order to sustain their assigned units, service personnel needed to understand the operation, anticipate unit locations, know required support at designated times, and overall Troop Basis (taking into account any intra-task force movements or formation of ad

[223]Wilson, 26-31; Reichman, 1-10; War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 2," 202-206.

hoc units).[224] They also needed to accompany their supported forces in order to establish staging areas, provide maintenance, and facilitate subsequent transportation and distribution operations.[225] Because they excluded logisticians, units ran out of supplies prior to reaching their objectives. For instance, Jonathan W. Anderson[226] halted his division six miles short of Casablanca because it lacked fuel and ammunition to continue the assault.[227]

Feeling overconfident after securing the first three objectives, units preparing for subsequent operations continued to marginalize logistics and service units. Neither the task forces nor the divisions developed distribution plans, and nobody designated locations for depots, warehouses, and supply points.[228] According to doctrine, both commander's guidance and the locations of the combat units along established lines of communication (supply routes) determined where to establish depots, warehouses, and supply and distribution points.[229] Without guidance and incorporation into the planning process, logisticians could not pinpoint the best locations from which to support their assigned units. They also had troubles coordinating support for units assigned to British forces. Although the Allies integrated combat forces, logistics remained segregated between national forces. In planning the operation, they failed to identify how and when British forces conducted resupply. As a consequence, they planned for American

[224]War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 2," 210-211.

[225]Reichman, 6; Ryder; Dabney; Patton, 7-10, 14-35, 38-63.

[226]The Official Website of Arlington National Cemtery, "Jonathan W. Anderson," http://www.arlingtoncemetery .net/jwanderson.htm (accessed February 24, 2014). Jonathan W. Anderson, a cavalry officer, commanded the Third Infantry Division during Operation Torch; his unit was part of the Western Task Force.

[227]Anderson, Publication 72-11, 18-19.

[228]Ulio, 55-58.

[229]US War Department, FM 100-10, 56.

standard three days of supply, and promptly ran out of supplies since the British had an extended resupply rate.[230]

Had the United States Army, at all levels (strategic, operational, and tactical), not marginalized service units and logisticians, but incorporated them into the planning effort, Allied forces would have seized Tunisia in 1942. By planning for the best case scenario, not developing contingencies and general guidance, ignoring doctrine and plans from logisticians, and most critically, excluding service units from the initial invasion force, OPD and theater, task force, and divisional commanders did not plan for success. Although they seized the first three objectives of Casablanca, Oran, and Algiers, they gambled on winning Tunisia with minimal costs (support) and lost.[231] However, Eisenhower learned to appreciate logistics and understood that it controlled all campaigns and limited many.[232] Meanwhile, based on numerous logistical issues that occurred during mobilization and Operation Torch, Somervell gained more influence with Roosevelt who invited him to attend the Casablanca Conference in 1943. Because he was present and overheard the plan for invading Sicily, Somervell completed estimating requirements and began drafting the support plan in February 1943, while Eisenhower and the planners still focused on Tunisia.[233]

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[230]Ryder, 8-9.

[231]General Dwight D. Eisenhower to Combined Chiefs of Staff, Washington,, DC, December 3, 1942, in *The Papers of Dwight David Eisenhower, The War Years: II*, ed. Chandler, 791-793.

[232]Eisenhower, "Eisenhower Report on Torch," 43-44.

[233]Millett, 113-116.

CONCLUSION

> I am learning many things . . . in the higher positions of a modern Army, Navy, and Air Force, rich organizational experience in an orderly, logical mind are absolutely essential to success. The flashy, publicity seeking type adventurer can grab the headlines and be a hero in the eyes of the public, but he simply can't deliver the goods and high command. On the other hand, the slow, methodical, ritualistic person is absolutely valueless in a key position. There must be a fine balance – that is exceedingly difficult to find.[234]
>
> —Dwight D. Eisenhower, Letter to Harry Cecil Butcher

After Operation Torch, many senior military leaders, such as Eisenhower and Marshall, learned the value of balance: balance of the perceived importance of logisticians, reducing biases against them, while improving educational opportunities and their relationship with other organizations; balance of troop and unit allocations, ensuring Troop Basis provides sufficient service units to sustain combat forces; and balance of planning efforts, encouraging leaders to accept and value logisticians' recommendations. Although experience, courage, and discipline remained important attributes, successful leaders needed to balance their decisions with empirical logic and analytical interpretations logisticians provided to ensure feasibility and improve efficiency.[235] Whereas combat forces were essential to fight the war, service units were equally important to sustain fighting and subsequent operations. Marginalization of logisticians prevented them from supporting Operation Torch. This exclusion caused the culmination[236] of Allied forces 16 miles short of Tunis and delayed Patton's assault on Morocco.

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[234]Eisenhower to Butcher, in *The Papers of Dwight David Eisenhower, The War Years: II*, ed. Chandler, 822-825.

[235]Linn, 1-9; Ohl, 7-8.

[236]Carl von Clausewitz, *On War*, eds. Peter Paret and Michael Howard (Princeton: Princeton University Press, 1984), 528. According to Clausewitz, the culminating point is when the advance is halted because the attacker has exhausted his superiority. Headquarters, Department of the Army, Army Doctrine Reference Publication 3-0, *Unified Land Operations* (Washington, DC: Government Printing Office, 2012), 4-49. Similarly, current US Army doctrine defines the culminating point as that "time and space at which a force no longer possesses the capability to continue its current form of operations."

The lessons learned from Operation Torch greatly improved the standing and inclusion of logisticians for the remainder of the war. However, biases that led to the marginalization of logistics remained and persist even today. Following the war, and the improved balance of the force after Operation Torch, leaders slowly shifted back to the original paradigm.[237] This paradigm prevents unity of effort, encourages future Army reductions in service units, and influences combatant commanders to marginalize logistics when planning operations and developing partnered nations' security forces.

Although its situation improved following Operation Torch, SoS never achieved complete unity of effort with the other headquarters during World War II. In 1943, SoS, now renamed Army Service Forces, finally obtained a position on the Joint Logistics Planning Committee, giving it increased influence over field operations.[238] Army Service Forces improved its coordination with the War Production Board and WSA, ensuring that America supplied its military with essential transportation, supplies, and equipment.[239] Meanwhile, belatedly recognizing the need for adequate service units and that logistics governed activities, OPD and AGF began working more efficiently with Army Service Forcs.[240] However, they resented Army Service Forces and its perceived equal position. The animosity remained dormant until after the war, whereupon AGF and OPD successfully lobbied to abolish the headquarters. AGF subsumed the nine service commands, while the WD General Staff gained control over the service branches and agencies. Most procedures and organizational structures transferred intact to the new

[237]Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1970), 65, 76-77, 90-97, and 100. A paradigm is the accepted norm that guides how people think, act, and judge situations. A crisis situation challenges the established order and allows for possible change (assimilation or revolution). However, paradigms have defenders who use phenomena to control results. After the crisis is resolved, defenders attempt to return to the previous established norm.

[238]Millett, 122.

[239]Koistinen, 204.

[240]Millett, 113-116, 120-121.

organizations. What had been combined, to streamline operations, provide requisite authority to make decisions, and successfully sustain the war, was again divided—service commanders no longer held an equivalent position; their status reverted to serving combatant commands (individuals originating from combat arms branches with parochial biases).[241]

After Operation Torch, service units gained immediate prominence in Troop Basis allocations. Besides increasing the total allocation of service units within the Army, divisions (motorized, armored, and infantry) evolved to a more balanced force structure, increased the number of communications, engineer, maintenance, quartermaster, transportation, and military police personnel and became more self-sufficient. Divisions could sustain themselves for limited periods of independent or semi-independent operations. By the war's end, the ratio of combat to service forces was as high as 1:4.[242] Although this number might appear excessive, extended lines of communication in two theaters of operation and limited infrastructure required additional service units. Over the next few decades, the ratio reduced. By 1991, the ratio of combat to service troops deployed during Desert Storm was roughly 1:3.[243] The Army fully integrated combat forces with service forces that maintained the capability to replenish existing forces prior to culmination. The division-centric Army, designed to fight the Cold War, was very effective, but not efficient or quickly deployable.[244] Following victory in Iraq and the end of the Cold War, the United States government pressured the military to reduce its size, while enhancing its ability

[241]Millett, 123, 400, 426-427.

[242]Greenfield, Palmer, and Wiley, 473-474; Schifferle, 168.

[243]Krause and Phillips, 448-449, 472; John J. McGrath, OP 23, *The Other End of the Spear: The Tooth-to-Tail Ratio (T3R) in Modern Military Operations* (Fort Leavenworth, KS: Combat Studies Institute Press, 2007), 41. There are several conflicting figures representing the ratio of combat to service forces during Desert Storm. According to Krause and Phillips the ratio was as low as 1:1.3, but McGrath provides two ratios of 1:2 and 1:3.3 (depending on how the data is configured).

[244]Krause and Phillips, 448-449, 472.

to deploy rapidly and decisively engage the enemy.[245] Senior leaders investigated various options. In 2003, Army Chief of Staff Peter Schoomaker,[246] directed United States Army Training and Doctrine Command to establish Task Force Modularity. Like Marshall, 61 years prior, he restricted the 85 group members from disclosing any information on the planned reorganization of the Army. By excluding the branches from the planning effort, Schoomaker hoped to avoid friction caused through parochial biases and self-interest.[247] Like the Harbord Board and 1942 reorganization of the WD, the Army planned to change its organizational structure and system of logistics; similar to McNair's 1942 perception of service units, senior leaders viewed service units as excessively large organizations.[248]

Modularity shifted the Army from its traditional division–centric focus to concentrate on the more agile and responsive brigade organization. The Army designated three types of maneuver brigades (infantry, stryker, and armor), which received elements of former divisional support units and an enhanced brigade support battalion, allowing the brigade to operate independently for limited periods of time. As a result, higher headquarters at each echelon (division and above) consolidated organizations and responsibilities.[249] Within the logistics community, each division lost its main support battalion and division support command; the new

[245]Jack O'Connor and Sean D. Smith, "The Sustainment Mission Command Capability," *Army Sustainment* (July-September 2013): 6-9, http://www.army.mil/article/106753 (accessed February 23, 2014).

[246]General Peter Jan Schoomaker, a special forces officer, served as the 35 Army chief of staff. The Army recalled him from retirement to assume the position, and he retired a second time in 2007.

[247]William M. Donnelly, *Transforming an Army at War, Designing the Modular Force 1991-2005* (Washington, DC: Center of Military History, 2007), 27-29.

[248]Headquarters, Department of the Army (HQDA), Field Manual Interim (FMI) 3-0.1, *The Modular Force* (Washington, DC: Department of the Army, January 2008), 1-2.

[249]Donnelly, 34; O'Connor and Smith.

brigade support battalion and sustainment brigade subsumed their units, staff, and responsibilities—doing more with fewer individuals (see figure 1).[250]

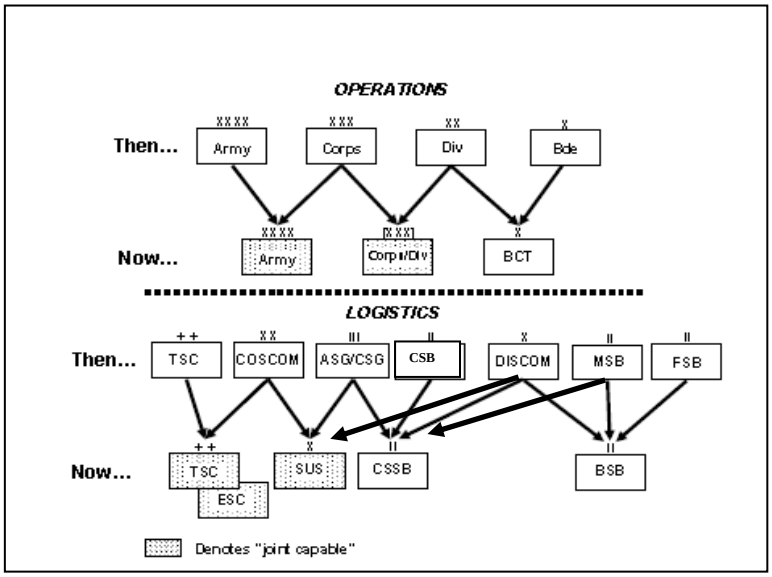

Figure 3. Transformation to Modularity

Source: Data adapted from US Army Command and Staff General College, Student Text 4-1, *Sustainment in the Theater of War* (Fort Leavenworth, KS: US Army Command and General Staff College, June 2012), fig. 2-1, 2-2.

This shift in habitual relationships created gaps that remained unfilled. Divisions lost transport (heavy equipment transports and rough terrain container handlers) and maintenance[251] capabilities, limiting commanders' options and requiring additional external coordination. The

[250]US Army Command and General Staff College, Student Text 4-1, *Sustainment in the Theater of War* (Fort Leavenworth, KS: Command and General Staff College, June 2012), 2-2.

[251]Ibid., 4-32. The four-tiered maintenance system that Somervell instituted during World War II that ensured maximum readiness reverted to a two-tiered system (field and sustainment level) that no longer provided supplementary mechanics at the division and sustainment level for critical equipment; all mechanics for major combat systems now reside within the brigades. "Revising the maintenance system into two levels—field and sustainment—takes the maintenance task away from theater logisticians except for the issue of repair parts supply. It is yet unclear whether the two-level system can function effectively in maintaining OR rates in a large-scale, high-intensity theater**.** Contract maintenance continues to assume a greater portion of overall maintenance operations all the time."

Army changed from supply-based to distribution focused logistics.[252] By pooling resources (for example, consolidating all heavy equipment transport vehicles into a pool of only three active duty transportation companies),[253] creating multifunctional units (merging units with multiple specialties into one combined unit), and not assigning fixed unit structures to sustainment brigades and combat service support battalions, the Army eliminated what it perceived as redundant capabilities. Instead, these headquarters had capabilities that the Army used to support specific missions. The shift reduced the total number of service units, and increased the number of civilian contractors who became the technical experts on maintaining specific equipment and provided a labor pool. The Army implemented these changes while engaged in two wars, Iraq and Afghanistan. By reducing the number of service and support units and the size and number of headquarters elements, and increasing the force by 30,000 troops, the total number of combat (maneuver) brigades increased from 33 to 43 active units.[254] As a result, the new combat to service force ratio of active duty units became 1:1.6.[255]

Now, in 2014, as the Army concludes the war in Afghanistan the Obama administration directs another reduction in forces. As part of the plan to reduce its total force by 80,000 troops, the Army will cut from 11 to 12 brigades. However, these cuts are unbalanced because the Army plans to retain the majority of its maneuver battalions (only reducing the force by three battalions); each remaining brigade gains an additional maneuver battalion with additional tanks, mechanized equipment, and frontline troops that require support. Meanwhile, the plan eliminates

[252]O'Connor and Smith; HQDA, FMI 3-0.1, 1-2.

[253]3d Sustainment Command (Expeditionary) Public Affairs, "233rd Transportation Company Cases Colors," Official Homepage of the United States Army, July 13, 2013, http://www.army.mil/article/61545/ (accessed on March 8, 2014).

[254]Donnelly, 21-22, 34, 53; McGrath, 52 and 67.

[255]McGrath, 47, 51. Numbers fluctuate based on manipulation of data—i.e. the ratio for service forces is higher when including contractors doing logistics functions.

11 brigade headquarters and brigade support battalions (over 8,300 sustainment troops)—cutting the perceived fat of the Army.[256]

Ironically, the concept of modularity is reminiscent of McNair's 1937 and 1942 visions of the Army. He envisioned a force with a reduced service unit footprint—he perceived the Troop Basis for service units as excessive; he wanted to eliminate logistics at the divisional level and enact distribution at brigade level; he proposed pooling vehicles and service units at higher echelons to task organize units to support specific missions.[257] Was McNair a visionary, or is the Army implementing a flawed plan that cannot sustain continued operations for an expeditionary Army, as senior combatant commanders learned during Operation Torch? The current plan marginalizes logistics and fails to recognize additional requirements during the initial stages of an operation and war; it relies heavily upon civilian contracted support which is not always reliable.

Some problems associated with continued reduction and marginalization of service units became apparent during the last two years United States forces remained in Iraq. In 2009, the Army faced competing requirements, withdrawal of United States forces and continued developmental assistance of Iraqi Security Forces—both relied heavily on logistics for success.[258] The Army needed service units to coordinate the evacuation of troops, equipment, and supplies, and close down installations. It also required service units to partner with the newly fielded (created) Iraqi service units; in their rush to build combat forces to gain control and minimize violence in Iraq, the United States Army marginalized and excluded the development of Iraqi

[256]Sydney J. Freedberg Jr., "Army Cuts 10 Combat Brigades – Or 11, Or 13 – And That's Just the Beginning," *Breaking Defense*, June 25, 2013, http://breakingdefense.com/2013/06/army-cuts-10-combat-brigades-or-11-or-13-and-thats-before-sequester/ (accessed March 3, 2014).

[257]Greenfield, Palmer, and Wiley, 175, 206-208, 213-214, 287-288, 307-308, 332.

[258]US Department of Defense, "Measuring Stability and Security in Iraq, June 2010," *Report to Congress in Accordance with the Department of Defense Appropriations Act 2007* (Section 9010, Public Law 109-289), Washington, DC: US Department of Defense, August 2010, http://www.defense.gov/pubs/pdfs/June_9204_Sec_Def_signed_20_Aug_2010.pdf. (accessed March 8, 2014), viii.

service units for four years (2004-2009).[259] Iraqi Security Forces had neither the equipment, nor the logistics systems to sustain themselves.[260] As a result, they (like the French following the North African invasion) relied heavily on United States logistical support, overtaxing their capabilities.[261]

Logic dictates that an increase in requirements mandated a corresponding increase in service units and logistics military transition teams deployed to accomplish both missions. However, this increase did not occur. In order to achieve the hard deadline of withdrawing all United States forces from Iraq by December 2011, the Army instituted phased reductions in forces. Because military transition teams had largely achieved the desired conditions of training the Iraqi Army (combat forces), Multi-National Forces-Iraq discontinued the teams. The mission of partnering and training the Iraqi Security Forces transitioned to the newly renamed Advise and Assist Brigades—allowing the Army to reduce its total force by about 3,000 soldiers. These brigades were normal maneuver brigades augmented with up to 50 additional advisors.[262] This arrangement tasked the brigade support battalion, which was allotted only enough soldiers to sustain the brigade, with coordinating the movement and closure of forward operating bases, while simultaneously training newly formed, partnered Iraqi service units. Senior leaders accepted that given the time left for partnering, Iraqi Security Forces would not achieve a parity

[259]US Department of Defense, viii-x; Brigadier General Keith C. Walker, "Culmination Briefing," Iraq Assistance Group, MNF-I, May 31, 2009, http://waronterrornews.typepad.com/home/2009/06/bg-keith-walker-reports-successes-in-iraq.html#more (accessed March 8, 2012).

[260]Brigadier General Michael Smith, interview by Contemporary Operations Study Team, March 19-20, 2012, Combat Studies Institute, Fort Leavenworth, KS, 33.

[261]Brigadier General Steven Salazar, interview by Contemporary Operations Study Team, April 24, 2012, Combat Studies Institute, Fort Leavenworth, KS, 5-6.

[262]Staff Sergeant Luke Koladish, "Iraq Assistance Group Cases Colors," Defense Video and Imagery Distribution System, entry posted June 4, 2009, http://www.dvidshub.net/news/34514/iraq-assistance-group-cases-colors#.UxvJl9iYaM8 (accessed March 8, 2014); Lieutenant General Keith C. Walker, interview by Contemporary Operations Study Team, May 16, 2012, Combat Studies Institute, Fort Leavenworth, KS, 8.

level of competence—instead, they accepted a lower standard that they referred to as "Iraqi good enough."[263] Had senior leaders and planners at Multi-National Forces-Iraq not marginalized logistics, when first building Iraqi Security Forces, and planned for a more balanced force capable of sustaining itself, they would have been better postured to secure their nation.

Excluding logisticians from planning efforts and limiting their allocation within the Army prevents unity of effort and results in imbalanced forces difficult to sustain. During Operation Torch, Army leaders learned the consequences of marginalizing logistics. After the operation, they made appropriate changes and won the war. The Army needs logisticians to anticipate strategic requirements and overcome constraints. The Army needs service units to sustain its combat forces. "To deprive the field commander of essential supplies reduces his otherwise effective Army to the status of a force equipped only with primitive means of combat."[264] Prior to its demise, Army Service Forces provided very sage advice for both the Army and logistics planners:

> It cannot be too strongly emphasized that the demand for service troops exists even before the activation of combat units. Adequate percentages of manpower must be provided early in any mobilization program. The need for these units upon initiation of mobilization is very nearly immediate and is urgent upon the initiation of active combat operations. Pressure during early phases of mobilization to reduce requirements for service troops in order to permit allocation of higher percentages of the available manpower to combat units must be expected. It is the duty of the service planners to keep the service requirements to the minimum but also ensure that there are sufficient troops to accomplish the mission.[265]

[263]Larry Kaplow, "The End of the War in Iraq: Just 'Good Enough,'" *Newsweek*, January 2, 2009, http://www.newsweek.com/end-war-iraq-just-good-enough-78323 (accessed March 8, 2014).

[264]US War Department, FM 100-15, 39.

[265]War Department, Special Staff, Historical Division, "History of Planning Division, ASF, Vol. 2," 209.

BIBLIOGRAPHY

3d Sustainment Command (Expeditionary) Public Affairs. "233rd Transportation Company Cases Colors." Official Homepage of the United States Army. Posted July 13, 2013. http://www.army.mil/article/61545/ (accessed March 8, 2014).

Allied Forces Headquarters. "Agreement with French, November 22, 1942." *World War II Operational Documents Collection.* Washington, DC: US Army, 2003. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/singleitem/collection/p4013coll8/id/2906/rec/3 (accessed July 17, 2013).

———. "Lessons of Operation Torch," January 19, 1943. *World War II Operational Documents*. Washington, DC: US Army, 2003. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/singleitem/collection/p4013coll8/ id/63/rec/6 (accessed July 17, 2013).

———. "History of Allied Force Headquarters, Part 1." *World War II Operational Documents Collection*. Washington, DC: US Army, September 20, 1965. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/singleitem/collection/p4013coll8/id/2777/rec/2 (accessed July 17, 2013).

Anderson, Charles R. Publication 72-11, *Algeria-French Morocco*. Washington, DC: US Army Center of Military History, 1993.

———. Publication 72-12, *Tunisia*. Washington, DC: US Army Center of Military History, 1993.

Atilano, John A., LTC, U.S.A. "The Trans-Atlantic Essay Contest and the Planning Principles of the North African Campaign." Monograph, School of Advanced Military Studies, US Army Command and General Staff College, Fort Leavenworth, KS, 2013.

Atkinson, Rick. *An Army at Dawn: The War in North Africa, 1942-1943.* New York: Henry Holt and Company, 2002.

Bykofsky, Joseph, and Harold Larson. *The Transportation Corps: Operations Overseas*. Washington, DC: Center of Military History, US Army, 1990.

Carr, Vincent M. Jr. "The Battle of Kasserine Pass: An Examination of Allied Operational Failings." Research Report, Air Command and Staff College, Maxwell AFB, AL, 2003. http://www.dtic.mil/get-tr-doc/pdf?AD=ADA424990 (accessed January 25, 2014).

Citino, Robert M. *Blitzkrieg to Desert Storm, The Evolution of Operational Warfare.* Lawrence, KS: University Press of Kansas, 2004.

———. *The German Way of War: From the Thirty Years' War to the Third Reich*. Lawrence, KS: University Press of Kansas, 2005.

Clausewitz, Carl von. *On War.* Edited and translated by Peter Paret and Michael Howard. Princeton: Princeton University Press, 1984.

Clark, Edwin N. “Papers, 1933-81.” Army Records and Papers – 1942 (1), Box 2. Dwight D. Eisenhower Presidential Library, Abilene, KS.

Conservapedia. “Operation Torch.” http://www.conservapedia.com/Operation_Torch (accessed January 25, 2014).

Cooper, Matthew. *The German Army 1933-1945.* Chelsea, MI: Scarborough House, 1978.

Crawford, Richard H., and Lindsley F. Cook. “United States Army in World War II, Statistics,” April 9, 1952. *World War II Operational Documents Collection.* Washington, DC: US Army, 2008. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/singleitem/collection/p4013coll8/id/2396/rec/14 (accessed July 17, 2013).

D’Este, Carlo. *Decision in Normandy*. New York: HarperPerennial, 1994.

Devers, Jacob L. Interview by Dr. Maclyn P. Burg, August 19, 1974. OH-377 (1 of 4). Oral history interview transcript. Dwight D. Eisenhower Library, Abilene, KS.

———. Interview by Dr. Maclyn P. Burg, February 4, 1975. OH-377 (3 of 4). Oral history interview transcript. Dwight D. Eisenhower Library, Abilene, KS.

———. Interview by Dr. Maclyn P. Burg, July 2, 1975. OH-377 (4 of 4). Oral history interview transcript. Dwight D. Eisenhower Library, Abilene, KS.

Donnelly, William M. *Transforming an Army at War, Designing the Modular Force 1991-2005.* Washington, DC: Center of Military History, 2007.

Echevarria II, Antulio J. “American Operational Art, 1917-2008.” In *The Evolution of Operational Art: From Napoleon to the Present,* edited by John Andreas Olsen and Martin van Creveld, 137-165. New York: Oxford University Press, 2011.

Eisenhower, Dwight D. “Eisenhower Report on Torch.” In *World War II Operational Documents Collection*. Washington, DC: US Army War Department, 2004. http://cgsc.contentdm.oclc.org/cdm/singleitem/collection/p4013coll8/id/110/rec/23 (accessed July 17, 2013)

———. *The Papers of Dwight David Eisenhower, The War Years: I.* Edited by Alfred D. Chandler, Jr. Baltimore: Johns Hopkins Press, 1970.

———. *The Papers of Dwight David Eisenhower, The War Years: II.* Edited by Alfred D. Chandler, Jr. Baltimore: Johns Hopkins Press, 1970.

———. *The Papers of Dwight David Eisenhower, The War Years: V.* Edited by Alfred D. Chandler, Jr. Baltimore: Johns Hopkins Press, 1970.

———. “Outline Plan for Operation Torch to Combined Chiefs of Staff,” August 25, 1942. In *World War II Operational Documents Collection.* Washington, DC: US Army, 2003. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/compoundobject/collection/p4013coll8/id/1250/rec/113 (accessed July 17, 2013).

Freedberg, Sydney J. Jr. “Army Cuts 10 Combat Brigades – Or 11, Or 13 – And That’s Just the Beginning.” *Breaking Defense,* June 25, 2013. http://breakingdefense.com/2013/06/army-cuts-10-combat-brigades-or-11-or-13-and-thats-before-sequester/ (accessed March 3, 2014).

Gharajedaghi, Jamshid. *Systems Thinking, Managing Chaos in Complexity: A Platform for Designing Business Architecture*. 2nd ed. Boston: Elsevier, 2006.

Greenfield, Kent Roberts, ed. *Command Decisions*. Washington, DC: Center of Military History, US Army, 1987.

———. *The War Against Germany and Italy: Mediterranean and Adjacent Areas.* Washington, DC: Center of Military History, 1988.

Greenfield, Kent Roberts, Robert R. Palmer, and Bell I. Wiley. *The Army of Ground Forces: The Organization of Ground Combat Troops*. United States Army in World War II Collection. Washington, DC: Historical Division, Department of the Army, 1947.

Gruenther, Alfred. Interviewed by Ed Edwin, April 20, 1967. OH-113. Oral history interview transcript. Dwight D. Eisenhower Library, Abilene, KS.

Handy, Thomas T. “Diary, Operations Division, March 29-July 31, 1942.” *World War II Operational Documents Collection.* Washington, DC: US Army, 2008. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/compoundobject/collection/p4013coll8/id/2296/rec/49 (accessed July 17, 2013).

———. “Diary, Operations Division, August 1-October 31, 1942.” *World War II Operational Documents Collection.* Washington, DC: US Army, 2008. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/compoundobject/collection/p4013coll8/id/2326/rec/102 (accessed July 17, 2013).

———. “Diary, Operations Division, November 1-December 31, 1942.” *World War II Operational Documents Collection.* Washington, DC: US Army, 2008. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/compoundobject/collection/p4013coll8/id/2315/rec/76 (accessed July 17, 2013).

———. Donated by Mary Handy Parker, May 22, 1973. OH-486 (2 of 4). Oral history interview transcript. Dwight D. Eisenhower Library, Abilene, KS.

———. Donated by Mary Handy Parker, December 18, 1975. OH-486 (3 of 4). Oral history interview transcript. Dwight D. Eisenhower Library, Abilene, KS.

Harrison, Gordon A. *Cross-Channel Attack, the European Theater of Operations*. Washington, DC: US Government Printing Office, 1951.

Harry S. Truman Presidential Library, “Desegregation of Armed Forces Folder 1943.” Record Group 220: Records of the President's Committee on Equality of Treatment and Opportunity in the Armed Services. http://www.trumanlibrary.org/whistlestop/study_collections/desegregation/large/ index.php (accessed November 22, 2013).

Headquarters, Department of the Army. Field Manual-Interim 3-0.1, *The Modular Force*. Washington, DC: Department of the Army, January 2008.

Headquarters, First Infantry Division. "Torch Operations: Field Orders," November 17, 1942. *World War II Operational Documents Collection.* Washington, DC: US Army, 2003. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/compoundobject/collection/p4013coll8/id/42/rec/77 (accessed July 17, 2013).

Headquarters, Joint Chief. "Combat Estimate, French Morocco Army, May 1, 1942." *World War II Operational Documents Collection.* Washington, DC: US Army, 2007. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/compoundobject/collection/p4013coll8/id/1972/rec/96 (accessed July 17, 2013).

Headquarters, Mediterranean Base Section. "MBS History, Volumes I and II, September 1942-October 1943." *World War II Operational Documents Collection.* Washington, DC: US Army, 2007. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/compoundobject/collection/p4013coll8/id/1703/rec/61 (accessed July 17, 2013).

Headquarters, Services of Supply. "Embarkation-Debarkation Procedures: 1942-1943," December 21, 1943. *World War II Operational Documents Collection.* Washington, DC: US Army, 2003. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/compoundobject/collection/p4013coll8/id/844/rec/56 (accessed July 17, 2013).

Howe, George F. *Northwest Africa: Seizing the Initiative in the West*. Washington, DC: Office of the Chief of Military History, Department of the Army, 1957.

Huston, James A. *The Sinews of War: Army Logistics 1775-1953*. Washington, DC: Office of the Chief of Military History, 1966.

Jervis, Robert. *System Effects: Complexity in Political and Social Life*. Princeton, NJ: Cambridge: University Press, 1997.

———. "Thinking Systemically About Geopolitics." *Geopolitics* 15, no. 1 (2010): 165-171.

Johnson, David E. "From Frontier Constabulary to Modern Army: The U.S. Army Between the World Wars." In *The Challenge of Change: Military Institutions and New Realities, 1918-1941*, 162-219. Lincoln, NE: University of Nebraska Press, 2000.

Kaplow, Larry. "The End of the War in Iraq: Just 'Good Enough.'" *Newsweek*, January 2, 2009. http://www.newsweek.com/end-war-iraq-just-good-enough-78323 (accessed March 8, 2014).

Kitchen, Mark D., Major, U.S.A. "The North Africa Campaign: A Logistics Assessment." MMAS Thesis, East Texas State University, Texarcana, TX, 1991. http://www.dtic.mil/dtic/tr/fulltext/u2/a257095.pdf (accessed November 17, 2013).

Koistinen, Paul A.C. *Planning War, Pursuing Peace: The Political Economy of American Warfare, 1920-1939*. Lawrence, KS: University Press of Kansas, 1998.

Koladish, Luke. "Iraq Assistance Group Cases Colors." Defense Video and Imagery Distribution System, Posted June 4, 2009. Defense Video & Imagery Distribution System. http://www.dvidshub.net/news/34514/iraq-assistance-group-cases-colors#.UxvJl9iYaM8 (accessed March 8, 2014).

Krause, Michael D., and R. Cody Phillips, eds. *Historical Perspectives of the Operational Art.* Washington, DC: Center of Military History, US Army, 2007.

Kuhn, Thomas S. *The Structure of Scientific Revolutions.* Chicago: University of Chicago Press, 1970.

Lee, Ulysses. "Employment of Negro Troops." In *World War II Operational Documents Collection.* Washington, DC: US Army Center of Military History, 1963. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/singleitem/collection/p4013coll8/id/3989/rec/49 (accessed July 17, 2013).

Leighton, Richard M., and Robert W. Coakley. *Global Logistics and Strategy 1940-1943*. Washington, DC: Office of the Chief of Military History, 1955.

Linn, Brian McAllister. *The Echo of Battle: The Army's Way of War.* Cambridge, MA: Harvard University Press, 2007.

Lubin, Ryan. "Operation Torch: The Planning and Performance of Amphibious Operations in North Africa." Senior Thesis, Georgia College and State University, Milledgeville, GA, 2011. http://www.gcsu.edu/history/docs/geog_cap/geog4970_thesis_lubin_2011.pdf (accessed January 25, 2014).

March, James G., and Chip Heath. *A Primer on Decision Making: How Decisions Happen*. New York: Free Press, 1994.

Matheny, Michael R. *Carrying the War to the Enemy: American Operational Art to 1945.* Norman: University of Oklahoma Press, 2011.

Matloff, Maurice. *American Military History Volume 2: 1902-1996.* Conshohocken, PA: Combined Books, 1996.

Matson, Ralph A., Captain. "World War II Family Letters." Transcribed by Estelle Smart Matson, 1980. Matson Family Personal Records, Salt Lake City, UT.

McGrath, John J. OP 23. *The Other End of the Spear: The Tooth-to-Tail Ratio (T3R) in Modern Military Operations.* Fort Leavenworth, KS: Combat Studies Institute Press, 2007.

Meyer, Leo J. "The Decision to Invade North Africa." In *Command Decisions,* edited by Kent Roberts Greenfield, 173-198. Washington, DC: Center of Military History, US Army, 1987.

Millett, Allan R., and Williamson Murray, eds. *Military Effectiveness, Volume II: The Interwar Period*. New York, NY: Cambridge University Press, 2010.

Millett, John D. *The Organization and Role of the Army Service Forces*. United States Army in World War II Collection. Washington, DC: Center of Military History, US Army, 1985.

Murray, Williamson. "Operation Torch: Allied Invasion of North Africa." *World War II* (November 2002). Published online, June 12, 2006. http://www.historynet.com/operation-torch-allied-invasion-of-north-africa.htm (accessed January 25, 2014).

O'Connor, Jack, and Sean D. Smith. "The Sustainment Mission Command Capability." *Army Sustainment* (July-September 2013): 6-9. http://www.army.mil/article/106753 (accessed February 23, 2014).

The Official Website of Arlington National Cemetery. "Jonathan W. Anderson." http://www.arlingtoncemetery. net/jwanderson.htm (accessed February 24, 2014).

Ohl, John Kennedy. *Supplying the Troops: General Somervell and American Logistics in WWII.* DeKald, IL: Northern Illinois University Press, 1994.

Olsen, John Andreas, and Martin van Crevald, eds. *The Evolution of Operational Art, From Napoleon to the Present*. Oxford, UK: University Press, 2011.

Peppers, Jerome G. *History of United States Military Logistics 1935-1985*. Huntsville, AL: Logistics Education Foundation Publishing, 1988.

Reichman, F. J. "Report of Army Ground Force Observers, December 24, 1942-January 15, 1943." *World War II Operational Documents Collection.* Washington, DC: US Army, 1999. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/singleitem/collection/p4013coll8/id/3385/rec/27 (accessed July 17, 2013).

Ross, William F., and Charles F. Romanus. *The Quartermaster Corps: Operations in the War Against Germany*. Washington, DC: Center of Military History, US Army, 1991.

Ruppenthal, Roland G. *European Theater of Operations: Logistical Support of the Armies*. Washington, DC: Center of Military History, 2000.

———. *Logistical Support of the Armies, Vol. I: May 1941-September 1944*. Washington, DC: Center of Military History, US Army, 2000.

Salazar, Steven. Interview by Contemporary Operations Study Team, April 24, 2012. Combat Studies Institute. Fort Leavenworth, KS.

Schifferle, Peter J. *America's School for War: Fort Leavenworth, Officer Education, and Victory in World War II*. Lawrence, KS: University Press of Kansas, 2010.

Service, Supply, and Procurement Division, War Department General Staff. *Logistics in World War II, Final Report of the Army Service Forces*. Washington, DC: Center of Military History, US Army, 1993.

Smith, Michael. Interview by Contemporary Operations Study Team, March 19-20, 2012. Combat Studies Institute. Fort Leavenworth, KS.

Strategic Logistics Branch, Planning Division, Army Service Forces. "History of Planning Division, ASF, Vol.8." *World War II Operational Documents Collection*. Washington, DC: War Department, 1945. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/compoundobject/collection/p4013coll8/id/1779/rec/32 (accessed July 17, 2013).

Tuomey, Michael Sean. "The Culminating Point: The Lessons of Clausewitz and Operation TORCH." *Translog* (Fall 2009): 10-13. http://go.galegroup.com/ps/i.do?id=GALE%7CA215842 032&v=2.1&u=97mwrlib&it=&p=AONE&sw=w (accessed November 12, 2013).

US Army Command and Staff General College. Student Text 4-1, *Sustainment in the Theater of War*. Fort Leavenworth, KS: US Army Command and General Staff College, June 2012.

US Department of the Army. Army Doctrinal Reference Publication 3-0, *Unified Land Operations*. Washington, DC: Government Printing Office, 2012.

US Department of Defense. "Measuring Stability and Security in Iraq, June 2010." *Report to Congress in Accordance with the Department of Defense Appropriations Act 2007* (Section 9010, Public Law 109-289). Washington, DC: US Department of Defense, August 2010. http://www.defense.gov/pubs/pdfs/June_9204_Sec_Def_signed_20_Aug 2010.pdf. (accessed March 8, 2014)

US Naval War College. *Sound Military Decision*. 1942. Reprint Fort Leavenworth, KS: School of Advanced Military Studies, US Army Command and General Staff College, 1987.

US War Department. FM 100-5, *Field Service Regulations, Operations*. Washington, DC: US Government Printing Office, 1941.

———. FM 100-10, *Field Service Regulations, Administration*. 1940. Reprint with Changes Number 1 and 2 by Order of George C. Marshall. Washington, DC: US Government Printing Office, 1942.

———. FM 100-15, *Field Service Regulations, Large Units*. Washington, DC: US Government Printing Office, 1942.

Walker, Keith C. "Culmination Briefing." Iraq Assistance Group, MNF-I, May 31, 2009. http://waronterrornews.typepad.com/home/2009/06/bg-keith-walker-reports-successes-in-iraq.html#more (accessed March 8, 2012).

———. Interview by Contemporary Operations Study Team, May 16, 2012. Combat Studies Institute. Fort Leavenworth, KS.

War Department, Special Staff, Historical Division. "History of Planning Division, ASF, Vol.1." *World War II Operational Documents Collection*. Washington, DC: War Department, 1945. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/compoundobject/collection/p4013coll8/id/1304/rec/51 (accessed July 17, 2013).

———. "History of Planning Division, ASF, Vol.2." *World War II Operational Documents Collection*. Washington, DC: War Department, 1945. Combined Arms Research Library

Digital Library. http://cgsc.contentdm.oclc.org/cdm/compoundobject/collection/p4013coll8/ id/1773/rec/33 (accessed July 17, 2013).

———. "History of Planning Division, ASF, Vol.3." *World War II Operational Documents Collection*. Washington, DC: War Department, 1945. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/compoundobject/collection/p4013coll8/id/1806/rec/82 (accessed July 17, 2013).

_____. "History of Planning Division, ASF, Vol.4." *World War II Operational Documents Collection*. Washington, D.C.: War Department, 1945. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/compoundobject/collection/p4013coll8/id/1769/rec/41 (accessed July 17, 2013).

Weinberg, Gerhard L. *A World at Arms: A Global History of World War II*. New York: Cambridge University Press, 1994.

Wilson, Arthur R. "Report of Operations in North Africa to Headquarters Services and Supply," December 12, 1942. *World War II Operational Documents Collection*. Washington, DC: US Army, 1946. Combined Arms Research Library Digital Library. http://cgsc.contentdm.oclc.org/cdm/singleitem/collection/p4013coll8/id/61/rec/14 (accessed July 17, 2013).

Wikipedia. "John J. Pershing," "James G. Harbord," "Joseph T. McNarney," "Albert C. Wedemeyer," "Lesley James McNair," "Mark W. Clark," "Thomas T. Handy," "George S. Patton," "Arthur R. Wilson," and "Peter Jan Schoomaker." https://www.wikipedia.org/ (accessed February 2, 2014).