The History of Tank Development in the United States

Author: Joshua Deal

Abstract

American tank development was driven by changes in doctrine and tactics over time. When the United States entered World War One, the Army was quick to incorporate armor into its ranks. As American armor developed, it was hampered by narrow visions of the purpose of armor on the battlefield. Armor was thought to only be useful in close infantry support and pursuit missions. During the interwar years the focus of development was on light and maneuverable tanks. It was not until World War Two that tank tactics matured. The war proved that armor was an essential part of any modern military. Tank on tank tactics were refined. With this came the need to destroy enemy tanks with one accurate shot. This became the focus of tank development toward the end of World War Two and has prevailed to this day. The war also drove the shift from producing many specialized tanks to producing a single multipurpose tank. Tanks became heavier and more powerful in an effort to design an invincible tank that could dominate the battlefield. The main battle tanks of today are a testament to the changes that the United States military has gone through since World War One.

How to Cite: Deal, J., 2010. The History of Tank Development in the United States. Philologia, 2(1). DOI: http://doi.org/10.21061/ph.v2i1.110

WORLD WAR ONE

The story of American armor development began with the technical advancements of World War One. During the war tanks were used for close infantry support and to break through enemy defenses. As the United States entered World War One, in 1917, American Expeditionary Force (AEF) Commander, General John J. Pershing, realized the importance of tanks on the modern battlefield. When the AEF arrived in France, it was apparent that the stalemate of trench warfare could only be broken with the use of the tank. With this understanding, General Pershing commissioned the formation of the United States Tank Corps on December 22, 1917. The Tank Corps was originally commissioned to have two thousand French Renault FT-17 light tanks and two hundred British Mark VI heavy tanks. When the Tank Corps was actually organized, however, it fell short of its original projections. It was made up of twenty–one battalions of Renault light tanks with seventy seven tanks each and eight heavy tank battalions equipped with forty five Mark VI tanks each. The United States began producing its own Renault FT-17s by 1918, but none of these American clones would reach the battlefields of Europe in time to see action.

Captain George S. Patton was the first officer to be given a position in the Tank Corps. After receiving his assignment he became a strong advocate for armored warfare and wrote a doctrine for the Tank Corps after observing French tank operations. Patton emphasized speed and mobility in armor. In describing the tank’s role he wrote, “If resistance is
broken and the line pierced the tank must and will assume the role of pursuit cavalry and ride the enemy to death.” It is clear that Patton intended for tanks to be used in close infantry support to breach enemy defenses and pursue the enemy. His doctrine was a clear copy of French doctrine. For the most part the Tank Corps used the Renault FT-17 because it was well suited to the American armor doctrine of the time. The Renault was little more than an infantryman encased in armor. It was a two man tank equipped with a 37mm cannon and it had a top speed of only 5.5 miles per hour. These vehicles were light and maneuverable, ideal for close infantry support.

On September 12, 1918, the 326th and 327th Armored Battalions, under the recently promoted Colonel Patton, participated in the St. Mihiel Offensive. Patton’s doctrine was put to the test. The advance was slowed by the speed of the tanks, but the Americans were able to break through many heavily defended German positions. Despite the technical setbacks of the Renault, the Tank Corps was able to perform as expected by Patton. Though the war ended shortly thereafter, the Tank Corps had proved its worth.

THE INTERWAR YEARS

After World War One the United States military began to prepare itself for the next war in Europe. The vision of this “future war” would come to plague tank development until the outbreak of World War Two. The concept of future war that was developed was based on World War One tactics. Military leaders assumed that the next European war would be dominated by massed infantry engagements in parallel lines supported by artillery, light tanks, and airplanes. Communication in a future war would be based on electrical wire, such as the phone or telegraph. Radio would only be used to relay information between infantry units. In this vision of a future war, the tank had a strict role of close infantry support and exploitation. There was no room for tanks to develop their own independent role. Instead, armored doctrine and tactics stagnated and remained the same as in World War One.

Naturally, the cavalry felt threatened by the tank and feared that it would be replaced on the battlefield. Many cavalry officers, such as Colonel Patton, supported the mechanization of the cavalry for the sake of using motorized vehicles to supply the horsed cavalry, but felt that the horse should not be replaced.

After the War, George S. Patton continued his work on armored doctrine. He was assigned to Fort Riley, Kansas in 1919. Patton worked to develop the United States armored doctrine that would be used in World War Two. He also wrote many articles on armored tactics and the various uses of tanks outside of infantry support and pursuit missions. Patton petitioned the United States Congress to authorize the creation of an armored force, but had no success. In 1920 Congress felt the need to reorganize the military. In an effort to permit faster mobilization in the event of another major European conflict. General of the Armies of the United States (the highest rank in the Army) John J. Pershing had great influence in the United States after the war and was a popular choice for president though he never ran. He was called to testify in front of a joint session of Congress to give insight on the direction of the reorganization. Pershing testified that the Tank Corps should be subordinated to other branches of the Army. Based on French military reorganization after the war, Pershing believed that the Tank Corps should be a supporting arm of the infantry, not a branch of its own. This was because tanks tactics had not changed since the war. Thus, when Congress passed the National Defense Act of 1920, the act disestablished the Tank Corps and crippled tank development in the United States until the onset of World War Two. Armor was left to the same World War One tactics. Tanks were only to be used for close infantry support and pursuit.

Tank development did not cease, though. The Tank Board was established in 1924 in order to oversee the development of new tanks. The board coordinated with the Infantry Tank School at Camp Meade, Maryland to develop tank doctrine and specifications for tank designs. Together they placed stringent specifications on designs based on a doctrine of lightness. This doctrine of lightness grew out of World War One tactics. The Tank Board determined that tanks would be used for close infantry support and exploitation for use by the infantry, meaning that tanks would be used to rush through holes in enemy lines and pursue the enemy. A five ton limit was placed on light
tank design because transport vehicles of the day could not handle weights over five tons. Similarly a fifteen ton limit was placed on medium tanks because the Army Corps of Engineers determined that current mobile bridge standards could not handle weights over fifteen tons. The current infantry doctrine was inflexible when it came to transportation. The Army refused to make adjustments to its transportation system to accommodate heavier and varied tank designs. Because the Tank Corps was subordinated to the infantry, the tank was left to conform to current standards, which encumbered tank designers. Time and again designs were turned down because they did not meet the specifications established by the Tank board. Tank Design was further crippled by a lack of adequate funding. The Ordinance Department was tasked with testing submitted tank designs and developing new technologies and prototypes. Between 1925 and 1931, the Ordinance Department’s budget was cut to $60,000 a year. The government was not actively trying to hinder tank development, though. It was part of all around Federal budget cuts. Even with these budget cuts, the Ordinance Department was still able to develop and test at least one experimental tank per year.

Most tank designs came from private companies and designers. One such designer was John Walter Christie, a mechanical engineer who developed tracked gun carriers for the United States during World War One. After the war, Christie designed many revolutionary tanks that utilized new suspension systems and various techniques to stabilize tanks so they could fire on the move. In 1928 Christie introduced a high speed tank chassis featuring his innovative suspension system. It was called the Model 1940, because it was considered years ahead of its time. He also engineered the tank so that the tracks could be removed and wheels could be used when the tank traveled on roads, eliminating the need for heavier transport vehicles to get it to the battlefield. Christie’s design was tested by the Ordinance Department for use with the cavalry and infantry, but was turned down because it did not meet the current mechanical specifications outlined by the Tank Board. Christie sold his chassis to the Polish government and the Soviet Union, where it had a great influence on the development of their tanks.

At the beginning of the 1930s, the government was looking to modernize the armed forces. The War Department ordered the mechanization of all branches of the Army in 1930. This meant that infantry vehicles, scout cars, self-propelled artillery, and tanks should be integrated into the Army. The Mechanization Board was formed to oversee this process. It commissioned an experimental armor force at Camp Eustis, Virginia in 1930. The force was to develop tank doctrine and unit organization. But, its operations were delayed by Depression induced budget cuts. This stalled the mechanization of the Army.

In 1931, the new Army Chief of Staff, Douglas MacArthur, reordered the mechanization of the Army. He ordered that the Mechanized Force be organized into the cavalry and that every branch of the Army should mechanize as much as possible. Naturally, the cavalry felt threatened by the tank and feared that it would be replaced on the battlefield. Many cavalry officers, such as Colonel Patton, supported the mechanization of the cavalry for the sake of using motorized vehicles to supply the horsed cavalry, but felt that the horse should not be replaced. But enough commanding officers supported the use of tanks that armor was integrated into the cavalry. The cavalry had specific expectations from tanks, though. Tanks were expected to be capable of exploiting holes in enemy defenses and pursuing the enemy, just as horsed cavalry had. To conform to the cavalry’s tactics, tanks were expected to be fast, mobile, and lightly armed and armored. The cavalry developed its tank doctrine based on these principles.

The National Defense Act of 1920 had subordinated armor to the infantry, so the cavalry could not have armored fighting vehicles. In order to get around this technicality, the cavalry had to call the tank a Combat Car. John Walter Christie’s Model 1940 chassis was customized in order to suit the cavalry’s needs. The cavalry adopted Christie’s T5 Combat Car in 1936 and it entered service as the M1 Combat Car in 1937 as the cavalry’s primary tank. Christie’s design weighed 9.8 tons, had a 250 horse power engine with a top speed of 45 miles per hour, 16mm armor, a four man crew, and three machine guns. This tank was ideal for the cavalry’s armored tactics. It had a high top speed for tanks of the day, making it perfect for pursuing the enemy. But the tank lacked in heavy weapons and would not be
useful in anything other than pursuit. By this time, most tanks had a heavy main gun that could be used to attack defensive positions and other tanks. Due to the nature of the cavalry’s armored doctrine, the M1 Combat Car was never meant for these purposes. It was strictly meant for pursuing the enemy.\textsuperscript{11}

As the cavalry developed its tank doctrine it began to request that radios be used in new tank designs. Radios in tanks would allow for more independent tank operations in which many Mechanized Cavalry commanders were interested. With radios, tanks could be organized into purely armored units that could act independently of the infantry and develop more complex tactics. There were many problems with radios at the time, though. Radios contained fragile tubes that could be shattered during the bumpy ride in a tank, the tuning dials could not be used easily while the tank was moving, the enemy could intercept radio messages from tanks, and the signals could drift into other channels and interfere with more important messages from higher command. The Signal Corps was able to solve many of radio’s problems, though. It was able to make radios smaller and easier to carry. It also found that the use of crystals in the tuning devices would allow for tuning without dials. This tuning was more precise and did not allow drifting. In 1933 Edwin H. Armstrong received a patent for his system of frequency modulation radio, or FM radio. FM signals were immune to static, they provided many frequencies without drift, and their short wavelength would not interfere with other radio signals.\textsuperscript{12} FM radio was perfect for use in tanks. The problems of putting radios into tanks were mostly solved by the time the United States entered World War Two. Use of radio in tanks would set the stage for future developments of tank doctrine that would not mature until after World War Two.

\textbf{WORLD WAR TWO}

Until the invasions of Poland and France, the United States government had never realized how obsolete its tanks and tank doctrine were. Past notions of the “future war”\textsuperscript{15} were thrown out the window as German forces swept over Europe with relative ease. Germany employed heavy, powerful tanks and new armored tactics. The United States had long admired French military structure and had always done its best to imitate the French. During the interwar years the United States and the French subordinated tanks to the infantry. The United States and France were completely lacking in armored divisions. With the defeat of the French, in June 1940, came the realization that the French and United States’ approach to the use of armor was outdated and shortsighted. In response to this revelation, American armor went through profound changes as the nation readied itself for war.\textsuperscript{13}

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The United States Army now looked to German armored forces for guidance on how to reorganize its own. The German military had organized combined arms armored units. These armored units included infantry, artillery, and other support units. German tanks were the main force in these units, and the infantry and artillery were used to support the tanks’ operations. The information that the Americans had about German armored divisions came mostly from German propaganda about the invasions of Poland and France. The Germans gave the impression that they were fully mechanized and that the army was supplied only by motorized vehicles, when in reality most of the German infantry divisions were supplied by horses. These exaggerations caused the United States Army to fully mechanize and rely on motorized vehicles for supply rather than horses. The United States also believed that all the German tanks had guns that were at least 75mm. This was simply not true at the time, but the United States Army began to require that all its tanks have 75mm guns so they could stand a chance in a fight with German tanks. The Americans also believed that the Germans had used their tanks to lead attacks. In reality, German infantry had led the way in all the successful attacks. In fact, infantry battalions outnumbered tank battalions in German armored divisions. The Americans sorely underestimated the role of infantry in German armored organization.\textsuperscript{14}

So the United States Army reorganized its tank divisions based on German exaggerations. Each armored division had eight tank battalions organized into a single brigade containing over 350 tanks. There was also an infantry regiment, made up of two infantry battalions and an antitank company, and a field artillery battalion to support the tanks. The
field artillery battalion contained 105mm howitzers that were used to destroy enemy antitank guns in direct support of the tanks. During the North African campaign, the Americans realized that more infantry was needed to support the tanks. During the Battle of Kasserine Pass, American divisions were spread out and unable to support one another effectively. American armor was decimated and Allied forces were routed. In response to this defeat, the United States Army reorganized in order to coordinate the infantry, armor, and artillery more effectively. By 1943 the Army had added an infantry brigade to every armored division. It had also done away with light tank battalions and, instead, added light tanks to the medium tank battalions as support in an attempt to phase out light tanks. This was because medium tanks could serve the same infantry support role as light tanks and were also able to attack enemy tanks. Light tanks were not suited for tank on tank engagement and did not fit tank tactics at the time. To fix the problem of coordination, the Army organized unique groups called “combat commands.” Rather than being organized into regiments or brigades, tank, infantry and artillery battalions would be organized together in various ways depending on the mission at hand. This allowed tanks, infantry and artillery to cooperate very effectively and ensured that tanks always had the proper support.

During the war the United States continued to develop new and improved tanks. As the war went on, the focus of tank design shifted to one tank that could serve all roles on the battlefield. At the beginning of the war specialized tanks, such as light infantry tanks, cavalry tanks, and heavy tanks, were produced to serve specific roles. The M5 Stuart Light Tank became a favorite for close infantry support at the beginning of the war. The M22 Locust was developed specifically for the airborne infantry. The M22 was designed to be slung under an aircraft and was able to be dropped by parachute into battle. But the war proved that medium tanks could serve multiple roles on the battlefield. Tank tactics had evolved. Tanks were used for close infantry support, breaking enemy defenses, taking and holding ground, and destroying other tanks. It became apparent that it was not reasonable to build specialized tanks in large enough numbers to be effective in their specific roles. It was much easier to mass produce a single tank that could fill all of these roles; so American armor doctrine changed from employing specialized tanks to employing a single tank model. These versatile all purpose tanks were called Main Battle Tanks (MBT).

The M3 Medium Tank was the evolutionary link between specialized tanks and the MBT. It was developed at the Rock Island Arsenal in 1940 to serve as a medium tank and entered production in 1941. It weighed 13.7 tons, had a crew of four, 51mm armor, a 37mm gun, and three .30 caliber machine guns. It served extensively in North Africa and continued to be a British favorite throughout the war.

The M4 Sherman became the first true MBT in the United States Army. Its simple design is what made it so versatile. It was rugged, easy to maintain and highly customizable for different roles on the battlefield. The British Sherman Firefly tank replaced the standard M4 main gun with a 76.2mm 17-pounder cannon well suited to knocking out German tanks. The Sherman Crocodile had flamethrowers and was used in the Pacific theatre to clear Japanese tunnels and bunkers. The Sherman Calliope tank had a rocket launcher attached that was used for artillery support.
There were bulldozers added to Sherman tanks to clear obstacles and hedgerows in Normandy. There were anti-mine Sherman tanks. The Sherman tank chassis was also used for tank recovery vehicles. The Sherman tank was able to fill every role that the Allies needed, which is why it was the first true MBT.20

During World War Two the tank came into its own. Armored tactics were refined during the war. Tanks were no longer seen as being used only for close infantry support and pursuit. MBTs were able to do it all. They could support infantry, take and hold ground, and destroy enemy tanks. They had become an integral part of the Army and gained a new-found respect. The Army Reorganization Act of 1950 reorganized armor as one of the component arms of the Army along with infantry and artillery.21 Armored units were now able to be organized into their own companies and were no longer subordinated to the infantry as support. This finally gave armor the respect that it deserved in the United States Army.

THE COLD WAR AND THE PERFECTION OF THE MBT

By the end of World War Two a trend had developed in tank-on-tank engagements. Tanks began to use guns of a higher caliber with higher muzzle velocity, capable of inflicting great damage on other tanks. Tanks also became heavier, with thicker armor in order to prevent enemy tanks from taking them out. This was a natural escalation in tank-on-tank combat. The focus shifted to accurate first shots that would take out the enemy tank before it could fire back. This trend continued into the Cold War years as technology improved and heavier, faster, and more powerful tanks were developed.

Near the end of World War Two, the M26 Pershing Heavy Tank was put into service. The Pershing was armed with a 105mm gun and a crew of four. Originally the Pershing was designed as a tank killer to hunt and destroy German tanks, but it proved able to serve in all tank roles. The Pershing served as an MBT in the Korean War for some time. But the tank proved to be too heavy and was unsuited to the tactics used in Korea. The M46 Patton was developed in 1951 and became the prominent American MBT of the 1950s. The Patton weighed 48.5 tons, had a crew of five, a 704 horse power engine, a top speed of 30 mph, 102mm armor, a 90mm gun, and three machine guns.22 The United States Army decided to increase the standard gun power on its tanks from 75mm to 90mm. This 90mm gun was not only a bigger round, but it also had a higher muzzle velocity than previous 75mm armed tanks. These guns could reliably destroy an enemy tank at over one-thousand yards. Tank tactics were now firmly based on one hit kills.23

One hit kill tactics were strengthened during the Korean War. Shermans, Pershings, and Pattons all served extensively throughout the war, though the Patton became the favorite of the United States Army due to its powerful 90mm main gun and its fairly high speed and maneuverability. At the beginning of the war, in 1950, the North Koreans were able to mass their armor effectively and drove the South Koreans back considerably. As the war went on, the United Nations’ forces had increasing control over the skies. Close air support was used to destroy many North Korean tanks. So the North Koreans began to spread their armor out and keep it in camouflaged positions to ambush American armor. By the summer of 1951 United States armored tactics had changed. The new tactics focused on taking out enemy armor with one shot, knocking them out before they could do damage.24

After the Korean War, American attention turned to West Germany. The United States military began to prepare for a war in the German countryside. The United States expected that the Soviet Union would come storming across the German countryside with masses of tanks and armored vehicles. The MBT’s operative philosophies would flourish on this battlefield. The battlefield would have been dominated by heavy tanks engaging each other at maximum range in an attempt to score one hit kills. So Cold War tank design was dominated by the tactic of one hit kills. This not only put a focus on larger guns with a greater range, but also on more reliable targeting techniques. In 1960 the M60 was introduced for service. It was also called the Patton, named after its predecessor the M46, but was considered to be a new and improved design compared to the M46. The M60 had a crew of four and weighed in at 58 tons. It was powered by a 750 horsepower engine and had a top speed of 30mph. It was equipped with a 105mm gun and two...
Bigger guns were not the only answer to the search for weapons that could destroy tanks in one hit. During the 1950s, the United States and the Soviets began researching antitank guided missiles. The Soviets had built many different types of missile tanks by the end of the 1950s. The Soviet missile tanks had no turrets though. Soviet guided missiles traveled very slowly and left their tanks vulnerable to the very tanks at which they were firing. The American response to this was the development of the Shillelagh High-Explosive Antitank (HEAT) Missile. The HEAT missile was designed to be fired from a conventional gun. It contains a shaped charge that is able to blow holes in the thickest of armor. In 1966 the M551 Sheridan was developed to fire this new antitank missile. The Sheridan was a lightweight, air transportable tank designed for the airborne. It weighed 17.5 tons, had a four man crew, a 300 hp engine and a top speed of 43mph. The Sheridan featured a 152mm smoothbore gun that was designed to fire the new HEAT missile. The HEAT missile was still in its early stages. It fired slowly and did not have a very good range. Eventually the M60A3 variant of the M60 was developed. The barrel of the M60A3 was smoothbore and shortened so that it could fire the HEAT missile. The M60A3 had little success as a missile tank.

The search continued for a tank that could perform effectively as a standard MBT and a missile tank. Germany to design a new MBT that could defeat any Soviet tank that might potentially be used in an invasion of Central Europe. The project was known as MBT-70. It was to feature the HEAT missile and a 1,500hp engine. Chrysler Defense and the Detroit Diesel division of General Motors were tasked with building prototypes of the MBT-70. Both designs were tested in 1976, and the Army picked Chrysler’s model because it was more cost effective. It began making test vehicles. The first M1 tank was produced in 1980. It was called the Abrams Tank, after General Creighton Abrams. The M1 featured angular, flatplate armor and a lower profile than previous American tanks. It was armed with a 120mm smoothbore gun capable of firing the HEAT missile. The M1 featured steel encased, depleted uranium armor that is virtually impenetrable. Due to this heavy armor, the Abrams weighs in at 73 tons. It is powered by a 1,500 hp turbine engine that is capable of burning nearly any petroleum or alcohol based fuel. The HEAT missile was developed into a round that could be fired at higher speeds, just like a conventional round. The Abrams also features a thermal targeting system. This system allows the tank crew to see thermal outlines of the enemy at long ranges and through buildings and landscapes. This means that the crew can find and kill the enemy before ever being spotted. The Abrams is the most powerful MBT in the world. With its improved HEAT system, it can destroy any tank in the world in excess of 3,000 meters. Through its service in both Gulf Wars, the Abrams has proved that it can be used to destroy any enemy tank, is effective at destroying enemy bunkers and buildings, and is capable of effective close infantry support.

CONCLUSIONS

When the United States entered World War One, it relied on French tanks and tactics. American tank development after the war was bogged down by strict doctrine and a lack of foresight into the possible roles that tanks could play outside of infantry support. When the United States entered World War Two it had to scramble to rewrite armored doctrine and to produce modern tanks. World War Two allowed tanks to come into their own and develop their own roles and tactics. Out of industrial and practical needs came the production of one tank that could fulfill all roles on the battlefield. This Main Battle Tank developed out of the mass production and versatility of the M4 Sherman tank. Throughout the Cold War, MBTs were made heavier and more powerful. Armored tactics put emphasis on heavier tanks that would be able to destroy enemy tanks in one hit. The United States developed heavier, high powered tanks
in preparation for a war against the Soviets in the German countryside. Eventually the M1 Abrams was produced and has become the dominant MBT in the world.

Since the end of World War Two, tank doctrine and tactics have been built around the anticipation of a war with the Soviet Union. Though large, heavy MBTs are ideal for a conventional war in central Europe, they have proven to be less practical in the urban battlefields of today's wars. In close urban warfare and guerilla like insurgencies, a seventy-three ton tank is not the ideal vehicle for patrolling city streets. They are too large and unwieldy in tight urban environments. A smaller, more mobile, light armored vehicle is needed in these situations. The Humvee has been used to attempt to fill this role, but has proven to be under armored and vulnerable to roadside explosives. So it seems that necessity dictates that tank design will once again diversify, moving away from MBTs and towards tanks designed for specific roles.

NOTES

1 LTC Kenneth A. Steadman, “The Evolution of the Tank in the U.S. Army: A Study Prepared for the Commander, Combined Arms Center,” Combat Studies Institute (1982): 1.
2 Captain Dale Wilson, “The American Expeditionary Forces Tank Corps in World War I: From Creation to Combat” (master's thesis, Temple University, 1986), 8–11.
3 Christopher Anderson, Hell on Wheels (London, Greenhill Books, 1999), 5.
4 Ibid., 5, 6.
5 Steadman, “Evolution of the Tank,” 1.
6 Ibid.
7 Ibid., 1–2; Spencer C. Tucker, Weapons and Warfare – Tanks: An Illustrated History of Their Impact (ABC–CLIO, 2004): 61–62.
8 George F. Hoffman, “A Yankee Inventor and Military Establishment: The Christie Tank Controversy,” Military Affairs 39 (1975): 12–16.
9 Steadman, “Evolution of the Tank,” 2–3.
10 Ibid.
11 Tucker, Tanks: History of Their Impact, 64–66.
12 Karl Larew, “From Pigeons to Crystals: The Development of Radio Communications in U.S. Army Tanks in World War II,” Historian 64 (2005): 667–673.
13 Bruce Gundmundsson, On Armor (Westport, CT: Praeger Publishers, 2004): 83–90, 133–136.
14 Ibid.
15 Ibid., 133–138.
16 Tucker, Tanks: History of Their Impact, 112–115.
17 Gundmundsson, On Armor, 145–156.
18 Tucker, Tanks: History of Their Impact, 116–118.
19 Ibid., 118–122.
20 Ibid.
21 John Witeclay Chambers II, “Army Reorganization Act,” in The Oxford Companion to American Military History, http://www.encyclopedia.com/doc/10126-ArmyReorganizationAct.html/ (accessed March 18, 2009).
22 Tucker, Tanks: History of Their Impact, 123–124.
23 Gundmundsson, On Armor, 165–168.
24 Gundmundsson, On Armor, 169–172; Tucker, Tanks: History of Their Impact, 155–157.
25 Tucker, Tanks: History of Their Impact, 156–159.
26 Gundmundsson, On Armor, 168–172.
Tucker, *Tanks: History of Their Impact*, 160–162.

Tucker, *Tanks: History of Their Impact*, 160–162; David Zucchino, *Thunder Run: The Armored Stride to Capture Baghdad* (New York, NY: Atlantic Monthly Press, 2004): 1–5.

**BIBLIOGRAPHY**

Anderson, Christopher. *Hell on Wheels*. Pennsylvania: Greenhill Books, 1999.

Captain Wilson, Dale. “The American Expeditionary Forces Tank Corps in World War I: From Creation to Combat.” Master’s thesis, Temple University, 1986.

Chambers, John Whiteclay II. “Army Reorganization Act.” The Oxford Companion to American Military History, Oxford University Press. 2000. From www.encyclopedia.com. http://www.encyclopedia.com/doc/10126-ArmyReorganizationAct.html (accessed on March 18, 2009).

Gudmundsson, Bruce. *On Armor*. Westport: Praeger Publishers, 2004.

Hoffman, George F. “A Yankee Inventor and Military Establishment: The Christie Tank Controversy.” *Military Affairs* 39(1975): 12–18.

Larew, Karl. “From Pigeons to Crystals: The Development of Radio Communication in U.S. Army Tanks in World War II.” *Historian* 64(2005): 664–667.

LTC Steadman, Kenneth A. “The Evolution of the Tank in the U.S. Army, A Study Prepared for the Commander, Combined Arms Center.” *Combat Studies Institute* (1982): 1–6.

Tucker, Spencer. *Weapons and Warfare*. Santa Barbra: ABC-CLIO, 2004.

Zucchino, David. *Thunder Run: The Armored Stride to Capture Baghdad*. New York: Atlantic Monthly Press, 2004.

**ABOUT THE AUTHOR**

Joshua Deal is from Richmond, Virginia. He is currently a sophomore at Virginia Tech, pursuing a double major in history and political science with a minor in philosophy, and he hopes to attend law school after he finishes his undergraduate studies. His activities at Virginia Tech include being a member of the National Society of Collegiate Scholars and the cofounder and treasurer of the Debate Club. Aside from his schoolwork, Joshua enjoys playing football, spending time with family and friends, and playing guitar.

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1 M24 "Chaffee" light tank, from the United States. It is particularly worth noting that the M36 tank destroyer originally used open-top turrets. However, when M36s went through winter in Korea, snow piled up in these open-top turrets. Generally speaking, US forces were far better trained than their North Korean and Communist Chinese counterparts, so this data does not necessarily accurately reflect the strengths or weaknesses of the tanks. British forces participating in the Korean War brought with them a batch of relatively new Comet tanks. One of these Comets is preserved at the Hong Kong Museum of Coastal Defence. The upgraded version of Comet is the Centurion, which is one of famous and representative tanks of Western nations in the 1950s. Centurion Tank from U.K. At last count, the United States had 1,984 think tanks—nearly a third of the world’s total. American think tanks are constantly researching solutions to a variety of the world’s problems, and then arguing, advocating, and lobbying for policy changes at local, state, and federal levels. Some think tanks, such as the Brookings Institution or the Heritage Foundation, have become household names and are cited frequently by major news corporations. What makes a think tank influential? One way to gauge the influence of a
think tank is to focus on the scholars active in it, their record of publications and other scholarly achievements, and how deeply these have affected the culture's climate of opinion. Our approach in ranking think tanks takes a different tack. The History Learning Site, 25 May 2015. 30 Oct 2020. The North Atlantic Treaty Organisation (NATO) was created in 1949. NATO was seen as being a viable military deterrent against the military might of the Soviet Union. In response to NATO admitting the membership of West Germany, the Soviet Union was to gather all its client states in Eastern Europe into the Warsaw Pact in May 1955. The heart of NATO beat around the military and financial muscle of the United States. However, because the post–war Soviet threat was perceived to be against Western Europe, the headquarters of NATO was based in Br Tank, any heavily armed and armored combat vehicle that moves on two endless metal chains called tracks. Tanks are essentially weapons platforms that make the weapons mounted in them more effective by their cross-country mobility and by the protection they provide for their crews. This article discusses the development of tanks from the beginning of the 20th century to the present. For articles on related military platforms, see amphibious assault vehicle and armoured vehicle. Earliest developments. France’s lead was followed in most other countries; the United States and Italy both assigned tanks to infantry support and copied the Renault F.T. The U.S. copy was the M1917 light tank, and the Italian was the Fiat 3000.

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