THE DEVELOPMENT OF AERIAL WARFARE THROUGH AIRPLANES AND ITS CONSEQUENCES

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The way in which war is conducted has changed multiple times since the beginning of mankind. Even at the very beginnings of society, war and conflict were conducted in an orderly manner, relatively speaking, and have only continued to advance in complexity as time passed. For example, the Ancient Greeks utilized the formations of phalanxes, and primitive naval warfare to conduct military conflict. Approximately one thousand years later, gunpowder based weapons encouraged the development of linear tactics and ranged artillery and infantry. Furthermore, with the development and implementation of brand new technologies, society, and subsequently the military, has adapted and evolved itself to accommodate the rapidly growing world. Using the aforementioned gunpowder developments, once nations realized the military efficiency of rifles and cannons, bowmen and swordsmen became obsolete. The developments of technology have always brought about change in the world around us, and this holds especially true for warfare. Technology forces nations to shift and adapt the way in which they conduct war by adding different layers of complexity and aspects to the art of conducting war. An arguably recent technological advancement, airplanes, opened up another dimension of possibilities to the way in which nations engaged in military conflict. Airplanes and aerial warfare in general were crucial elements to the tactics and strategies employed by countries in past major wars and conflicts. They were the next technological advancement that would drastically alter the face of warfare and the manner in which it was conducted forever. The technological development and advancement of airplanes increased the complexity of warfare by adding on new elements to warfare and enhancing other elements. As stated previously, airplanes are a fairly recent technology, but even at their young age they were capable of shifting the dynamic of war across the globe.

The emergence of the military uses of airplanes would lay the foundation in which airplanes would begin to evolve the art of warfare. It is not an exaggeration to claim that airplanes added a new dimension to military conflicts of the past. While figuratively speaking, aerial warfare would indeed change the world, in a literal sense airplanes opened up a new dimension for war to take place, the sky. Battlefields transitioned from two dimensional zones to three dimensional zones almost instantaneously, and the benefits were immediately apparent. War is not only conducted in terms of destruction and confrontation, as there are tactical and operational aspects that serve just as important of a purpose. One of the earliest documented uses of aerial technology used by any military would be the Union army in the United States Civil War in the 1860s. The Union Army “Balloon Corps” offered the Union primitive aircraft reconnaissance and observation functionality.[[1]](#footnote-1) While these were not airplanes, the “Balloon Corps” served the important role of showing what advantage aerial dominance could provide nations. With soldiers in the air, a military force was able to conduct reconnaissance of enemy forces from a distance. This allowed them to gather information well before any form of confrontation and plan accordingly. Unfortunately, this primitive form of aerial warfare proved to have many liabilities that would be improved upon with the development of military airplanes.

World War I would prove to be the first major global conflict that would feature airplanes as a prominent part of the battles. By this time, around 1914, airplanes have proven to be extremely useful in a military sense. The dirigible aircrafts were a cut above the rest with regards to early 20th century military aircraft. One of the larger dirigible balloons, the German Zeppelin L. Z. IV was 500 feet long, could support a crew of fifteen, and could travel at an average of 40 miles per hour.[[2]](#footnote-2) A large machine such as this had numerous features and strengths that the Germans took full advantage of in World War I. Dirigible aircrafts were especially capable of performing extended tactical reconnaissance operations in the night, and for performing raids in enemy shipyards and supply depots.[[3]](#footnote-3) Ironically, these massive aircrafts were extremely capable of these stealth operations as they stationed at very high altitudes rendering them undetectable. On the smaller end of the aerial warfare spectrum was the traditional airplane. These were much smaller and less expensive than other aircrafts at the time, but they served a unique purpose. Due to the relatively small size and old technology that was present in World War I there were not many bomber planes in operation. Nonetheless these airplanes were responsible for not only reconnaissance and light raids, but also controlling space. Much like in a game of chess where proper pawn placements lead to a decisive victory, maintaining control of aerial space in World War I usually led to a clear win. Many a time, the initial operation during a battle was to control airspace and dissipate the “fog of war”.[[4]](#footnote-4)

The abilities and strengths of airplanes in World War I solidified them as permanent members of military forces across the globe. More importantly, however, the abilities and strengths of airplanes in World War I significantly increased the complexity of the art of conducting war. Aerial reconnaissance, raids, and space became subjects that nations had to implement and learn how to defend against in order to be victorious. This new military technology single-handedly opened a new dimension and realm of possibilities for nations to conduct war. The landscape of the battlefield had opened itself to the sky, and realizing this many nations poured there resources into the development of airplanes and aerial warfare. Weaknesses of airplanes in World War I such as the lack of quick and easy communication[[5]](#footnote-5) would be improved upon in the 1930s and the tactical uses for airplanes would receive a significant update.

World War II served as the period in which airplanes solidified their roles in military forces and allowed them to further alter the way in which war was conducted. One of the major problems with aircraft in World War I was addressed soon after the war had ended. By the time World War II had begun countries such as the United States, had implemented two-way radio systems in most of their aircraft allowing for reconnaissance missions to go more smoothly.[[6]](#footnote-6) The United States was one of the countries during World War II to have invested in an aerial militia, going as far as to establish an Army Air Corps. The United States had decided to utilize airplanes to support the ground forces in fields such as aerial observation, wire laying, and even medical evacuation.[[7]](#footnote-7) As stated previously, airplanes in World War I opened up new categories for the art of war. These developments were further expanded upon in World War II with a new category of aerial support. Airplanes did not enhance warfare through a support role alone; their offensive advancements were immensely improved upon leading to even greater developments to the art of war.

Airplane bombing campaigns during World War II served as the vessel in which airplanes increased the offensive complexity of warfare. A drastic change of airplanes from World War I to World War II was that they were largely capable of bombing operations. The European bombing campaign is especially noteworthy with the British Prime Minister Stanley Baldwin stating that “The bomber will always get through”.[[8]](#footnote-8) The infamous German bombing campaign on Britain during World War II is an example of how an entire nation’s operation can be shut down through the use of aerial warfare. The British would retaliate, with the assistance of the United States, and perform their own aerial bombing campaign on Germany. This is where airplanes began to sophisticate the offensive and strategical elements of warfare. Americans during this bombing campaign focused primarily on Germany’s industrial web.[[9]](#footnote-9) The goal was to shut down resources and supply chains so that the German military would not be prepared in future battles. The developments in airplane technology forced this strategic development of warfare to occur. It simply was more efficient to analyze the enemy’s industrial system and strategically take it down. Another way that airplanes sophisticated the strategic elements of war was exemplified by the British, morale depreciation. The goal of British area-bombing operations was to lower German morale and overall decrease support for the war.[[10]](#footnote-10) While morale depreciation was not a new concept, airplanes extended the range of possibilities for this tactic. It was now possible to ruin an enemy’s morale from long distances away, thus adding it as an option for nations, and further sophisticating the manner in which war was conducted.

As a result of the bombing campaigns in World War II, it was clear to the world that an organizational structure that outlined the usage of airpower was an absolute necessity. War in general would take a drastic shift after World War II with the emergence of nuclear weapons. Consequently, the methods in which airplanes increased the complexity of warfare were growing small. However, airplanes continued to receive technological developments and shifted the focus of aerial warfare entirely.

The rise of nuclear weapons altered the direction in which aerial warfare would advance allowing them to continue to enhance warfare. The threat of nuclear weapons was apparent; at a moment’s notice a weapon could be launched that would kill thousands. As a result, there arose a need for a strong defensive doctrine that would protect against the possibility of a nuclear threat. Japan had been working on a pre-emptive strike doctrine on enemy carriers since the 1930s and in the 1950s would begin to develop it.[[11]](#footnote-11) Japan’s solution was to invest in aircraft that conducted intense surveillance and reconnaissance. One aircraft in particular, the P-1 was notable for its fast speed, long operation time up to 10 hours, and incredible range where the aircraft would relay information back to military facilities.[[12]](#footnote-12) This was one of the first truly defensive aircraft based military projects that came as a result of the rise of nuclear weapons. Technological developments of airplanes created a new form of defense that nations could utilize. This shift in focus for the advancement of airplanes carried over to the modern day. A much more recent advancement that was hypothesized by the United States Air Force was the implementation of standoff jammers onto B-52 planes.[[13]](#footnote-13) This would grant the United States the ability to shut down enemy communication systems, and other resources from within their borders.

Airplanes have been established as a staple of military force for a long time, and through these last sets of developments, has covered all realms of warfare. The airplane introduced new methods of offense, front-line support and defense, and back-line support and defense that sophisticated the manner in which war was conducted. There were now more options that ever before, and nations around the world had to adopt these new methods in order to survive future military conflicts. There remains a question, however, as to why nations would begin to invest so deeply into airplanes. There were many other military technologies that held just as much potential as aircrafts, so what made aircrafts promising?

The developments in aerial technology came as a result of society’s wish for an end to war in general. World War I has occasionally been called “The War to End All Wars”, and although it did not live up to its title, World War I had a huge impact on all people. There was a desire to develop technologies that would deter any conflict through fear since peace seemed to be so far off. Airplanes and an aerial force served as a status symbol, a display of military might aiming to dismay and destroy the morale of any potential enemy.[[14]](#footnote-14) In the hopes of keeping enemies at bay, nations developed first and thought about the usage of the new technologies later. However, it was always unclear as to what would definitively “be enough” to scare off threats, and therefore countries continued to develop their military forces and technologies.[[15]](#footnote-15) As previously mentioned, airplanes were extremely versatile and powerful forms of military technology. For nations that wanted to stay out of conflict for as long as possible by warding off threats, they appeared to be the best choice. A devastating war impacted the world so greatly that nations turned to developing a military “wall” in order to prevent war. The desire to end war resulted only in the creation of more deadly weapons, and the future of airplane technologies is providing further complications.

Future airplane technologies will impact warfare by posing questions regarding the political and social aspects of war. One of the many future possibilities for airplane technologies are drones. These unmanned aircrafts are capable of sensing enemies through virtually all weather conditions while remaining covert, and as stated by the United States military, drones will “provide global vigilance, global reach, and global power”.[[16]](#footnote-16) The main benefit of developing drones in the future falls into two categories. Primarily they are extremely efficient and versatile capable of both surveillance and offense. Drones such as the Phantom Eyecan remain aloft for four days while drones like Switchblade are capable of kamikaze like attacks without sacrificing a human life.[[17]](#footnote-17) This opens the discussion for the other ways in which drones assist nations. They are unmanned, resulting in an overall decrease in casualties in times of military conflict. This also results in the decrease in the size of the active military while still allowing nations to conduct military operations.[[18]](#footnote-18) While these advancements appear to be immensely beneficial for any nation wishing to improve their airplane technology, a question has to be made. Is it right and just to remove the human soldier in order to implement a system that can bring about destruction at the push of a button? Should war be conducted in such a manner that the humanity of the conflict is entirely removed? These question and many more are raised when discussing drones and future developments in military technologies. The future technological advancements of airplanes affect warfare by questioning its morality.

The airplane is an interesting military technology that over the course of the past century has been able to force drastic shifts in the way in which nations conduct war. The largest effect that airplanes have had on warfare is providing multiple better options for nations to choose from when strategizing. Starting from World War I, airplanes created the opportunity for military forces to utilize aerial surveillance, conduct aerial raids, and control air space in battle. These enhancements to warfare were so powerful that they quickly became necessities during World War II. The development of airplane technologies in World War II further sophisticated the art of war. They became a primary offensive force, solid reconnaissance force, and also forced nations to develop operational strategies regarding aerial bombing campaigns. Nations now had the option to choose to attack enemy industry or enemy morale. After World War II airplanes were developed to become a staple defensive force against the threat of nuclear weapons, and opened the door for airplanes to become strategical disrupters. The rise of these airplane technologies can be attributed to warfare itself, where the fear of war forced nations to continue advancing military technologies in the hopes of deterring enemies. However, continuing airplane technologies in the modern era will bring up questions about the morality of warfare. Airplanes have been an instrumental part of the recent developments of warfare as their sheer power was enough to alter the battlefield forever. Airplane technologies increase the complexity of warfare by providing more options to existing elements, and creating elements on its own that force military powers to adapt to it. Arguably only second to nuclear warfare, airplanes have been a significant part of military history and evolution over the last century.

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