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### Artificial Intelligence and the Modern System of Force Employment

The idea of an Information-Technology Revolution in Military Affairs emerged as result of the overwhelming victory of the United States in the 1991 Gulf War. It was argued that the methods used to fight against the Iraqi Army represented a new character of war; in it, air-power would dominate, and there would be a reduced need for the insertion of ground forces. This new character would network precision-strike technologies with information technologies, and relative combat power would lie in favor of those with the technological superiority. The US engagements in Bosnia, Kuwait and Iraq seemed to support this theory. However, the wars in Afghanistan (2001) and Iraq (2003) demonstrated that despite the ability to win wars using airpower and small special forces teams, the need for larger ground combat units was still a necessary component of military capabilities. This research aims to assess the effects of Artificial Intelligence (AI) as an Information Technology, as a means to support close combat involving ground forces.

According to Stephen Biddle, it is the “modern system” of force employment that alters the balance of relative combat power in mid- to high-intensity close combat. Using the *modern system* means being able to make use of cover and concealment, dispersion, small-unit independent maneuver, suppressive fire and combined arms integrations. Those who can more effectively implement the characteristics of this system, or implement more of the characteristics, are more likely to achieve superiority in this type of combat.

In order to determine the extent to which AI can influence the ability to implement the characteristics of modern system force employment, AI technology from other sectors were inserted into a historical operation. Following this, the extent to which the developments of the operation is altered can be analyzed according to the modern system theory. Operation Anaconda (Afghanistan 2002) was one of the first operations after 1991, in which the US Army was forced place its troops into close combat ground operations. It required the insertion of infantry forces into the Shahi-Kot valley in southeast Afghanistan. Process tracing, the systematic analysis of qualitative sources in order to describe phenomena, is used to establish the elements of modern system force employment that were used by both the US and Al-Qaeda during this operation. A second case is established in which AI systems are inserted into the operation, and the extent to which this may influence the way in which Operation Anaconda unfolded. Comparative case analysis is then used to explore the influence of the inserted AI technologies on the ability to use the modern system of force employment.

AI inserted at the tactical level of mid- to high-level combat can theoretically influence the ability of a force to implement the characteristics of modern system force employment. For example, it can effectively provide suppressive fire, allowing soldiers to focus on implement the other four characteristics of the modern system. However, at the current level of development, the data necessary to train AI cannot be provided as it is not controlled by the armed forces, does not exist, or if it does exist, is stored in a way that makes it inaccessible (classification restrictions, stove-piped, hidden in large volumes of data). Furthermore, the rules establishing the confines in which the AI can take action cannot be established at this level of war. The laws governing AI may differ per country, making it difficult to implement

in a coalition, and the Laws of Armed Conflict have not established accountability mechanisms for the use of these technologies at this level. Tactical-level combat is too fluid, with the context differing between every operation as well as between each of the units involved at this level. This makes it very difficult to establish the rules in which AI can function.

At the tactical level, current AI development is not a technology that changes the balance of relative combat power of two sides making use of the modern system of force employment. Therefore, the mid- to high-intensity combat balance of power will remain in favor of the military able to use soldiers to implement the higher number of characteristics of the modern system. However, as the system is reliant on, and a part of, the 'systems-of-systems' that govern modern warfare, this paper only establishes that one of the nodes influencing military superiority is not an ideal place to implement AI. As AI is a broad technology with many applications, a clear understanding of the role it can play at each node in the system is vital. This includes at the tactical, operational, and strategic level but also in the overall system that establishes the international balance-of-power

it is vital that the role it can play in each of the nodes that make up each of the levels, as well as the nodes that make-up the overall military system of a state or coalition, are explored. In establishing the role of AI at each node that make up the system of systems, a greater understanding of the role of AI in a technologically driven military can be established. Furthermore, understanding AI's intricacies its potential at the different nodes that comprise the system of systems is essential to prevent technological failure in future war.