If World War I was “a war to end all wars” then World War II was a war that redefined the rules of war. In World War II the machine gun, the tank, and the most powerful weapon the atomic bomb were the best weapons of World War II. Each side had machine guns, and various tanks with the German tanks being the best. The atomic bomb was the most powerful weapon but only used twice and only by the U.S. for it was the only country able to create it.

The machine gun was the most common type of weapon to a soldier on both sides of the front lines. It has evolved tremendously since its first use in WWI, and continues to be the most common weapon used in warfare even today. A main problem of the old firearms was that it fired a single bullet at one time. This causes a problem for when the enemy has already loaded his gun and going to fire before you reload and fire at him. The end result in most cases is death for the slower loader. Basically, it’s speed or lack of it that is the problem, because reloading causes a slowing of the advancement of troops and that is unacceptable in all warfare.

The machine gun was invented in 1807 by reverend, John Forsyth an American who began to patent his percussion ignition system. This system is not like the machine gun of today but it put inventors in the right direction toward today’s machine gun that doesn’t have to be reloaded after every shot. “The bottle of the gun is rotatable over and over on a hollow spindle which led through the wall of the barrel into the chamber. When the bottles is turned 180 degrees
a spring loaded firing pin comes over the opening.\textsuperscript{1} This system of Reverend Forsyth allowed multiple rounds to be chambered over and over again through the barrel increasing fire to more then a single bullet, which allows a soldier to hit a target more then once or multiple targets at a time.

In 1861 the Gatling gun was put into production, which revolutionized rapid fire weapons. Richard Gatling an American from North Carolina is the man responsible for the Gatling gun. The Gatling gun was so good for the reason that its six barrels had a .58\textsuperscript{2} caliber muzzle that could fire two shots a second with a cartridge of 100 hundred\textsuperscript{17} bullets. The Gatling gun worked by turning a hand crank that fixed the bullets into position each time it was turned. When turned and chambered gas would ignite the bullet, exploding it faster from the chamber. Gatling had initially made the gun for soldiers to cover bridges and other crossings.

The Gatling gun and all other multi-barreled were all basically the same and could fire at the same rate for they all adopted the same ignition system. “British Naval Detachment of six Gatling manned by 30 sailors was very effective. This can be judged by the casualty figures British 39 killed 379 wounded. Egyptian 2,000 killed, 500 wounded and captured.”\textsuperscript{3} These figures are very encouraging for an army using this weapon in the Anglo-Egyptian War of 1882. The problem is that the Gatling gun is very heavy and can not be used by troops in the field. For it was to heavy and large to be carried around by infantry and other combat soldiers.

The solution to the heavy Gatling gun was the production of a light weight weapon using

\textsuperscript{1}F.W. Hobart; Pictorial History of the Machine Gun 1972 Drake Publishers New York N.Y. pg.13

\textsuperscript{2}

\textsuperscript{17}

\textsuperscript{3}
nearly the same mechanisms as the Gatling gun but smaller. There are four new types of machine gun invented for the infantry that contained magazines with 20-30 rounds, which can quickly be removed and replaced. There are the light machine guns which are used in the infantry, then the medium machine gun which has more accurate sustained fire. Also there are the general purpose machine gun, which are heavy and hardly ever used by infantry and the heavy machine gun that are mounted on vehicles usually.

Machine guns evolved much through the beginning of the twentieth century until the most advanced machine gun came out in October of 1918 and the end of the first World War. “The first firing managed 877 rounds in bursts at 500 rounds/min. The bullet weighed 707 grains and the maximum velocity reached was 2200ft.” This machine gun was called the Browning .50 caliber machine gun, which was carried by soldiers in battle. The Browning machine gun was invented by John Browning an American who went to Belgium in early 1918 to get a patent. This gun can be fired single shot or rapid fire depending on the adjustment of the gas port.

In World War II Melvin Johnson went a little further with Browning machine gun design and produced the Johnson Machine gun. Johnson was from Boston and educated at Harvard University and Harvard Law School and believed that the current rapid fire gun was insufficient. He implemented more light weight armor with a .30 caliber barrel instead of a .50 making it easier to carry. Johnson also reduced the magazine from 30 rounds to 20 rounds with a more controlled burst of fire to make up for less bullets fired. The armed forces were very impressed with the improvements made to the machine gun. “The gun was used by the Marines in the

---

4 F.W. Hobart pg.48
Pacific and the Army’s First Special force in Italy. About 5,000 guns were produced.”

Americans had their version of the machine gun and so did the British, French, Russian, and Germans. The British used the Bren machine gun that was adopted from the use of the Lewis Gun. The Bren gun was adapted during World War II to have a 7.92 mm round because that round was most available during wartime. The Bren gun was designed to handle a more harsh environment then common machine guns. “There is no doubt that the Bren was one of, if not the most efficient light machine gun used during World War II.”

This came in handy with the war when soldiers were in harsh conditions that original machine guns couldn’t take and that would cause them to break down.

Although all the machine guns from different countries came from the same design as the Gatling gun and used the same design of the Reverend’s igniting system for the rapid fire, there are still some rational differences with each gun. The French after World War I needed to replace the Chauchat, which was the current French model of the machine gun that was faulty and unreliable. “Nine American Divisions were armed with the Chauchat and probably 50 percent of the guns were thrown away as useless.” In 1921 a prototype called the Chatelleraut was produced, that was very similar to Browning automatic rifle. It was faulty and then was improved and renamed Model 24/29. It was used extensively in World War II by French troops and Free Corps.

The French used it against the Germans in the great offensive in North Africa. The improvements made on the Chatelleraut was that it had two triggers, the rear trigger was used for

5

6F.W. Hobart

7F.W. Hobart pg.95
automatic fire and the front was for single shots. This improvement was used to save ammunition for close up fighting in a time when shells and ammo were getting scarce, for the French had been at war since 1939.

The Germans revolutionized the machine gun industry in 1936 by coming up with a rapid fire weapon called the MG 34, which is very light weight at 26 pounds. It has a rate of fire of from 800-900rpm, this combination made it the best infantry gun to come out of World War II. The weight made it more ideal in moving through the combat zone, and the speed of the bullets allow more hits with a spread out aim over the body killing your enemy faster with the multiple shots to his body.

Another improvement on this weapon was that the Germans increased the force of the bullets by using the gases in the gun. “It obtained additional power by using the expansion of the gases at the end of the muzzle to operate a recoil intensifier or muzzle booster which accelerated the barrel backwards.” This kind of technology was implemented by Adolf Hitler when he became Fuhrer in 1933 and gained total control of Germany and all its people. He implemented this to show how great German nationalism and to show the world how innovative Germany could be.

Through all the machine guns different varieties and places of origin it still had one common goal. That goal was to shoot faster and load more quickly so the enemy couldn’t kill as easily as he could kill you. The machine gun was a time saver in general and this made it easier for troops to move through the combat zone with light weight rapid fire weapons that could take out the enemy quickly.
Guns used in 1861 and 1941 have lots of differences and improvements through nearly a hundred years of evolution. In 1861 the Gatling was made for the reason that the one shot guns were to slow, heavy with to much work to reload and fire with safety. The Gatling led the way for future rapid fire guns, with this weapon shooting became easier for the more shots fired the better the odds that you will hit your target.

Through years leading up to World War II the machine gun has come from a turn crank fire to a squeeze trigger mechanism which made it easier to fire. The new machine guns were lighter and easier to reload making warfare easier for any soldier in a tough battle. The best of these new machine guns implemented during the war came from Britain and it was called the Bren machine gun, for it worked the best in the harshest conditions and in a battle reliability on your weapon is the second best thing you have to save your life, with the first being your fellow soldiers. The next benefit that the Bren machine gun had that made it a very essential weapon was that used 7.92mm round, which turned out to be the most available during the war. With these advancements with the Bren machine gun, other Allied nations begin to adopt these machine guns to used in the Normandy invasion for they were the most reliable of all World War II machine guns.

The new machine gun were important in war for they made the advancement of troops faster in battle, like the D-Day invasion. This invasion was on June 6, 1944 and took place on five different beach fronts, with Omaha beach being one of the worst to land on for it had some of the best Nazi soldiers on the beach front and some of the heaviest resistance for the air bombings didn’t do any damage to Omaha beach. The lite weight machine guns were a good addition to the life pack the soldiers carried, for they were already heavy enough for a ocean
invasion.

Being under such gun fire by the Germans the soldiers needed to move fast through water without drowning from a heavy pack. With the confusion and terror of gun fire many soldiers panicked and drowned before getting to the beach. This happened even with the lite weight machine gun for the packs were very heavy and not easy to move fast strapped to their backs.

The next weapon that was used extensively was the tanks. Tanks were a major part of the war effort on both sides of the line. The German Panzer tanks and the new German Tiger tanks were some of the most advanced assault vehicle of their time.

Before the Panzers and the Tigers came about the German army began to rethink the usual tank design and it’s problems. Problems that the original tanks had were that they were not moving well and had light weight armor that made it a death trap to be in if struck with heavy gunfire. The armor was light and when a soldier got caught under fire in the tank it would be impossible for him to get out without getting cooked inside.

Between 1933 and 1945, the German industry developed and produced a series of tank models which were called "Panzerkampfwagen" which means, Armed Fighting Force. The first model of the Panzer tank was called simply the “Panzer I”, a very small light tank that weighed six tons with a crew of two, driver and commander, armed with two light 0.3 machine guns, a 25lb gun and used a diesel engine that were superior to the gasoline engine tanks. This 25lb gun made it difficult to attack enemies that threatened it for it didn’t have good close range defenses, making the earlier tanks a death trap to be in “This tanks was originally made as a training tank.”

Close to a thousand tanks were produced in 1935, and the tank were used by the

---

David Harding; Weapons 5000 B.C. to 2000 A.D. 1980 St. Martins Press Inc. pg. 314
German forces which participated in the Spanish Civil War. Adolf Hitler and Benito Mussolini, the dictator of Italy since 1922, allowed the new tanks to battle in the Spanish War because they wanted to see how they would perform in combat. When World War II started, the German army had nearly 1500 Panzer I tanks. They participated in the blitzkrieg invasion of Poland in 1939, although it was not suitable for front line fighting because of its lack of firepower and very thin armor.

At the end of 1941, the Panzer I tanks were no longer used in combat because they could not withstand heavy bombardment. Next developed by the Germans was the Panzer II, then the Panzer III, the Panzer IV, the Panzer V or the Panther, and then finally, the Tiger tanks. The Panzer II, a light tank, weighed about 10 tons with a crew of three, developed in the mid 1930s as a median until the arrival of the Panzer III and Panzer IV tanks.

The Panzer II was the main tank in the blitzkrieg or “lightning war” invasions of Poland and France. It also participated in the invasion of Russia in 1941, even though it was already obsolete, and lacked armor and firepower. It was armed with a 20mm gun and a coaxial machine gun and is the basis for the other German tanks. The coaxial machine gun meant that gun could be mounted on the tank and be fired in all directions, making the tank a more dangerous weapon.

The Panzer II, even though it became obsolete quickly in the early years of the war, it was still the basis for various other tanks models such as a fast reconnaissance tank, and amphibious tank that was fitted with propellers making water crossing easier and faster. The Panzer II was also faster than the Panzer I and all tanks that the Allies possessed. It had 180hp and could
travel up to 290km\textsuperscript{22} before refueling. This made this tank useful for battle and communications because of its defense capabilities and speed. The Panzer II saw battle until the end of the war in 1945.

The Panzer III which was the main German tank used between 1940 to 1942. The Panzer III is a medium tank which weighed near 20 tons and could carry a crew of five, which is two more then the Panzer II making it easier and more efficient on the battlefield. It had a 37mm shell gun with two machine guns, and later the shell gun changed to a 50mm\textsuperscript{23} gun after World War II started.

The 37mm gun was to weak to destroy the armor on Russian tanks, so a more powerful 50mm gun was installed. “A total of 15,000 were produced.”\textsuperscript{10} Production ended in mid 1943, but production of a self-propelled gun version continued until the end of the war. The Panzer III was most the most evolved tank, and most feared for it took a good blast to harm the thick steel that covered this automatic terror. This thick armor helped out in the Germans Blitzkrieg style warfare, for they could go in fast and with little damage and losses on the way out.

The Panzer IV tank was another step up for the Germans in their quest for the most advanced weapons in order to win the war quickly. It was produced in the mid 1930's before the outbreak of The European War and was also battle tested in the Spanish Civil War. The Panzer IV was a fast tank and weighed five more tons then its brother the Panzer III. Like the Panzer III the new tank could hold five soldiers.

It carried a short-barreled 75mm gun which was 25mm bigger then the average tank gun,
and two machine guns with one having coaxial and one anti-aircraft on top, which could fire up to 3000 rounds. The engines remained the same as the original Panzers, which had 180hp in them. Aside from those changes and a few extra sheets of armor the Panzer IV is not much different then the Panzer III.

The Panzer I through the Panzer IV were tanks that were fast, armored, and battle ready. The German Panzer divisions were composed of hundreds of tanks and artillery pieces that were mounted on fast trucks. The Panzer division were supported by dive bombers, when the Panzer rushed in and broke the enemies front line, which breaks communication and disorganizes the enemy.

With the war going into 1942 and with more pressure being mounted on Germany with America joining the war effort on the side of the allies, Germany need help. To advance more into Russia and help the Italians, Southern Germany began more upgrades to their Panzer divisions. The Panzer V or Panther tanks were produced to help the balance of war go back to Germany’s favor.

The Russians with the winter ending, were gaining morale among the citizens and the troops that were left because pride to fight for “Mother Russia” not for Communism and Joseph Stalin the leader of the Soviet Union. Generals that were set aside by Stalin during his purges were sent to run the front lines and began building better weapons such as T-34 tank that could demolish the armor of the Panzer III.

The Panther tanks were a heavy tank that could withstand a blast from the Russian tanks. The Panther weighed 45 tons, which is 20 more tons more then the previous tanks the Panzer III and four. The Panther was equipped with special armor called sloped armor that could withstand
heavy bombardments. "I saw several German tanks coming across the field toward us; we all opened fire upon them, but we just as well have been firing in the air, for all the good we could do. Every round would bounce off and wouldn’t do a bit of damage." 

It carried a long-barreled 75mm gun, two machine guns, and one anti-aircraft on top with production beginning in 1942. The 75mm gun on the Panther was a very powerful weapon that would make an enemy think twice about engaging it. On November 26, 1942 an American M3 tank platoon sighted a German Panzer division, which turned out to be the first engagement with the German tanks and the Americans. The US soldiers witnessed for the first time how powerful the German tanks could be. "One hit from the German’s high velocity 75mm gun ended the contest" 

Other nations who seen the power of the German tanks began to modify there weapons in order to compensate. The U.S. see his even before they entered the war in 1942 after the attack on Pearl Harbor. During this period the US modified weapons and tanks to defend against the Panzers. The US began to increase firepower among their tanks and other mobile divisions. "To increase artillery firepower, the tables provided twelve rather then eight 155mm guns and eliminated the 75mm guns, which had been assigned to tank destroyer units." The Allies had to reworked weapons to keep up with German tanks.

The Germans were beginning to lose the war, and the continuous Allied bombing made it hard for the Germans to mass produce any kind of weapons, especially big weapons like tanks

---

11David Johnson pg. 195
12David Johnson pg.190
13John Wilson; Maneuver and Firepower: The Evolutions of Divisions and Separate 1997 Jeff Clark Center of Military History Washington D.C. Pg 161
and their secret weapon the V-1 and V-2 rockets. With the bombings the Panthers were rushed into production, and were not properly tested, resulting in many mechanical problems resulting in the abandoning of many new tanks. Above all the Panther tanks dealt well when they worked with the offensive on the eastern front against the Soviet Union.

The next tank that the Germans started to produce was called the Tiger tank and what a monster tank it was. Many of today’s tanks are modeled after its design. It was armed with a most powerful gun that was 88mm, which was used both as a heavy anti-aircraft gun and as an anti-tank gun.

Over 1000 tigers were produced between 1942 and 1944. With its powerful gun and advanced sight, that allowed it to destroy tanks and other enemies from a longer range then any tank of its day. The armor was even thicker then the Panthers making it nearly indestructible. The advanced gun and armor of the Tiger made it hard for fast production and maintenance which is why there were few made in the two years after development.

The Tiger tank with all its armor was a heavy tank weighing 55 tons, that was ran by five soldiers. It could carry 8 rounds for its 88mm gun, also attached were two machine guns, with nearly 6000 rounds. “The 88mm anti-aircraft gun had emerged as a most potent anti-tank weapon capable of settling with even the Matilda at ranges beyond 1000 yards.”

The weight of its armor, which was seven inches thick, made it slower then most tanks and had a lower range of 100km, which became a huge problem during 1943 when the Germans began to lose the war and had a fuel shortage. The Matilda is an anti-tank weapon used by the Germans to blow up enemy tanks, that were up to 1000 yards away.

14Walter Beekman; Tanks and Weapons of World War II 1973 BPC publishing New York pg. 42
Another problem with the Tiger tank and its weight was that it had to have a unique suspension system to carry the weight. Even with this the Tiger tank was easily stuck in rocks and mud making it harder for them to help in the Eastern front against the Russians. If the tanks got stuck it was impossible for the tank to get released before its bombarded and destroyed. On the other hand when the tanks worked and didn’t get stuck the Tiger tanks were unmatched on the battlefield.

The final tank that the Germans designed was one of the biggest tanks ever made it is call the King Tiger tank. It weighed 68 tons which was due to the increased thickness in the armor making it much slower then most tanks in the war. Like the Tiger the King Tiger was very complex, tough to fix, and was rushed into production but the Allied bombing was increased dramatically making it hard to mass produce these heavy beasts of war. The King Tiger had a 88mm gun just like its little brother the Tiger, but this fired high powered armor piercing shells that were a fear of any Allied soldiers going up against them.

Along with the 88mm gun the King Tiger possessed two machine guns that could carry nearly 6000 rounds, like the Tiger could. The King Tiger had some problems that were identical to the earlier Tiger, because they were both complex machine and rushed through production without field tests. In battle many of the King Tigers were deserted for they didn’t work or got stuck in the mud and rough terrain in Russia. When abandoning these tanks the Germans used the slash and burn technique, like the Russians used when the Nazis were first invading. This techniques was used so the enemy wouldn’t get any supplies of information able to be used against the enemy.

The Germans did this for the reason that they didn’t the Allies able to take the tanks and design one for the use against the Germans. The King Tigers were great tanks when they
worked but only about 400 were completed for the war effort because German tanks were at the end of their thirteen years of terror and murder. Another common problem the two Tigers had was that they required large amounts of fuel, for they could go only 100 km before they needed to refuel. This is bad for the Germans, because they have a fuel shortage and need it to keep on divisions running besides the tanks. The Nazis designed these tanks in a last effort to win the war. Adolf Hitler was always stating that they had new secret weapon that would turn the war back to them.

All the tanks that have been discussed were tanks that led the way for the tanks of today in performance and look. The best of all the German tanks was the Panzer IV for it was the fastest and most reliable of all the German tanks. The 75mm gun was a new and improved gun with a 25mm barrel longer than the usual barrel, the longer barrel made it so the Panzer IV could reach longer distance than the average tank.

It was also more reliable for it was more carefully produced and tested than the later Panther and Tiger tanks. The Panzer IV was equipped with the most armor and firing rounds than any other tank of its day. The Panther and Tiger tanks could have been the best tank of its time but due to the heavy Allied bombings it was rushed into production, that created major malfunctions which rendered it most the time useless. When the Tiger and Panthers did work they were a force unmatched by any other tanks of their day.

These tanks participated in the largest and greatest tank battle in the history of war that would test there performance in extreme conditions. This battle took place in and around the city of Kursks, which is a city in Russia. The German Panzer divisions of the first division, second division, third Panzer, sixth, seventh, and eleventh divisions taking part in the battle, with some Tiger tanks used to spearhead through the Soviet defenses
This battle was suspected by the Russians for they were building up troops at Kursk and they knew that Kursk was a key point for the Germans if they wanted to take Stalingrad and grab the oil there. Hitler also wanted a victory so that he could regain initiative in the eastern front and this would avenge their defeat at Stalingrad. The Russians and the Germans were organizing a major force for battle.

The Germans gathered a force of over one million soldiers and three thousand tanks. The battle was fought at very close range almost point blank, which meant that the armor was almost ineffective because the shells are so powerful at close range especially when fired by a Tiger or Panther tank, who had the largest shells ever seen with a tank. Over the course of a day the Germans and the Russians lost close to 300 tanks, due to heavy fighting with no disengagements. These heavy losses to the Germans happened because the Russians were heavily dug into the defenses and were fighting hard. They were fighting not for communism but for Mother Russia, which gave them high morale, thus creating battle ready troops that fight through anything.

Along with the heavy losses, the German tanks began to break down because of the inefficient cooling systems, which turned the tide to the Russians. The Germans tanks began to get separated from their divisions. The Russians soldiers began to destroy the tanks and kill the soldiers using Molotov cocktails to burn the tanks and the enemies out. A Molotov cocktail is a homemade bomb made with pure alcohol that is burned and thrown on the tanks spreading fire uncontrollably.

The Germans began to fall back, with the Russians pursuing them fast and aggressively without mercy. The Germans would never be able to regroup from the losses at Kursk and everything started to look bad for the Germans, especially after they lost the Afrika Corps to the British and American forces. The calling off of Operation Zitadelle which was what Hitler
named the operation that was going to eliminate the force around Kursks and take back initiative in the invasion of the Soviet Union.

Hitler believed this operation would “shine like a beacon to the world” this operation was a major blow to the German forces mostly for the lives lost and the negative morale gave to the German people. The Russians found that they could defeat the Germans and that the Germans were not the best warriors after all. This operation was such a failure that the Germans would never recuperate from it.

The machine guns, and the German tanks of World War II, both were and still are a important weapon in warfare. They are nothing compared to the power that is unleashed with the detonation of an atomic bomb. “The fission of uranium is an artificially produced transformation process that develops about a hundred times more energy than do ordinary nuclear processes.”15 The atomic bomb was and still is a major weapon in war that has been only used twice in war.

It was dropped by America from a bomber plane on Japan in August of 1945 on Hiroshima and Nagasaki. These two bombings without a doubt ended the war and crippled the Japanese. The question still remains the same today, about the decision to drop them. The choice was made by President Truman to drop it for a few reasons, the first one is that the U.S. lost so many soldiers taking the Philippines and Okinawa and was it necessary for the troops to have to march into Japan and die to take it. The other reason for the dropping of the bombs were that Japan had two sections of government. On one side you had the Japanese who wanted to surrender, and on the other side they had the military that wanted to fight till the last man and

this side had the deciding vote.

Another reason for the dropping of the atomic bomb was to show the world and Russia that America had the bomb and would use this. At this time America was very scared of the spread of communism. The belief was that the dropping of the atomic bomb would make Russia more manageable in Europe. One thing that is clear is that the dropping of the atomic bomb on Japan changed the world forever, for now there is a weapon that could destroy the world.

Not everyone agreed about the decision to detonate the two atomic bombs against Japan, but it wasn’t the American public, for they didn’t learn of it until after the detonation. This is not stating that they didn’t after the fact, but the most important person to disagree was American General McCarthur. He believed that the Japanese were finished and ready to surrender at anytime, so it didn’t make sense to him to drop them. Truman did not listen to the General, instead he listened to the former director of war James Byrnes. Byrnes believed that the Japanese would fight to the last and needed a major blow to force them to surrender.

The atomic bomb that was dropped on Hiroshima was named “Little Boy” and it weighed around 9000 pounds. Its bigger brother was called “Fatman” and this one was the bomb that was dropped three days later on Nagasaki, because the Japanese still refused to surrender after the wiping out of Hiroshima. It weighed 10,000lbs\textsuperscript{26} and used the implosion method to trigger the nuclear explosion.

The nuclear process to make uranium react and explode at a nuclear rate is the same in both bombs. One Uranium nucleus contains 92 protons and 143 neutrons, the neutrons are then forced into an atomic nucleus, which increases energy and divides the nucleus into two parts that
are highly charged\textsuperscript{28}. With the separated nucleus so highly charged, they begin to repel each other with energy equal to 200 million volts\textsuperscript{29}. This process begins to multiply over and over again, and forms a chain reaction, that begins the explosion. “The weapon had produced the effects of an explosion of 20,000 tons of TNT.”\textsuperscript{16}

The atomic bomb when detonated creates a bright flash of light and mushroom cloud that would put so much fear in a person to see. The only way to know what it looked like when the bomb went off is to talk to someone who lived through it. “Mr Tanimoto has a discreet recollections that it traveled from east to west, from the city of the hills. It seemed a sheet of sun.”\textsuperscript{17} Both bombs exploded in a circular pattern and covered about 4.4 miles, the best place to be when both these went off, would be right in the blast zone, for a person would be killed in a flash and feel no pain.

Both bombs reached 300,000 degrees centigrade in one second after being detonated. After the initial explosion thermal heat intensifies from the fireball causing sever burns, and eyesight problems. The heat is so intense that it would burn the image of a shirt permanently on to the body. It would also burn the impressions of any shape on to skin if a person happen to be standing in front of something during an atomic blast. Over 350,000 thousand people were killed instantly during both of the attacks, with thousands dying later from the overdose of radiation. Thousands developed inoperable tumors and cancer, and babies were born with numerous deficience such as blindness and retardation. Even to this day people are still having

\begin{flushright}
\textsuperscript{28} John Hersey; Hiroshima, 1946 Alfred Knopf co. New York N.Y. pg. 8
\end{flushright}
defects and complications do to the intense amount of radiation released.

The machine gun, the German tanks, and the atomic bomb are the best and greatest technological leaps used in what is considered to be the war that redefined the rules of war. The machine guns have gone through so many various and great changes that have revolutionized modern warfare. The German tanks were revolutionary and powerful, they started a trend into what a person sees as a tank today, no matter what country that it is being developed in.

The most powerful and most controversial weapon out of World War II, was the atomic bomb. During the war years the atomic bomb was sought by all countries, but the only one to accomplish it was the U.S.. The Germans tried to make an atomic bomb but were unable to get a good supply of uranium to test there nuclear theories, this was the problem with most countries when trying to invent the atomic bomb during World War II. There is one truth about war. The truth is that there will always be war and that means that there will always be powerful weapons that cause destruction and death, but those same weapons can save the lives of your nations soldiers.