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A Preliminary Analysis of the Impact of Artificial Intelligence on World Peace

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Abstract: *As inevitable historical phenomena at different stages of social politics, war and peace are eternal themes in international politics. The development of Artificial Intelligence (AI) promotes world peace and development but also brings challenges to the world. With the advancement of AI, the manpower-and-material-intensive wars have basically changed to be technology-intensive. Meanwhile, the battlefield of modern warfare has grown increasingly AI-featured, so that modern combat systems are not only a powerfully defensive system, but also a precisely targeting one. Combined with terrorism, AI might pose the biggest potential risk, seriously endangering world peace.*

Keywords: *Artificial Intelligence, World Peace, Impact*

While the development of AI promotes world peace and development, it also brings challenges. Engels believed that the combination of technological progress and military objectives would directly lead to changes in military strategy and tactics. [1] New Frontiers of AI Research, released by fourteen experts including Bud Nolan, covered the latest progress of AI. In addition to the fact that AI is able to defeat the world Go champion, it has begun to learn how to play cards. [2] This report has been noted by DeepMind, a well-known institution for international AI research. Released by twenty-six AI experts, "Malicious Uses of AI: Predicting, Preventing and Mitigating," points out that AI is a double-edged sword since AI systems and the knowledge of AI programming can be used for either beneficial or harmful purposes which depends on human intelligence for the right choice. [3] In the near future, AI will pose a profound impact on the implementation of strategies and will disrupt the existing balance of power. [4]

1. AI promotes world peace

A certain level of deterrence would be created along with the extensive use of AI, which could in part positively prevent the outbreak of a world war. Risks in future wars unveiled by comprehensive analysis of the technical characteristics of AI includes: First, the risk of losing control in AI systems. Such condition could happen since Intelligent systems may not be able to operate exactly by the human will. Second, the ethical risks of AI warfare. Among the various ethics aspect of AI warfare, it requires further observation on whether it is safe to the civilians and causes no harm to all human beings. Third, the irreversible time line of war with erroneous consequences Once a war occurs, corresponding programs used to effectively identify changes in the battlefield and urgently stopped them are initial. Fourth, the risk of uncertain manipulator. An important prerequisite maintaining world peace is that the leaders of peace-loving countries master the power of control. However, it will be a great danger if the radicals seize it. [5] The dangers in the above four aspects constrain the military abuse of AI to a certain extent, keeping the world peace in some way. Deterrence strategy is not to fend the invaders but to destroy the capabilities that the aggressor concerned without strong military power. [6] The United States pursues a tough unilateralist policy because of its world's most powerful economy and unparalleled military power. [7] History has shown that nuclear weapon can only be a deterrence for the extraordinary destructive power instead of a real force.

While AI technology greatly improves military capabilities, it is also vulnerable to various types of attacks. it vulnerable to hacking for the heavy reliance on the modern information networks among the operations of the military, economic, and financial system; Military communication systems are vulnerable to attacks by adversaries, especially based on open-source database, because a large number

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of military computers connect through commercial networks. Besides, hacking can also cause errors in AI algorithms. [8] So, deterrence can be performed by modern countries and organizations mastering computers and AI. Such power includes not only the direct negative impact from AI, but also the potential profound disruption to the running of countries and organizations. Furthermore, security problems are manifested by the huge deterrent capability from weapons and equipment armed with AI technology. The direct reason why major powers avoid solving international conflict through war is the appearance of robotic forces in the future. International Relations Studies said that the period when the challenger rise in the world politics, posing challenges to the leading countries, international politics would become the most dangerous and unstable. [9] During this period, there is often a war between the leading power and challenging one. [10] The most widely acknowledged case would be the United States' s becoming the world hegemony in replacement of Britain. [11] The battlefield of modern warfare continues to be more AI- featured as the most powerful defense as well as a precisely striking system with the wide application of AI, especially the development of AI weapons. The world peace can be maintained in the long run as long as the leading powers remain prudent about war.

The development of AI has a great impact on the development of people and weapons in the military. Some studies believe that the development of science and technology plays an initial role in improving the political and ideological, psychological, scientific and cultural knowledge, and technical skills of soldiers, thereby enhancing military strength. [12] Many of the existed studies concerned about the relationship between technology and major-powers wars, for example, technological progress is the material base of winning the war, [13] and AI, an essential force in military progressing. Such researches include basic theories and studies on the actual combat.[14] Influenced by new scientific and technological revolution and the extensive application of AI, modern warfare shows some new characteristics, mainly manifested in: local warfare has become an important form of modern warfare. The combat effectiveness of the armed forces has been greatly enhanced increasing suddenness and destructiveness of modern warfare with wider scale and scope. Future wars has been transformed by new technologies and digital wars have begun to take the stage of history.[15] From the analysis of local wars of the past two decades, the attack points of modern wars are shrinking but the dispatch space is expanding unprecedentedly showing a three-dimensional trend in war. It is mainly reflected in precise guidance, the wide use of AI weapons, and the three-dimensional action of water, land and air. It has become an important means of combat using AI-assisted decision-making analysis system, and a new trend in combat operations featured high-speed and all-day. Intelligent deployment has been realized in the combat command and logistics support, which becomes rapid, compliant, accurate and precise. Great changes also happened in tactics that three-dimensional combat on water, land and air and unmanned aerial vehicles has been a vital trend. The resulting deterrence will effectively control the occurrence of war and bring about international peace.

In addition, there have been dramatic changes in military establishments and institutions. Along every scientific and technological revolution in history, there will be changes in weapons and army equipment, which in turn changes the military systems and establishments. First, producing new weapons requires the support of new forces. The development of nuclear weapons created strategic and tactical missile forces; Space technology, spawned spy satellites and space forces; AI, made intelligent-related organizations. Second, the status and role of various branches of the armed forces change with the new form of war. Modern war is a battle of science and technology. The basic type of the army has changed from manpower and material intensive to technology intensive, when unmanned weapons taking the table in the future. Especially, the use of smart weapons has invented intelligent army in military operations.

To recap, as unavoidable historical phenomena at different stages of social politics, war and peace are eternal themes in international politics. Throughout human history, war is never absent as a continuation of bloody politics.

2. AI affects international warfare

The application of AI technology in war has brought huge political and economic attrition. It has been an important reason why military powers generally refuse to start wars easily. It has posed a new task in maintaining system security as the application of AI systems becomes more and more extensive. Over the years, the explosive amount of data available for analysis has made AI systems be introduced to extract, represent, and process in big data. However, information extracted from open sources is full of redundancy which is generally less trustworthy. Malicious or incorrect data may result in loss of money, reputation and resources; In some cases, it threatens human life.[16] So far, the interpretability of

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AI has not been well addressed. For a system, it is important not only to be reliable, but also to be explainable so that it can be trusted. The process is complex if an AI system issues a specific instruction, which is backed by a series of algorithms and data. Human doubts about the formation of the instruction when making decisions will result in an untrustworthy situation.[17] Therefore, the extensive application of AI weapons cannot be performed until numerous verification and security algorithms have been done.

AI technology has the potential to become a crucial means of enhancing combat effectiveness in future armed conflicts. China will gain substantial military advantage, if its current AI program succeeds. This could pose significant negative strategic effect on the United States and its allies. How strong is the leading advantages of the U.S., and what would the U.S. and air forces need to do to maintain that? RAND conducted a comparative analysis of the strategic, cultural and structural factors of AI in the United States and China, as well as the development of military capabilities, and relevant Chinese and English literature. They consulted literature on trends and breakthroughs, business issues, comparative cultural analysis, and military science and operational concepts. The RAND researchers found that key dimensions of the U.S. Department of Defense include the development and engineering of transition from AI to the military; progress in validation, confirmation, testing and evaluation; and the operating concept of AI. Notably, the RAND Corporation believed that every dimension is under the direct control of the U.S. Department of Defense.The RAND Corporation tried to assess which country was currently leading in AI, but there were difficulties in the actual modeling and estimation in the process of practical calculation. However, this instead shifted Rand company's view to that in international competition, it seemed more valuable to discuss the application level of various parts of the AI ecosystem. From a global perspective, it is likely that the U.S. could possibly lead in several key areas of AI, despite that China has several strengths and a high degree of leadership on this issue. As of the beginning of 2020, the United States was in a moderately leading position in the development of AI technology with the main factor that the United States has a huge advantage in advanced semiconductor and AI innovation. Although the United States is in such position, it lacks substantive industrial policy. China is trying to catch up through massive government investment. China has an advantage over the United States in the field of big data sets that are critical to AI development, that's because the Chinese government and large tech companies in China are not bound by privacy laws and protections for data collection. However, China's advantage in data volume may not be able to surpass the U.S. strength in semiconductors. The RAND Corporation considered that from the viewpoint of the U.S. Department of Defense, breakthrough basic research is not a key factor in comparing the relatively competitive position of the United States and China. Whether it is the United States, China, or Sino-American cooperation, basic research is for all mankind. The business industry is also not a key part for competition and comparison. Companies and industries, headquartered in the United States or China, seek to offer products and services in all markets. Their goals remain to gain a competitive advantage in AI and to build strong barriers. As a result, RAND considered that the U.S. should manage expectations through developing and maintaining a forward-looking AI map that highlights the realistic AI goals of The Department of Defense over time. Under the control of the U.S. Department of Defense, engineering programs is created for the establishment and customization of validation, confirmation, and evaluation technologies of AI technologies. Developing, testing, and evaluating processes are invented for the adaptation of new operational concepts of AI.[18] In social life, the military has always been the field with the most extensive and fastest application of scientific and technological. Economically, science and technology are the primary productive forces, while militarily, they are combat powers. A large number of new technologies keep appearing throughout history and being widely used in the military, producing a large number of new types of weapons and equipment. With the new investment of armaments, war has evolved, the way of modern warfare, changed, and new strategic theories, formed. Engels once pointed out that the army and material conditions would determine the result of the war.[19] The author believed that AI mainly serves as a way for the military to gain major military advantages, so that great powers can obtain competitive advantages during wartime and hegemony competition. It lines mainly on the military competence.

AI promotes the development of military war theory. Historically, previous revolution in science and technology promotes the development of war theory. During the First World War, the British invented the tank, "tank warfare" theory followed. Germany created toxic gas applied in the battlefield, followed by the theory of "gas warfare". Germany produced the submarine, with the theory of "submarine warfare" proposed. The application of a large number of aircraft and large-scale vessels on the battlefield helped to form war theories such as "air supremacy" and "sea supremacy". In World War II, Germany theories of "blitzkrieg", "total war" and "grand depth strategy" were developed due to the widespread use of aircraft, tanks and heavy artillery on the battlefield. Since the twentieth century,

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human has invented nuclear weapons based on basic theories such as Nuclear Theory and Relativity, changing modern warfare and international politics as well. Nuclear weapons and their long-range delivery vehicles differ from any previous weapon not only in quantity but also in quality. The emergence of nuclear strategy in the history of the development of modern military warfare is of epoch-making significance, promoting the updating strategic theory of the United States and the Soviet Union. Some scholars believe that the most internationally politically significant new technology of the twentieth century is probably the development of nuclear weapons and their means of delivery. In fact, nuclear regimes are stronger than non-nuclear regimes.[20] They have a great influence on the nature of the international system, relevant member units and their interrelationships. numerous military theories emerge because of the widespread application of atomic bombs, hydrogen bombs, rockets, missiles and other technologies, and arm races between the United States and the Soviet Union. Nuclear deterrence strategies, rocket shooting strategies, rocket nuclear striking strategies, Massive Retaliation Strategy, Strategy of Mutual Assured Destruction, and the theory of Secondary Nuclear Striking successively emerged in the military and academic circles of the United States and the Soviet Union. A new military revolution has been triggered by the appearance of smart weapons, precision-guided weapons, thermonuclear weapons, electronic weapons, space weapons and drone armies. New technologies and weapons have also posed a far-reaching impact on military strategy, promoting the emergence of new strategic thought and theories such as electronic warfare strategy, land-sea-air integrated strategy, regional defense strategy, high-frontier strategy, all-round rapid response strategy, and defense strategy of limited nuclear striking. Therefore, AI may also stimulate the development of military theories.

In future wars, dramatic changes will be taken in the main goals and means of war. Strategically, the war in the era of AI is mainly to destroy the enemy's infrastructure of launching and conducting wars, destroying their will to fight, interfering and destroying rival military command and control, decision-making process, and making it impossible for them to coordinate effectively. At the tactical level, AI warfare is to paralyze the enemy's power system. The primary goal of traditional warfare such as mechanized warfare is to destroy the enemy's living forces and carry out large-scale destruction of the enemy and the combat field, so as to eliminate the rival, the combat ability, and the material base. From the analysis of the current military development trend, the content of AI warfare mainly includes: (1) To obtain the military, economic and political intelligence of the enemy as much as possible through various technical means, and at the same time, prevent the other side from obtaining its own intelligence. (2) To control or destroy the enemy's military command and control system through various means and channels, meanwhile, to protect its own military system; (3) To establish a spatial information acquisition and transmission system, and destroy the enemy and the other party's related systems as possible; (4) To establish its own AI arsenal; (5) To obtain the leading position of AI by mastering and controlling the most advanced AI technology. On the one hand, with the wide application of AI technology, the dependence of troops, weapons and equipment on AI systems has reached a very high level. Once any AI weapon or system fails, it is like waste. On the other hand, the increasing status and role of AI systems in modern warfare have prompted hostile parties to compete for superiority in order to control the war by developing technologies aimed at effectively interfering, weakening, destroying, suppressing and protecting AI weapons and systems, thereby providing effective means and tools for attack and defense. In 2013, the European Union proposed a ten-year project on the human brain, planning to invest 1.2 billion euros in human brain research. In October 2016, the White House released the National AI Research and Strategic Development Plan,[21] establishing an implementation framework for the development of AI in the United States. Russia's new face reform, which began in 2018, places AI in a key area of investment. In addition, Russia believes that AI systems will become the key to determine the outcome of war in the future.[22] Chinese researchers are also sparing no efforts to explore this advanced technology. China has begun developing cruise missile systems with advanced AI. It is called long-range anti-ship missile (LRASM). It is described as a semi-automatic weapon, which means that while the target is artificially selected by the soldier, the missile will, with the use of AI technology, avoid defense and make the final decision to determine the target. At present, AI is applied more in the unmanned aerial vehicle technology, and unmanned aerial vehicles mainly perform detection and attack tasks behind enemy lines. Due to its small size, drone reconnaissance is not easy to be spotted and shot down. Even if shot down, the drone can send information back to headquarters through the equipment on board the aircraft before destruction. The main approaches of future warfare with AI may include: network hacking and computer virus attacks, AI armament attacks, and etc.

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3. AI-powered terrorism threatens world peace

The development of AI has promoted world peace but also brought challenges. The combination of terrorism and AI is the biggest concern. Terrorism is a form of violence, threat of violence or non-violent destruction aimed at assassination, bombing, kidnapping, hostage-taking and transporting, poisoning, endangering computer systems, etc., against non-combatant targets, creating a climate of terror or for political or social purpose, to threaten relevant governments or societies. International terrorist activities usually include the traditional category of terrorist acts, such as assassination, arson, hostage-taking, robbery, hijacking, sabotage, fraud, and environmental pollution.[23] With the development of the new scientific and technological revolution, international terrorism with high-tech character spread around the world. It is mainly manifested in the following three aspects:

First, international terrorism has also increasingly become more AI-featured with the AI advancing. Traditional terrorism usually performs through violent means such as kidnapping, assassination, suicide and so on. The development of science and technology has brought great promotion to the politics, economy and military, as well as to the means of terrorism. Terrorism has also begun to apply more technical and more ingenious methods like advanced drones, positioning, hacking and etc. It has made terrorism a cancer among peace-loving nations around the globe.

Second, AI technology facilitates the terrorism propaganda, organization and terrorist attacks. Terrorists use the Internet to publicize and organize activities. With the use of AI technology, the impact of terrorism expand broader and deeper. the U.S. official reports showed that terrorists use information encryption to organize and plan terrorist activities, search through AI to obtain intelligence, and use camouflage and hacking techniques to carry out terrorist attacks at the time and place as their wish. Various data on the Network also enables terrorists to get striking points through AI technology. AI has promoted globalization as well as the vulnerability of the international community that terrorist incidents within one country will affect another country or even the entire world. With the development of AI technology, technological terrorism began to emerge. The more the international community relies on AI, the more hazardous the terrorism will be. Terrorists seriously threat international security by hacking national weapons systems. Terrorists could as well hack other important state operation systems, such as data centers, intelligent control centers, power grids, communication systems, and so on. terroristic means also become more mobile and more flexible, and more scientific and technological.

Furthermore, terrorism-AI combined weapons of lethality will be one of the greatest threats to world peace now. It has also become the main content of all countries in jointly safeguarding international security to prevent terrorists from mastering and applying AI technology to launch terrorists attacks. Looking back at the history, terrorists have tried thousands of ways to steal nuclear weapons over the past decades, and it would be disastrous once they succeed. From the analysis of present technology trends, it is possible that a technical group, multinational company or non-governmental organization would be the earlier master, than governments, of AI technology. Therefore, countries should attach great importance to the possibility of technological proliferation. After 911, the world did see a more elusive terrorism. AI technology, if acquired by terrorists, is a great threat to people worldwide. For this, human beings should be soberly aware that the development of AI may make great contributions to future peace, however, with huge risks. Once systems are acquired by terrorists, it is impossible to rule out the possibility of being used by them, nor can it ignore the chance of indiscriminate attacks on humans by the systems. Consequently, human concerns on the mass destruction by terrorists increase. Therefore, the more advanced the AI technology becomes, the greater the risk of using AI lethal weapons will be.

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