DECEMBER 2024

FMSO
Foreign Perspectives Briefs
Foreign Military Studies Office (FMSO)

Wrestling with Complexity: How the PLA Assesses Combat Capability

Kevin McCauley

KEY TAKEAWAYS

- New quality combat capabilities [新质战斗力], which Xi Jinping prioritized for development in 2022, feature in many recent People's Liberation Army (PLA) articles. Changes in warfare, technologies, and production are creating new combat capabilities. This creates the need to develop new combat capability assessment methods based on informationized and intelligent technologies, analysis of new-type operational forces, the expansion of operational domains, and the interaction of civilian production and military technological requirements. While the PLA is searching for improved methods to analyze the complexity of future operations, it appears to fail to factor in important data that could improve the accuracy of current capability assessments.
- The PLA appears to use many different assessment methods with no standard method and no uniformity of factors used to assess capabilities. Combat capability assessments are important to the PLA for supporting planning, command decisions, conducting operations, modernization, force development, and training, and the evaluation factors and missions included in capability assessments provide insight into planning, operations, and the factors the PLA considers important for successful future operations. Yet some assessments exclude important areas such as training, operational methods, officers' professional military education level, and environmental factors. The PLA's lack of a uniform method for assessing combat capability could lead to uneven and inaccurate assessments supporting decision-making for operations. The variation in assessment factors employed in assessments would also appear to lead to variations in accuracy between the evaluations.
- Future warfare and technological developments are creating a more complex and dynamic battlefield. This is driving PLA researchers to examine more accurate and complex methods for evaluating combat capability. The PLA increasingly seeks data-driven and qualitative features that require accurate assessment methods compared to more traditional subjective and quantitative methods.

Authors

a. ***Kevin McCauley*** served as senior intelligence officer for the Soviet Union, Russia, People's Republic of China (PRC), and Taiwan during 31 years in the federal government, and former Adjunct at the RAND Corporation. He served on numerous advisory boards and working groups supporting the Intelligence Community, National Intelligence Council, and U.S. Indo-Pacific Command. He currently writes on the PRC and Taiwan military affairs for the U.S. Government and various think tanks.

INTRODUCTION

PLA-affiliated researchers discuss multiple methods for conducting a combat capability assessment with varying levels of accuracy. Some PLA researchers consider their assessment efforts to be relatively outdated, compared to some foreign militaries', such as the United States.' The PLA's research on this topic frequently references gaps in its approach, preventing it from adopting more standardized and rigorous methods, such as insufficient basic theoretical research, a lack of understanding of various evaluation methods, and a failure to develop combat capability assessments that can accurately evaluate complex nonlinear systems such as the system of systems operational theory that is the foundation for PLA transformation efforts. Many PLA theorists have advocated for the development of new and improved methods that incorporate more qualitative and accurate analytic methods to improve assessment accuracy, suggesting that improvements may be underway. Researchers also recommend incorporating evaluations of the operational environment (OE) and lessons learned from opposing force training, which would enhance the accuracy, complexity, and flexibility of assessment methods. PLA researchers believe evaluations during the period of mechanized warfare were relatively simple since they primarily used standardized quantitative analytic methods. The vastly greater level of complexity envisioned in future warfare operational concepts that incorporate informationized technologies and increasingly intelligent technologies greatly complicates evaluations. The PLA's requirements for victory are geared toward the realities of future conflict, but its development of a system of systems operational approach integrating forces, weapons, and equipment, creating synergy between individual systems and modular forces, makes traditional quantitative modeling and analysis difficult. Additionally, incorporating analysis of terrain, weather, enemy forces, and other OE factors increases the layers of complexity in the evaluation process.

SCOPE

The PLA uses many different operational research methods in its combat capability assessments. This paper reviews some of the methods PLA researchers employ, as well as select assessment methods the PLA attributes to foreign militaries. PLA researchers identify the pros and cons of various methods, noting that with the changing character and complexity of warfare, new and more accurate methods need to be developed. This paper provides an overview of operations where combat capability assessments are used, as well as factors used to support these evaluations. These assessments provide insights into what the PLA believes is important for successful future combat operations. Finally, the paper discusses developments driving PLA researchers to seek more accurate assessment methods due to the changing character of warfare. The paper will not focus on evaluations of weapons and equipment effectiveness, although the Modernization section briefly addresses the subject.

The PLA lacks uniformity and standardized practices in a number of areas, such as combat capability assessments, and the lack of uniformity in terminology and translations reinforces this issue. Translations in PLA and journal sources for combat capability [作战能力] and combat effectiveness [作战效能] differ. The official Academy of Military Science publication *Military Terms* translates combat capability [作战能力] as "operational capabilities" or "warfighting capabilities." It translates combat effectiveness [作战效能] as "combat effectiveness," "operational effectiveness," or "operational efficiency." Journal articles translate the terms as "combat capability," "operational

capability," or "operational effectiveness." The PLA and most other sources use the two [Chinese] terms interchangeably. The State Council Information Office's translation of the 2019 Defense White Paper *China and the World in the New Era* translates 作战能力评估 as "combat capability assessment" and that translation is used in this paper.[1]

IMPORTANCE OF ASSESSING COMBAT CAPABILITIES

PLA authors note that accurate assessments of combat capabilities are important for improving the military in multiple ways, including:

- **Operational Planning:** The PLA uses combat capability assessments to support combat mission and force composition decisions to accomplish assigned tasks. Combat missions are divided into separate tasks and assigned to a unit(s) depending on its combat capabilities to successfully achieve the assigned mission. Planners map the combat mission, resources, and operational units to support planning and continue to revise combat capability assessments during the course of the operation as tasks are accomplished and combat capabilities shrink through losses and changes in available resources.[2]
- **Combat and Force Development:** The PLA employs combat capability analysis to assess future force organization, weapons, and equipment based on future warfighting requirements. Combat capability evaluations are used to determine forces, weapons, and equipment required to accomplish wartime missions. Assessments of future combat missions, operational methods, and capabilities are used to drive unit structure and equipment modernization, as well as support innovations in operational methods.[3]
- **Confrontation Exercises:** The PLA conducts assessments of forces to support tactical scenarios in opposing force exercises. Various command, force groupings, operational and logistics support elements are evaluated for organization, transitions between operational phases, and withdrawal from combat to assess the red force capabilities compared to the blue force.[4] This can support operational planning and future combat requirements affecting organization, weapons, equipment, and new operational methods.
- **Combat Effectiveness Assessments of Weapons and Equipment:** Assessments determine the effectiveness of weapons and equipment and can support unit combat capability assessments in various combat scenarios as well as modernization efforts.[5]

Combat capability analysis can support operational planning from the strategic to the tactical level. Combat capability assessments provide operational commanders with data based on qualitative and quantitative evaluations of the overall combat capabilities of subordinate units to support planning and decision-making. Accurate combat capability evaluation supports system of systems confrontation simulations theater planners use for force planning. The simulations indicate the force size and structure for the Army, Air Force, Navy, and Rocket Force units required to successfully execute theater operational plans and achieve objectives during various operational phases. Constraints on force planning need to be considered, including the national economy, the quantity of weapons and equipment available, the development level of advanced technology, and the available forces. Accurately assigning values in areas such as the information and cognitive domains, as well as the future capabilities of intelligent technologies integrated into the force, could be difficult.[6]

ASSESSMENT METHODS

The PLA employs multiple evaluation methods to assess combat capability. A review of the literature also indicates that PLA researchers believe the PLA should adopt improved methods of analysis, including qualitative and quantitative factors, to better assess unit combat capability. Some researchers believe more factors should be used, including considering enemy capabilities, the OE, unit training, and officers' and soldiers' professional military education (PME) and experience.

One article Identifies multiple combat capability evaluation methods available divided into traditional and emerging categories. The traditional category is divided into four main groupings, each consisting of multiple individual methods. These four groupings include expert assessments, analytic methods, combat simulation methods, and other methods. The article also lists emerging combat capability assessment methods, including support vector machine evaluation, exploratory data analysis, data farming and mining, game theory, cybernetics, and value center approach.[7]

Some of the more frequently employed evaluation methods include:

- **Index method:** While PLA scholars believe this method has flaws, for example, it cannot assess the synergistic effect of combinations of weapons, it is considered more suitable for quantifying combat elements between large forces, including division, army, and above. The method is considered quick and easy, measuring the aggregate of a force's weapons inventory.[8]
- **Analytic Hierarchy Process (AHP):** PLA researchers describe this method as a multi-criteria decision-making method that combines qualitative and quantitative processing of various decision-making factors, breaking down complex problems into their component parts. Capability components may include firepower strike, maneuverability, command and control, and logistics. These sub-capabilities can be further broken down into lower-level component capabilities with a score assigned indicating that component's strength or weakness. This system does not account for the synergistic effect of systems integration.[9]
- **Interval Number Evaluation Method:** This method is intended to mitigate inaccuracies in attempting to quantify quality. This method attempts to evaluate quality by assigning a range to the assessment of component capabilities rather than a single number. This method recognizes that combat capability elements vary according to the situation.[10]

Combat Task Requirements Analysis Method: This method quantitatively assesses combat capability requirements. It starts with analyzing combat mission requirements, followed by evaluating combat capability requirements for the mission, and finally assessing equipment requirements. This method is used to construct future unit organizations and determine the types of weapons and equipment required for future warfighting capabilities.[11]

PLA researchers from the Academy of Military Science and National Defense University examined U.S. military analysis methods, including simulation models for combat capability analysis. These researchers discuss the U.S. Army's Center for Army Analysis (CAA) use of the Attrition Calibration (ATCAL) model; the THUNDER model large-scale confrontation simulation system for campaign-level air and space forces and joint campaign operations; the TACWAR theater-level simulation system; the Joint Integrated Contingency Model

(JICM) for strategic level analysis of joint force operations; and the Joint Analysis System (JAS) simulation that evaluates the formulation and execution of operational plans, evaluation of combat capabilities, assessment of weapon system effectiveness, analysis of system trade-offs, and new concept development.[12]

According to PLA researchers, methods that employ indicator data derived from empirical judgment include:

- **Analysis method:** This method develops index data based on expert judgments to determine combat capability index values and lethality indices for combat platforms to assess casualties and damage effects. This system is fast and convenient, but its accuracy is subject to expert judgment and does not account for factors that are difficult to quantify. The method is more suitable for analyzing the capabilities of large armed forces.[13]
- **Analytic Hierarchy Process (AHP):** This method divides complex problems into component elements, with experts comparing and assessing the relative importance of the elements. This process can avoid uncertainties and simplify complex problems by breaking down problems into component parts, although it also oversimplifies the process of analyzing indicators.[14]
- **Multiple attribute group decision-making method:** This method relies on a group of experts from various relevant fields to select and rank solutions. PLA researchers note that this approach has been employed to analyze and evaluate the combat capabilities of informationized air defense units. This method is considered simple to implement using computers, however, it is only as accurate as the subjective data the expert group enters.[15]
- **Fuzzy analysis method:** This highly subjective method provides an alternative assessment method to address gaps in indicator data assessments and can analyze uncertain characteristics of combat capability elements, as well as combat capabilities.[16]
- **Gray system analysis method:** This method is used to analyze combat capabilities when there is uncertainty and a lack of required data, and is considered to reduce subjectivity.[17]
- **Cloud center of gravity evaluation method:** This method is based on probability theory and fuzzy mathematics. The method can provide accuracy to qualitative evaluations, and PLA researchers consider the analysis and evaluation highly credible.[18]
- **Matter-element analysis method:** This method analyzes the interdependence of and incompatibility between various combat capability indicators. PLA researchers believe this method can achieve realistic and accurate results.[19]

Indicator data can also come from actual combat, experiments, simulations, and range tests for weapons performance parameters. These methods require large amounts of information and is more objective in analyzing combat capabilities, primarily for weapons evaluations, although human judgment remains a part of the process.

- **Probability comprehensive analysis method:** This method divides a combat operation into its various stages and aggregates the probability values for capability indicators at each stage into a comprehensive indicator probability. The capability indicator probability values come from simulations or exercises.[20]

- **Set pair analysis method:** This method is regarded as accurate and is used to evaluate weapons systems.[21]
- **Artificial intelligence analysis method:** Various methods based on artificial intelligence are used primarily to evaluate weapons or equipment systems.[22]
- **Simulation-based analysis method:** Using simulations is regarded as a low-cost method where operational plans can be repeated with variations. This is considered suitable for evaluating weapons systems and tactical-level unit combat.[23]
- **Utility function analysis method:** This method obtains indicator data from simulations, exercises, and actual combat performance to assess and analyze weapons systems.[24]

ASSESSMENT FACTORS

Assessment factors chosen to index or rate forces reveal another area where different researchers use varied criteria from simple to complex indices to conduct combat capability assessments. The same case exists for including factors related to the OE, with only some assessments including environmental and enemy force data. The OE can include terrain, hydrology, climate, electromagnetic situation, as well as the enemy and friendly forces situation. Combat results to indicate an operation's potential success may include the completion rate of assigned tasks, friendly and enemy casualties, weapons and equipment losses, and operation duration.[25]

Assessing unit effectiveness in conducting combat operations requires evaluating multiple factors. A force's ability to conduct a specific operation depends on how it allocates available personnel, weapons, and equipment. The PLA relies on campaign and tactical formations composed of modular components from the services and arms based on mission requirements. These task-organized formations are designed to recombine as a multi-phased operation transitions or missions change to maintain an optimal organization and capability to achieve assigned objectives. The employment of integrated modular task-organized formations is designed to provide greater capabilities and flexibility to meet assigned objectives, but the integration of forces and systems adds complexity to the analysis and evaluation. Tactics, training, morale, and other factors are important but more difficult to quantify. Many PLA journal articles on assessing combat capabilities do not assess OE characteristics, including the battlefield environment, terrain, weather, and time constraints factors impacting a unit's combat capabilities. The tasks and sub-tasks of the operation are also important for evaluations and are typically the focus of PLA evaluations.[26]

Table 1 shows the variety of factors the PLA uses in its combat capability assessments. The choice of factors supporting assessments varies greatly between users of different assessment methods.

TABLE 1: SELECTION OF PLA FACTORS FOR ASSESSING UNIT COMBAT CAPABILITY

Intrinsic Factors	External Factors
Quantity and Quality of Personnel	Topography
Quantity and Quality of Weapons and Equipment	Meteorology
Command and Control	Hydrology
Firepower	Enemy Forces
Maneuver	Infrastructure
Operational and Logistics Support	Electromagnetic Environment
Force Protection	
Training	

EXAMPLES OF PLA USE OF COMBAT CAPABILITY ASSESSMENTS

PLA and Chinese defense industry journal articles provide examples of combat capability assessments used to evaluate operational missions, inform commanders and their staffs for planning and decision-making, and support modernization. These examples also provide insight into various factors used to make assessments and the varying levels of complexity the PLA uses that can increase or decrease the accuracy of the evaluations. Furthermore, a review of PLA evaluations also provides insight into PLA planning and operations, as well as what factors the PLA considers important for conducting a successful operation. The following case studies show how important aspects of combat capability assessments are conducted, according to PLA-affiliated scholars.

COMBAT MISSION AND PLANNING

Rocket Force Planning

Two journal articles by authors affiliated with the Rocket Force Engineering University published in different journals in 2020 discuss combat capability assessments to support conventional missile operational planning. The first article by Wang Minle, evaluates choosing a launch position and a general assessment of conventional missile combat capabilities. Wang states that Rocket Force planning occurs at three levels. At the strategic level, planning is required to coordinate the entire missile force, composed of many operational subsystems, as well as coordinate with the other services. Planning at the campaign level is focused on the missile operational group(s) that conducts campaign missions. The purpose is to generate and optimize the missile operational group's campaign plan. At the tactical level, operational planning generates and optimizes the unit's tactical plan. Operational planning includes deployment, reconstitution, force mobility, rapid response, and employment of firepower. Selecting launch sites is considered an important component of

planning. Selecting an optimal launch position takes into consideration the following factors: [27]

- **Traffic conditions**
  - » Distance of the launch position from main roads and railways
  - » Mobility-based on road and bridge distribution
  - » Ability to recover from attack
  - » Interoperability between positions
- **Command and communication capabilities**
  - » Capability of the command information system
  - » Wired communications
  - » Wireless communications
  - » Command post location
- **Survival and protection capabilities**
  - » Camouflage and concealment of the position
  - » Ability to protect supporting facilities
  - » Maneuvering distances
- **Firepower constraints**
  - » Enemy operations
  - » Weather
  - » Ability to penetrate to the target
  - » Range
  - » Targeting

Wang also proposes a missile force combat operations capability index system for evaluating the combat capability of missile units in the table below.[28] A second article from Rocket Force Engineering University authors (Zhou et al.) provides a more complete index system for evaluating Rocket Force operations, which addresses command and control and information capabilities, while failing to address personnel and unit training.[29] Taken together, the two indices provide a useful perspective on PLA Rocket Force capability assessments.

TWO PERSPECTIVES ON EVALUATING ROCKET FORCE OPERATIONS (2020)	
Wang[30]	**Zhou et al.[31]**
• **Probability of Detection and Survival** » Probability of an enemy reconnaissance satellite detecting the unit » Probability of an enemy cruise missile strike destroying the unit » Probability of detection by enemy reconnaissance » Probability of destruction by enemy precision munitions • **Probability of missile penetration to target** » Weapon and equipment systems reliability » Probability of enemy reconnaissance satellites detecting a missile attack Probability of acquisition by ground-based radar » Guidance radar target acquisition probability » Probability of missile or warhead interception by the enemy • **Target damage probability** » Number of warheads employed in the strike » Strike accuracy » Strike intensity	• **Survivability capabilities** » Mobility » Anti-interference » Camouflage • **Communication capabilities** » Communication systems » Information processing » Information transmission • **Target strike capabilities** » Ability to destroy a target » Missile control » Ability to launch a strike • **Combat command capabilities** » Command and decision-making » Operational support • **Comprehensive support capabilities** » Logistics support » Equipment support

Both of Wang's evaluations consider the survivability of the missile unit to enemy detection and strikes. Likewise, both evaluations consider factors for a successful operation, including the ability to penetrate and strike the intended target, and the accuracy of the strike. Surprisingly, Wang's general assessment of missile operations does not include command and control, comprehensive support, or personnel and unit training as critical factors to a successful operation, though Zhou et al.'s does. Wang's article also does not mention the joint coordination aspect for intelligence support from the strategic, campaign, and special operations forces.

It is unusual to see detailed articles on the Rocket Force, particularly its operations. These articles include a more complete selection of evaluation factors to determine a conventional missile unit's capability to conduct a mission. These and other journal articles often fail to include two factors: quality of personnel—such as professional military education and training—and quality and quantity of training. Including these factors could provide more complete assessments, although they are difficult to accurately assess.

Amphibious Landing

The following analysis is based on a number of journal articles that address combat capability assessments for amphibious landing operations. There appear to be more assessment articles related to this mission than any other mission. One notable analysis addresses the capabilities of a group compared to an echelon landing formation. The article examines the capability of a group approach where each group includes an independent combat capability, while the coordinated actions of the groups generate an increased capability of the entire force. Taking a notional landing force composed of three infantry companies, three tank companies, an air defense missile company, an anti-tank guided missile (ATGM) company, and a helicopter squadron conducting an assault against a defended landing point. The analysis compares an echeloned assault formation and a group formation, shown in **Tables 2 and 3**.[32]

TABLE 2 ECHELONED FORMATION[33]

First Echelon	Infantry Company x1	Tank Company x 1	Air Defense Missile Platoon x1	ATGM Platoon x1	Helicopter Squadron x1
Second Echelon	Infantry Company x1	Tank Company x 1	Air Defense Missile Platoon x1	ATGM Platoon x1	
Reserve Team	Infantry Company x1	Tank Company x 1		ATGM Platoon x1	

TABLE 3 GROUP FORMATION[34]

Left Wing Assault Group	Infantry Platoon x2	Tank Platoon x2	ATGM Platoon x1
Right Wing Assault Group	Infantry Platoon x2	Tank Platoon x2	ATGM Platoon x1
Air Assault Group	Helicopter Squadron x1		
Air Defense Group	Air Defense Company x1		
Deep Assault Group	Infantry Company x1	Tank Company x 1	
Reserve Team	Infantry Platoon x2	Tank Platoon x2	ATGM Platoon x1

The authors assess that while the network and coordination between the echeloned force is simpler compared to the coordination network between the multiple groups in the second example, the evaluation demonstrates that the group formation has a greater combat capability based on the synergy between the individual groups. The group formation creates greater coordination efficiency. The analysis shows a gradual depletion in combat capabilities of the first and second echelon in the first example and the left- and right-wing assault groups in the second example. The remaining groups in the second example, however, essentially retain their original combat capability throughout.[35]

A research paper from 2021 on amphibious operations delivered at the 9th China Command and Control Conference discusses assessments supporting the future construction of an operational system of systems to conduct joint landing operations. The article describes research on establishing a flexible and agile operational system of systems to conduct future amphibious operations by integrating modern information, reconnaissance, and electronic confrontation systems.[36] The authors, who are affiliated with Nanjing University, China Shipbuilding Industry Group's 716th Institute, and the Intelligent Equipment New Technology Center, draw on mosaic warfare, a U.S. Defense Advanced Research Projects Agency (DARPA)[a] term to describe establishing a joint force based on a highly adaptable sensor network and a command system able to adapt and recombine to achieve distributive coordinated operations. The authors note the complexity of future amphibious operations due to the multiple services and arms, difficult command and coordination during multiple operational phases, auxiliary decision-making or decision-making support [辅助决策], such as the use of computers, networks, or other technologies to support, evaluate, and validate decisions – methods based on complex battlefield situations, and ad hoc mission planning creating difficulties in analyzing capabilities in such a complex OE. The authors recommend an analysis of auxiliary decision-making for key tasks supporting the overall operation, including amphibious force landing and transportation, fire support, mine clearance, and ground operations.

Two additional journal articles provide insight into the factors the PLA considers important in assessing combat capabilities for amphibious operations. The first, from 2013, develops a capability assessment index system for an amphibious landing based on several factors the author believes are important for a successful landing operation.[37] It is worth noting that the factors do not include command and control, reconnaissance, quantity or quality of training for the mission, or the professional military education level of the personnel involved in the operation. The authors do note that there are other important factors that affect combat capability, such as environmental factors, that are outside the scope of the article.[38] The second article, from 2014, also examines an index system for evaluating amphibious formations' landing and assault capability. These authors assess battlefield factors to include environmental factors as well as the effectiveness of various weapons that would have a significant impact on amphibious operations.[39]

---

a DARPA defines Mosaic Warfare as overwhelming an enemy with weapon and sensor platforms. The goal is to take complexity and to turn that into an asymmetric advantage. Individual warfighting platforms are combined to make a larger entity, or a force package. https://www.darpa.mil/work-with-us/darpa-tiles-together-a-vision-of-mosiac-warfare

CAPABILITY ASSESSMENT INDEX (2013)	BATTLEFIELD VARIABLES (2014)
• **Fire strike capability** » Neutralization firepower » Armored vehicle firepower » Anti-tank firepower » Infantry weapons firepower • **Maneuver capability** » Maritime maneuver » Land maneuver » Vertical maneuver • **Protection capability** » Air defense » Nuclear, chemical, and biological protection » Self-defense • **Support capability** » Engineering support » Logistics » Equipment support	• **Topography** • **Meteorological factors** • **Infrastructure** • **Air superiority** • **Electromagnetic environment** • **Leadership** • **Fire Control** • **Sudden effects that require contingency planning** • **Offensive and defensive actions** • **Infantry weapons** • **Anti-armor** • **Armor strike** • **Ground firepower** • **Naval gun shore support**

Notably, these authors do account for leadership and the possibility of unforeseen events. The assessment examines weapons capability assessments that influence the battlefield variables and ultimately the landing assault capability. The list does not include aerial or Rocket Force fire support unless that is included in ground firepower. The capabilities examined include the following: [40]

Another PLA-authored journal article conducts a combat capability assessment during combat on an island after an amphibious landing. The analysis examines a firefight between a second-echelon tank company of ten new-type tanks (NFI) against an enemy tank platoon equipped with M60A3 tanks and a TOW antitank missile launcher to determine losses for both sides. The friendly tank company is supported by artillery while the enemy platoon occupies favorable defensive terrain 3,500 meters away. The analysis shows that the tank company suffers its greatest losses 2,400-2000 meters away but suffers fewer losses as it closes on the enemy. The conclusion is that the 2,400-2,000-meter range is critical for the attacking tank force to overcome. The authors conclude that in pursuit and annihilation operations there is a requirement to increase tank firing speed, and a tank unit should occupy favorable terrain at a relatively long distance to fire on the enemy force.[41]

These journal articles include many critical factors required in making an accurate combat capability assessment. The inclusion of leadership and offensive and defensive actions are unique in the journal articles reviewed. However, as in most of the articles, evaluations of the quality of

officers, troops, training, and electronic warfare are nonexistent, perhaps due to the difficulty of assessing these factors.

Task Organization

The PLA uses combat capability assessments to determine the optimal force structures for various missions. The authors of a 2021 article in a Chinese defense industry journal on firepower operations note that the informationization of the PLA and the resulting development of new operational methods have changed the requirements for organizing modular forces for combat missions. Highlighting the additional complications this entails and adds to the assessment, they note that greater coordination between the command and control and fire control systems is required, considering force mission capabilities, battlefield conditions, and tactics consistent with the task. The modular operational system of systems designed for a firepower mission would consist of various modules. The command module is an indispensable part that can transform the strength of the force with powerful combat effectiveness while inhibiting the enemy's combat effectiveness. The main combat force is organized with the required weapons and equipment, while the support force provides operational and logistics support. The information reconnaissance detachment has become critical for collecting, processing, and transmitting intelligence to seize and maintain information superiority. The importance of the information reconnaissance capability has increased to support the command element with accurate information enhancing the lethality and protection of the friendly force. The support module includes operational support such as engineering and chemical defense, logistics and equipment support, and technical support. The authors' analytic method examines the preparedness of friendly and enemy forces and various types of combat scenarios. This then forms the basis of determining the optimal force to conduct a mission in a given combat situation.[42] With the PLA's reliance on a modular task-organized operational system of systems at each level of war, this type of analysis is critical for the PLA to establish optimal force groupings for a mission.

Joint Operations

The PLA's intent to develop an integrated joint operations capability increases the importance of supporting joint operations planning and decision-making. An article authored by officers from the National Defense University's Information Operations and Command Training and Research Department addresses the difficulties of conducting combat capability assessments on joint operations solely based on evaluations of weapons and equipment. Traditionally, assessments were based primarily on firepower, mobility, and protective factors. New weapons and equipment, such as information and electronic warfare systems, increase the difficulty of this type of evaluation. The authors propose an evaluation of five joint operations factors: strike, mobility, information processing, protection against enemy kinetic and electronic attacks, and support for sustained operations. The authors analyze the weapons and equipment system of systems based on the platform, system, system of systems, and unit.[43]

Aviation Support

A PLA-authored journal article from 2021 examines a combat capability assessment for fixed-wing close air support. The assessment addresses the operational process, which includes requesting and planning for close air support, preparation, implementation, and evaluation of results. The stages of the process are broken down as follows:[44]

- **Request and planning:** task acceptance; task analysis; formulation of an action plan; action plan analysis and simulation; and generating an order.
- **Operational preparation:** drill/training; communications check; maneuver; and observation.
- **Combat implementation:** target guidance group coordination with the operations center; and target engagement. These two steps are further broken down as follows:
  - » Coordination includes battlefield tracking; target nomination; airspace deconfliction; coordination, synchronization, and identification of terminal attack control methods.
  - » Target engagement includes aircraft access; situation update; target engagement authorization, transmission of target designation briefing; start of strike; entry into attack position, target identification and air defense suppression; confirmation and identification of target; weapon preparation; and issuance of approval order to strike.
- **Results evaluation:** types and quantity of personnel and equipment observed; activities including direction and state of target movement; and fortification and cover; the time the target was observed or attacked; and notes on ammunition consumption, observed damage to target including damaged and undamaged equipment and recommendation on restrike, mission number, and completion status.

The authors note complexities requiring analysis to improve evaluations over traditional air-to-ground combat capability assessment methods, including aircraft electronic countermeasures capability, penetration capability, weapons load and range, and navigation capability. Each of these issues can be broken down further to provide greater detail for the assessment.[45]

A journal article from 2021 that assessed the combat capability of air assault operations provides insight into the factors the PLA considers important for this mission. Training evaluations of the units and equipment characteristics are important in conducting the evaluations. The article looked at four main capability factors including both training and equipment, divided into sub-components as follows:[46]

- **Command and control capability:** Communications; decision-making; and coordination.
- **Helicopter capability:** Armed helicopter penetration; transport helicopter carrying capability; and helicopter endurance and range.
- **Airborne personnel capability:** The pilot's capability; airborne special operations combat capability; and coordination capability.
- **Comprehensive support capability:** routine maintenance; battlefield emergency repair capability; and battlefield medical rescue capability.

A separate article in a PLA-affiliated journal examines using confrontation simulations to assess the combat effectiveness of an Army Aviation force in a combat scenario based on a unit's ability to accomplish its mission, unit loss rate, and equipment damage. Simulations were based on combat in a land border area, with the air assault brigade assigned the task of annihilating an enemy infantry brigade and conducting a mobile defense.[47]

MODERNIZATION

System of Systems Operational Capability

System of systems operational capability is a key underpinning of the PLA's modernization and development of an integrated joint operations capability. System of systems operations represents the integration of modular units, weapons systems, and equipment into a large complex system, where the components create a synergistic effect on combat capability, which the PLA describes as 1 + 1 > 2. A key aspect is the operational system of systems – a task-organized modular force grouping optimally designed for its assigned combat mission – with a capability to optimally recombine as operational phases and tasks change.

A journal article by authors from the PLA's National Defense University assesses the resilience of an operational system of systems. The authors state that the National University of Defense Technology, the Air Force Engineering University, the Air Force Research Institute, as well as the National Defense University, and civilian research centers are analyzing system of systems resilience in various fields. The military operational system of systems is intended to be highly flexible, and reliable, with a rapid recovery capability in response to mission changes, disruptions, enemy attacks, and failures within the various component systems. The authors note that the ability to support functions necessary for mission success with a high probability, with shorter periods of reduced capability, and across a wide range of scenarios, conditions, and threats is critical. According to the authors, it is important to evaluate the resilience of the operational system of systems in the face of dynamic confrontation on the battlefield. A joint operational system of systems simulation testbed is a method to conduct research on the operational system of systems in a complex joint operations environment, compared to traditional methods that might only evaluate certain aspects or single component systems. A simulation test bed approach also allows for timely modifications based on confrontation and changes in relationships during the experiment with real-time analysis and feedback creating a dynamic process. Attacks on, damage to, and random failures of various nodes in the joint operational system of systems and its capability to adapt and change provide key indicators and factors that affect the resilience of the operational system of systems. Factors analyzed include prevention of attacks and failures, restoration of capabilities, flexibility, robustness, self-healing, and adaptability.[48] According to the same article, the significance of operational system of systems for conducting future operations makes this research on establishing a resilient force package critical.

An article in 2016 in the *Journal of Command and Control* reviews the problems of developing index systems for assessments of an operational system of systems composed of multiple systems that are highly integrated creating a synergistic effect on combat capabilities. The authors believe that complex systems conducting network-centric warfare present quantitative and qualitative analytic difficulties. The article reviews some proposed approaches by PLA and U.S. researchers to index systems to address the complex issues presented by a network-centric system of systems approach to organizing and conducting future military operations. One theme that emerges is the need to create a complex, multi-layer index system to address the synergistic effect of systems integration.[49]

Force Development: Combined Arms Battalion Assessments

Several journal articles have also been written about the combined arms battalions established

in the 2017 organizational reforms that also converted most maneuver divisions to combined brigades. Research employing combat capability assessments was also employed to develop digitized unit structures.[b] Combat capability assessments can provide insights into the optimal unit organization.[50]

An article published in 2016 by PLA officers primarily from the Tactics Department of the Army Armored Force College proposed a methodology for evaluating the newly established combined arms battalion's combat capability to support the commander's operational planning and decision-making. The article proposed an evaluation index system integrating personnel, equipment, and environment. Personnel are analyzed by military training level, equipment is assessed primarily on fire strike capability, and environment is assessment based on the status of personnel having appropriate equipment. The main factors of environment integration are command and control, intelligence and reconnaissance, and comprehensive support capabilities. The authors' detailed explanation of these factors is as follows:[51]

- **Military training level:** This includes physical training, professional skills, and discipline. Physical fitness determines the ability to sustain combat and adapt to the battlefield environment. Professional skills directly affect the degree of completion of tactical actions and the effective use of weapons and equipment. Discipline guarantees the execution of orders and thereby the outcome of combat. The training evaluation is based on the unit's quarterly military training evaluation.
- **Fire strike capability:** This aspect considers main battle tanks and artillery, and the authors believe this factor directly reflects the combined battalion's combat capability. Factors that affect fire strike capability include the readiness and reliability of the weapon systems, ability to detect targets, range, accuracy, and lethality.
- **Command and control capability:** This includes the commander's judgment and decision-making ability in combat, and coordination and synergy with adjacent units. The commander's attributes are determined by experience, number of exercises, and the ability to complete assigned missions.
- **Intelligence and reconnaissance capability:** The combined battalion relies on the reconnaissance platoon equipped with specialized vehicles, unmanned reconnaissance aerial vehicles, and other specialized equipment to identify enemy armor, equipment conditions, deployment, and environmental information. The command information system is also able to access intelligence and reconnaissance information from other units and sources, including higher-echelon intelligence centers.
- **Comprehensive support capability:** This includes operational, logistics, and equipment support. Factors include the ability to search for and rescue battlefield casualties; rescue and repair damaged equipment; supply oil, ammunition, and equipment; support communications; and remove obstacles.

b The PLA uses the term "digitized units" or "digitized forces" [数字化部队] for small, modular, and multi-functional units supported with communications, ISR and other technologies. See, for example, "China's National Defense in 2010" [2010年中国的国防], Information Office of the State Council, The People's Republic of China, March 2011.

Another journal article from 2018 on combined battalion combat effectiveness evaluates reconnaissance, command and control, maneuver assault, firepower strike, battlefield protection, and comprehensive support. The main factors are subdivided further to provide a more detailed evaluation. For example, reconnaissance is divided into intelligence collection, processing, and transmission capabilities. Command and control are divided into command decision-making, organizational planning, control and coordination, and information connectivity efficiency. The indicators are weighted according to their perceived importance. Evaluation of the command posts – main, rear, and group command posts - examine planning, decision-making, command and control, reconnaissance and intelligence, coordination of forces, political work, emergency response, and operational support. The various task force groups – right and left forward tactical groups, advance combat team, independent assault team, infiltration team, combat reserve team, air defense, and artillery group – are evaluated on planning, battlefield situation control, command and control, task force assembly, comprehensive defense, utilization of attached forces, engineer support, political work, and logistics and equipment support. [52]

The creation of combined arms battalions was a significant development in the PLA's reorganization. It appears combat capability assessments played an essential role in determining their organization.

PLA SEEKING ENHANCED EVALUATION METHODS

As the eras of warfare change, so do the factors impacting combat capability assessments. PLA theorists view their military in transition between three modernizations – mechanization, informationization, and incorporation of intelligent technologies. Currently, PLA theorists believe they are in a stage of informationized warfare with intelligent characteristics. New technologies, weapons and equipment, and operational methods emerge during each transition in warfare. As intelligent warfare emerges, cutting-edge and disruptive technologies, such as artificial intelligence, quantum technology, and information technology, are triggering a new revolution in military affairs and an expansion of warfare into multiple domains. Weapons and equipment have the characteristics of ultra-long range, precision, autonomous, intelligent, stealth, unmanned, and hypersonic for example.[53] New strategic areas of operations have opened to include space, the deep sea, cyber, and the polar regions.[54]

PLA researchers believe that older traditional combat capability assessment methods are static, rely on quantitative analysis, and do not adequately analyze the complexities of modern combat. Traditional methods tend to be subjective, based on experts' judgment. Analysis needs to be based on objective data to improve accuracy, and new approaches employing artificial intelligence are required to analyze complex operations and synergistic relationships between forces. Currently, a great deal of research is conducted on weapons and equipment parameters and units of a single combat arm, which are more easily assessed, with less research on the combat capabilities of joint and combined arms units, and the effects of various combat and support arms on each other.[55]

Many of the journal articles reviewed propose ways to improve the accuracy of methods for evaluating combat capabilities by improving operations research methods, increasing the factors examined, adding more qualitative methods for evaluating various factors, or reducing the subjective aspect when assessing factors. PLA theorists highlight that the informationization of the military and employing an operational system of

systems challenge traditional evaluation methods. Mechanized warfare capability assessments are conducted by analyzing the individual components of the force and combining the assessments. In the complex informationized operational system of systems, the dynamic networked relationships between the component systems (command and control, joint strike, maneuver, logistics, etc.) cannot be assessed by aggregating the assessments of the individual systems comprising the complex system. In addition, the interaction of the force components can produce new characteristics and capabilities emerging randomly, which may lead to an increase or decrease in overall capabilities. The dynamic between the component systems, and the adaptive and recombinant characteristics of the organization multiplies effects synergistically.[56] The PLA's assessment of the complexities of modern warfare makes accurate combat capability assessments increasingly difficult, as evidenced by many journal article discussions reviewed here.

The dynamic and multi-domain battlefield adds greater complexity to capability assessments. Qualitative and scientifically derived factors are increasingly important in evaluations to better support operational planning and the need to revise plans during high-tempo operations and rapid transitions between operational phases. PLA researchers believe many assessment methods are linear, especially those focused on weapons and equipment, but the combat process based on human-machine integration is more random. More complete and accurate methods of evaluating complex nonlinear systems are required to meet the needs of modern warfare capability assessments.[57]

Including factors such as the quality of personnel, weapons, and equipment, training levels, and information and electronic warfare would improve the quality of assessments. Force structure, internal dynamics, and OE also impact combat, and their effects must be factored into assessments. PLA research advocates continuously revising the combat capability assessments during an operation by incorporating feedback based on the dynamic characteristics of the operational system of systems. The large amount of data based on the expansion of the battlespace and information collection precludes traditional evaluation methods. New technologies such as big data processing, cloud computing, the Internet of Things, and artificial intelligence are required to extract high-value information to support evaluations.[58] Artificial Intelligence could transform assessments from experience-driven to data-driven methods and from manual to computer-automated computation. PLA authors believe these developments will provide more accurate information for commanders to make operational decisions, improving the efficiency and quality of decision-making and planning.[59]

Some PLA researchers recommend developing new methods, such as a complex network theory approach that is better suited to assessing the operational system of systems but requires a high degree of comprehensive data; more complex wargaming methods; and deep learning methods.[60] There is also limited research on new operational methods such as system of systems confrontation and network-centric warfare requiring greater coordination between the services and arms than in mechanized warfare. According to these authors, more research should also be done on foreign military combat capabilities analysis, which normally focuses on using simulation systems rather than other assessment methods.[61]

The PLA is also establishing databases of training and confrontation exercises, although some reports indicate the information is not fully used nor shared throughout the military due to "information barriers." Technological means to collect and analyze data are also being developed

to provide more accurate data to feed into evaluations. Increasingly, with the introduction of artificial intelligence and intelligent warfare into the force, the ability to assess the effects of human-machine integration and the nonlinear and dynamic aspect of modern operations on achieving combat objectives is becoming significant for accurately assessing combat capability.[62]

PLA researchers also believe deep learning and artificial neural network data analysis can improve combat capability assessments. Operational systems are large, complex systems with many factors affecting performance, leading to a huge index system that can overwhelm traditional assessment methods. The attribute reduction algorithm can solve the problem of massive data modeling by reducing redundant indicators to improve work efficiency and assessment accuracy. A better approach is to use deep learning networks to screen performance evaluation indicators, extract data, and remove redundant indicators to build an improved performance evaluation indicator system, then organize relevant data and provide significantly improved and accurate evaluation results. Combining deep learning and neural network analysis can take advantage of large amounts of historical or exercise data to inform the neural network. The combination of these two approaches can connect relevant data, make real-time predictions, and provide decision-making solutions that PLA researchers consider improved over traditional assessment methods.[63]

Given that the PLA's theater joint commands are relatively new, the PLA is attempting to develop an integrated joint operations capability. A PLA Daily article from February 2024 discussed possible improvements to joint operations assessments to better support commanders' decision-making. The author recommends clearly defining the purpose and process for joint operations assessments. To support large-scale joint operations, a standardized three-level strategic, operational, and tactical assessment organization of scientific and professional assessment teams employing information assessment tools is required. The specialists in the assessment teams need to be experts in the relevant fields with knowledge of planning, control, and intelligence. Static assessments are made before operations while dynamic assessments are conducted during the operation. The command information system can support the assessment through real-time intelligence collection, processing, and dissemination, and automated tools to speed up the assessment process. An intelligent assessment system can quickly complete situational assessments and formulate alternative plans to improve command decision-making. The author proposes a compressed assessment cycle embedded in the command and decision-making cycle with "small-scale distributed interaction at each level" and "multilevel large-scale distributed interaction" between the strategic, operational, and tactical levels. This will connect the assessment activities vertically and integrate them horizontally to achieve "real-time, synchronous, parallel, and interactive" assessments throughout the entire process and across domains.[64] A related PLA Daily article highlights the need for timely and accurate combat capability assessments with feedback mechanisms on the fast-paced future battlefield. In a time-compressed systems of systems confrontation, it is critical to dynamically update combat capability assessments to shorten the decision cycle and ensure commanders make science-based, rapid, and correct decisions. [65] These proposals are significant for establishing a uniform, standardized combat capability assessment method with specialized personnel to conduct the evaluations, and automated tools to rapidly calculate assessments. Establishing an official assessment method could improve the accuracy and uniformity of assessments

affecting operational planning and command decision-making.

NEW QUALITY COMBAT CAPABILITY

The PLA press has discussed new quality combat capabilities for several decades, but interest has increased, as evidenced in multiple PLA Daily articles published in 2024. The impact of technologies, initially based on information technology and now intelligent technology, combined with the emergence of new type operational forces in the PLA, has provided a basis to generate new and greater capabilities.[66] These technological, operational, and tactical innovations, and force developments will require new methods of assessing combat capabilities to support operational planning and modernization. The difficulty in finding new evaluation methods is driven by the increasing integration of units, which creates a synergistic effect where interconnection, coordination, and cooperation between forces in multi-domain operations make accurate assessments difficult. According to these authors, the PLA's adherence to traditional thinking and methods could constrain innovation and the development of new capabilities.[67]

Other articles in *PLA Daily* have discussed new quality combat capabilities driven by the information system-based system of systems operational capability, which is the foundation for PLA equipment modernization and innovation in military art. The new overarching capability integrates comprehensive perception, real-time command and control, precision strike, full-dimensional protection, and focused support systems into a system of systems.[68] Two PLA affiliated authors in 2010 noted that the integration of forces, weapons, and equipment by advanced information systems accelerates the transformation of the model for generating combat capabilities. This new combat capability generation method based on informationization changes the nature and interrelationships of basic elements such as personnel, weapons, and organizational systems. A separate author writing in 2011 argued that combat capability assessments should be based on static and dynamic considerations. Static assessments consider basic capabilities before entering combat such as quantity and quality of personnel and equipment, weapons effectiveness, training levels, and historical data of the opposing sides. A dynamic assessment is based on military art, force deployment, morale, and the OE during combat operations.[69]

Another PLA Daily article published in 2018 discusses developing new quality combat capabilities to account for new type operational forces, modernized equipment, multi-domain operations, and new operational methods, including the PLA installing an integrated joint operations capability.[70] Innovation in science and technology supports the development of new quality combat capabilities as technology drives innovation in operational methods. China's employment of military-civil fusion is important for technological innovation and maximizing the civilian sector to support innovations within the military. This includes conducting research and development in cutting-edge technologies where research is not keeping up with other countries while emphasizing breakthroughs in key emerging technologies.[71] Training focused on establishing, integrating, and employing new combat capabilities in the joint operational system of systems is identified as an important factor in improving the force. PLA modernization and reforms have increased the numbers and types of new type operational forces. They require training reforms to support the optimal use of new equipment and operational methods while integrating their capabilities with those of other forces to create a synergistic effect.[72] It is unclear from these articles

whether the PLA has been able to develop adequate combat capability assessments for these new operational forces and equipment.

As important as technologies are to combat capabilities, the PLA continues to believe that people remain the decisive factor deciding victory in war.[73] Developing new military talents and organizational methods is key to developing new quality combat capabilities. PLA reforms in professional military education and training have continued for several decades, but by the PLA's admission, problems remain. These barriers to improving personnel must be overcome to integrate new capabilities based on emerging technologies into the force. Scientific and technological innovation is required to develop new and disruptive technologies. New, quality personnel are required to scientifically organize training and master new areas of operation to command new-type operational forces in combat. New organizational forms are also required to scientifically integrate new weapons with personnel to gain an advantage.[74] Still, many assessments do not appear to focus on combat capabilities' personnel, training, and education aspects, perhaps due to the difficulty of scoring these issues.

PLA researchers also believe that international military competition is based on production and strategic resource supply to construct a stable and sustainable combat power development ecosystem to supply high-quality, high-performance, and high-reliability products and services. In the PRC, military and civilian research, development, and production are closely intertwined to enhance new quality combat capabilities.[75] Equipment requires constant upgrades, and procurement management, processes, efficiencies, and quality contribute to developing new combat capabilities. Scientific and technological research, promoting dual-use technologies, and technological innovation to produce advanced weapons and equipment are key to cultivating quality combat capabilities.[76] PLA combat capability assessments do not reflect these production challenges.

An article in PLA Daily in July 2024 addresses the interconnectedness of new quality productive forces with new quality combat capabilities. New quality productive forces determine the development of new quality combat capabilities. The productivity of the civilian sector, the quality of civilian and military personnel, and the quality of weapons and equipment produced affect combat capabilities. Research in the civilian sector can also support innovations in operational methods and military organizations. New quality combat capabilities based on emerging technologies drive science and technology-related civilian research and development. Additionally, a new quality defense industrial system provides strategic support for national security by integrating enterprises, supply chains, and innovation.[77] Again, these articles do not address how combat capability assessments might measure or reflect production challenges in the civilian and/or military sector.

Some PLA researchers recognize constraints to improving combat capabilities. Past reform efforts have attempted to eliminate "stubborn diseases" inhibiting the ability to improve combat capabilities. Some roadblocks include conceptual limitations, protection of bureaucratic interests, institutional barriers, and management constraints.[78] These issues have presented systemic obstacles to various PLA reform efforts. Improvements have been made in various areas, but the PLA recognizes continuing obstacles limiting the effectiveness of reforms and, importantly, capabilities within the force. As seen elsewhere in the PLA, such as training, while problems remain, PLA scholars are at least clear about the issues and how to address them. This suggests that in its search for

assessment methods to measure more complex systems with greater accuracy, the PLA could overcome some of the aforementioned conceptual limitations and limitations of traditional metrics.

CONCLUSION

The PLA uses combat capability assessments to support planning, command, and modernization, including combat and force development; however, the PLA does not appear to have a standard, uniform method to assess combat capabilities. The PLA employs many different methods, each with its pros and cons. Some assessments fail to include important factors that could improve the accuracy of the evaluations. The apparent lack of a standard method would appear to create variation in the quality of the assessments supporting operational planning and command during combat.

The changing nature of warfare compounds the lack of uniformity in assessment methods and factors. The changing nature of warfare creates the need for more accurate and complex methods to replace more traditional, and linear mechanized warfare-era methods. Assessing combined arms and joint forces, quality of personnel, training, and effects of emerging and disrupting technologies requires new methods to assess large volumes of data. However, the complex nature of future warfare makes it difficult to accurately evaluate factors supporting combat capability assessments.

Many recent PLA combat capability assessments do not analyze the quality of personnel, training, or morale. Many assessments do not factor in battlefield environment information and electronic warfare data, which can dramatically impact weapons effects and operations. Further, the assessments do not appear to analyze the quality and quantity of potential enemy forces and their courses of action. Although these factors are difficult to quantify to support evaluations, they are important in determining combat capabilities assessments to support planning. While the PLA is searching for improved methods to analyze the complexity of future operations, it appears to fail to factor in important data that could improve the accuracy of current capability assessments.

Examining the subjects researched in the articles on combat capability assessments provides insights into the subjects of interest for the PLA. The high level of interest in amphibious operations fits into the known rubric of priority operations that the PRC wants to develop for a deterrent or combat capability against Taiwan or its neighbors. The PLA also employs combat capability assessments to support Rocket Force operational planning, task force organization, assessments of joint operations capabilities, and aviation support to include close air support. Combat capability assessments also support modernization efforts by analyzing weapons and equipment, assessing future force resilience, and optimal organization of units. While this paper does not focus on the subject, combat effectiveness assessments conducted to evaluate weapons effectiveness can feed into operationally focused and modernization assessments.

Two authors advocated in a 2024 *PLA Daily* article for developing a standard assessment method for joint operations with dedicated assessment teams at strategic, operational, and tactical levels. The authors proposed using intelligent technologies and capabilities in the command information system to support and speed up the process with coordination and integration between the three levels to provide static assessments before a conflict and dynamic real-time assessments proposing courses of action to support command decision-making during wartime. Timely, efficient, and accurate combat capability assessments are significant for the command cycle in a fast-

paced future battlefield to ensure commanders make scientific, rapid, and correct decisions. This proposal could greatly improve PLA combat capability assessments, if adopted.

PLA researchers are exploring new methods to better analyze combat capabilities, with a current emphasis on new quality combat capabilities that are developing based on information and intelligent technologies. The changing character of warfare incorporating emerging and disruptive technologies, and integrated force groupings capable of recombination as operational requirements change requires new evaluation methods. However, developing new, accurate methods will be difficult based on future combat's complex, nonlinear nature. The PLA's success in developing new accurate assessment methods can be significant to support modernization efforts and future operational planning and command on a dynamic, multi-domain battlefield.

The Foreign Military Studies Office (FMSO)
U.S. Army Training and Doctrine Command (TRADOC G-2)
Ft. Leavenworth, KS 66027

HTTPS://FMSO.TRADOC.ARMY.MIL

The Foreign Military Studies Office (FMSO) at Fort Leavenworth, Kansas, is part of the US Army Training and Doctrine Command G-2, whose mission is to understand, describe, assess and deliver the conditions of the operational environment. For over 30 years, FMSO has conducted open-source research on foreign perspectives of the operational environment, emphasizing those topics that are understudied or unconsidered. FMSO's products are integral to critical thinking in the Army's leadership, analytic communities, and military education, and wherever there is a professional interest in what "they think they think."

SOURCES

1 *People's Liberation Army Military Terms* [中国人民解放军军语], (Beijing: Military Science Press, 2011), 67, 79, 535, 667, 758, and 1037; Fu Dong, Fang Cheng, and Wang Zhenlei [付东, 方程, 王震雷], "Research on Combat Capability and Combat Effectiveness Assessment Methods" [作战能力与作战效能评估方法研究], *Military Operations Research and Engineering* [军事运筹与系统工程], Vol. 20 No. 4, December 2006, 35; State Council of Information Office, *China's National Defense in the New Era*, 24 July 2019, https://english.www.gov.cn/archive/whitepaper/201907/24/content_WS5d3941ddc6d08408f502283d.html

2 Ma Yie, Wu Lin, and Guo Shengming [马悦, 吴琳, 郭圣明], "Research on Modeling and Solving Method of Combat Task Allocation" [作战任务分配建模及求解方法研究], *Journal of System Simulation* [系统仿真学报], Issue 4 2023, 1-2

3 Fu Dong, Fang Cheng, and Wang Zhenlei [付东, 方程, 王震雷], "Research on Combat Capability and Combat Effectiveness Assessment Metods" [作战能力与作战效能评估方法研究], *Military Operations Research and Engineering* [军事运筹与系统工程], Vol. 20 No. 4, December 2006, 37; Zhao Shaocai, Zhang Haichuan, and Li Nan [赵绍彩, 张海川, 李楠], "Theory and Application of Combat Capability Maps" [作战能力图谱概念和应用研究], *National Defense Science and Technology* [国防科技], Vol. 42 No. 2, April 2021, 106-112

4 Liu Yu, Zhang Lili and Zhang Wei [柳玉, 张莉丽, 张威], "Research on Multi-dimensional and Aggregated Operational Capability Evaluation Oriented to Live-Fire Exercises" [面向部队实兵演习的作战能力多维聚合评估], *Fire Control & Command Control* [火力与指挥控制], Vol. 47 No. 3, March 2022, 8-15

5 Dai Yaozong, Shen Jianjing, and Guo Xiaofeng [代耀宗, 沈建京, 郭晓峰], "Research on Combat Effectiveness Methods" [作战效能评估方法研究], *National Defense Science & Technology* [国防科技], Vol. 38 No. 5, October 2017, 104-105

6 Tang Linjie and Jiang Jingzhuo [唐林杰, 江敬灼], "Simulation Method for Theater Force Planning under Informationized Conditions" [信息化条件下战区兵力规划的仿真方法], *Military Operations Research and Systems Engineering* [军事运筹与系统工程], Vol. 21, No. 1, March 2007, 32-33; Zhu Xuegeng et al [朱学耕], "Assessment of the Combined Battalion's Dynamic Combat Capabilities Based on the Triangular Fuzzy VIKOR Method" [基于三角模糊VIKOR 的合成营动态作战能力评估], *Fire Control & Command Control* [火力与指挥控制], Vol. 45 No. 10, October 2020, 143-144

7 Cheng Kai et al [程恺], "A Review of Research on Combat Effectiveness and Evaluation Methods" [作战效能及其评估方法研究综述], *Journal of Systems Science* [系统科学学报], Vol. 22 No. 1, February 2014, 88-92

8 Fu Dong, Fang Cheng, and Wang Zhenlei [付东, 方程, 王震雷], "Research on Combat Capability and Combat Effectiveness Assessment Metods" [作战能力与作战效能评估方法研究], *Military Operations Research and Engineering* [军事运筹与系统工程], Vol. 20 No. 4, December 2006, 36-37

9 Fu Dong, Fang Cheng, and Wang Zhenlei [付东, 方程, 王震雷], "Research on Combat Capability and Combat Effectiveness Assessment Methods" [作战能力与作战效能评估方法研究], *Military Operations Research and Engineering* [军事运筹与系统工程], Vol. 20 No. 4, December 2006, 37

10 Fu Dong, Fang Cheng, and Wang Zhenlei [付东, 方程, 王震雷], "Research on Combat Capability and Combat Effectiveness Assessment Methods" [作战能力与作战效能评估方法研究], *Military Operations Research and Engineering* [军事运筹与系统工程], Vol. 20 No. 4, December 2006, 37

11 Fu Dong, Fang Cheng, and Wang Zhenlei [付东, 方程, 王震雷], "Research on Combat Capability and Combat Effectiveness Assessment Methods" [作战能力与作战效能评估方法研究], *Military Operations Research and Engineering* [军事运筹与系统工程], Vol.

20 No. 4, December 2006, 37

12 Li Chuanfang, Xu Ruiming, and Mai Qunwei [李传方, 许瑞明, 麦群伟], "A Summary of Research on Combat Capability Analytic Methods" [作战能力分析方法研究综述], *Military Operations Research and Systems Engineering* [军事运筹与系统工程], Vol. 23 No 3, September 2009, 73-74

13 Li Chuanfang, Xu Ruiming, and Mai Qunwei [李传方, 许瑞明, 麦群伟], "A Summary of Research on Combat Capability Analytic Methods" [作战能力分析方法研究综述], *Military Operations Research and Systems Engineering* [军事运筹与系统工程], Vol. 23 No 3, September 2009, 74

14 Li Chuanfang, Xu Ruiming, and Mai Qunwei [李传方, 许瑞明, 麦群伟], "A Summary of Research on Combat Capability Analytic Methods" [作战能力分析方法研究综述], *Military Operations Research and Systems Engineering* [军事运筹与系统工程], Vol. 23 No 3, September 2009, 74

15 Li Chuanfang, Xu Ruiming, and Mai Qunwei [李传方, 许瑞明, 麦群伟], "A Summary of Research on Combat Capability Analytic Methods" [作战能力分析方法研究综述], *Military Operations Research and Systems Engineering* [军事运筹与系统工程], Vol. 23 No 3, September 2009, 74

16 Li Chuanfang, Xu Ruiming, and Mai Qunwei [李传方, 许瑞明, 麦群伟], "A Summary of Research on Combat Capability Analytic Methods" [作战能力分析方法研究综述], *Military Operations Research and Systems Engineering* [军事运筹与系统工程], Vol. 23 No 3, September 2009, 74

17 Li Chuanfang, Xu Ruiming, and Mai Qunwei [李传方, 许瑞明, 麦群伟], "A Summary of Research on Combat Capability Analytic Methods" [作战能力分析方法研究综述], *Military Operations Research and Systems Engineering* [军事运筹与系统工程], Vol. 23 No 3, September 2009, 74

18 Li Chuanfang, Xu Ruiming, and Mai Qunwei [李传方, 许瑞明, 麦群伟], "A Summary of Research on Combat Capability Analytic Methods" [作战能力分析方法研究综述], *Military Operations Research and Systems Engineering* [军事运筹与系统工程], Vol. 23 No 3, September 2009, 74-75

19 Li Chuanfang, Xu Ruiming, and Mai Qunwei [李传方, 许瑞明, 麦群伟], "A Summary of Research on Combat Capability Analytic Methods" [作战能力分析方法研究综述], *Military Operations Research and Systems Engineering* [军事运筹与系统工程], Vol. 23 No 3, September 2009, 75

20 Li Chuanfang, Xu Ruiming, and Mai Qunwei [李传方, 许瑞明, 麦群伟], "A Summary of Research on Combat Capability Analytic Methods" [作战能力分析方法研究综述], *Military Operations Research and Systems Engineering* [军事运筹与系统工程], Vol. 23 No 3, September 2009, 75

21 Li Chuanfang, Xu Ruiming, and Mai Qunwei [李传方, 许瑞明, 麦群伟], "A Summary of Research on Combat Capability Analytic Methods" [作战能力分析方法研究综述], *Military Operations Research and Systems Engineering* [军事运筹与系统工程], Vol. 23 No 3, September 2009, 75

22 Li Chuanfang, Xu Ruiming, and Mai Qunwei [李传方, 许瑞明, 麦群伟], "A Summary of Research on Combat Capability Analytic Methods" [作战能力分析方法研究综述], *Military Operations Research and Systems Engineering* [军事运筹与系统工程], Vol. 23 No 3, September 2009, 75

23 Li Chuanfang, Xu Ruiming, and Mai Qunwei [李传方, 许瑞明, 麦群伟], "A Summary of Research on Combat Capability Analytic Methods" [作战能力分析方法研究综述], *Military Operations Research and Systems Engineering* [军事运筹与系统工程], Vol. 23 No 3, September 2009, 75

24 Li Chuanfang, Xu Ruiming, and Mai Qunwei [李传方, 许瑞明, 麦群伟], "A Summary of Research on Combat Capability Analytic Methods" [作战能力分析方法研究综述], *Military Operations Research and Systems Engineering* [军事运筹与系统工程], Vol. 23 No 3, September 2009, 76

25 Dai Yaozong, Shen Jianjing, and Guo Xiaofeng [代耀宗，沈建京，郭晓峰], Research on Combat Effectiveness Assessment Methods [作战效能评估方法研究], *National Defense Science & Technology* [国防科技], Vol. 38 No. 5, October 2017, 104-108

26 Cheng Kai et al [程恺], "Review of Operational Effectiveness and Evaluation Methods" [作战效能及其评估方法研究综述], *Journal of Systems Science* [系统科学学报], Vol. 22 No. 1, February 2014, 88

27 Wang Minle [汪民乐], "Overview on Combat Operational Planning of the Missile Force" [导弹力量作战行动规划综述], *Systems Engineering and Electronics* [系统工程与电子技术], Vol. 42 No. 12, December 2020, 2825-2832

28 Ibid.

29 Zhou Liyao et al [周立尧], Research on Combat Effectiveness Evaluation of Missile Force Operational Units [导弹部队作战单元作战效能评估研究], Ship Electronic Engineering [舰船电子工程], Vol. 40 No. 9, September 2020, 124-128

30 Wang Minle [汪民乐], "Overview on Combat Operational Planning of the Missile Force" [导弹力量作战行动规划综述], *Systems Engineering and Electronics* [系统工程与电子技术], Vol. 42 No. 12, December 2020, 2825-2832

31 Zhou Liyao et al [周立尧], Research on Combat Effectiveness Evaluation of Missile Force Operational Units [导弹部队作战单元作战效能评估研究], Ship Electronic Engineering [舰船电子工程], Vol. 40 No. 9, September 2020, 124-128

32 Wang Yinlai, Chen Songhui and Jia Ziying [王印来，陈松辉，贾子英], *Effectiveness Analysis of Force Formation for Landing Operations based on Complex Network* [基于复杂网络的登陆作战兵力编组效能分析], *Fire Control & Command Control* [火力与指挥控制], Vol. 39 No. 8, August 2014, 87-88

33 Wang Yinlai, Chen Songhui and Jia Ziying [王印来，陈松辉，贾子英], *Effectiveness Analysis of Force Formation for Landing Operations based on Complex Network* [基于复杂网络的登陆作战兵力编组效能分析], *Fire Control & Command Control* [火力与指挥控制], Vol. 39 No. 8, August 2014, 88

34 Wang Yinlai, Chen Songhui and Jia Ziying [王印来，陈松辉，贾子英], *Effectiveness Analysis of Force Formation for Landing Operations based on Complex Network* [基于复杂网络的登陆作战兵力编组效能分析], *Fire Control & Command Control* [火力与指挥控制], Vol. 39 No. 8, August 2014, 88

35 Wang Yinlai, Chen Songhui and Jia Ziying [王印来，陈松辉，贾子英], *Effectiveness Analysis of Force Formation for Landing Operations based on Complex Network* [基于复杂网络的登陆作战兵力编组效能分析], *Fire Control & Command Control* [火力与指挥控制], Vol. 39 No. 8, August 2014, 88-90

36 Xu Shuang et al [徐爽], Research on System Construction Facing the Future of Amphibious Warfare [面向未来两栖作战的体系构建研究], Proceedings of the 9th China Command and Control Conference, June 2021, 162-172

37 Chen Songhui and Qiu Hongli [陈松辉　邱宏理], "Study of Landing Operational Effectiveness Criteria based on AHP and Fuzzy Comprehensive Evaluation" [基于AHP和模糊综合评判法的登陆作战效能分析], *Ship Electronic Engineerin*g [舰船电子工程], Vol. 33 No. 2, February 2013, 91-93, 117

38 Chen Songhui and Qiu Hongli [陈松辉　邱宏理], "Study of Landing Operational Effectiveness Criteria based on AHP and Fuzzy Comprehensive Evaluation" [基于AHP和模糊综合评判法的登陆作战效能分析], *Ship Electronic Engineering* [舰船电子工程], Vol. 33 No. 2, February 2013, 117

39 Chen Songhui, Qiu Hongli and Du Hu [陈松辉，　邱宏理，　杜虎], Analysis and Research of Amphibious Formations Integrated Landing Combat Capability [两栖编队综合登陆突击能力的分析研究]，*Ship Electronic Engineering* [舰船电子工程], Vo. 34 No. 5, May 2014, 34-35

40 Ibid.

41 Liu Hongkun et al [刘洪坤], Combat Capability Assessment of a Tank Company Assaulting a

Combat Vehicle Platoon on an Island [坦克连对岛上战车排进攻作战能力分析], *Fire Control and Command Control* [火力与指挥控制], Vol. 31 No. 9 September 2006, 64-66 and 78

42 Huang Dasan, et al [黄大山], Army Firepower Optimized Distribution Model under Informationized Conditions [信息化条件下陆军部队火力优化分配模型], *Ordnance Industry Automation* [兵工自动化], Vol. 40 Issue 1, January 2021, 71-73 and 83

43 Wang Zhenyu, Ma Yaping, and Li Ke [王振宇, 马亚平, 李柯], "Research on Joint Combat Effectiveness Assessment Based on Combat Simulations" [基于作战模拟的联合作战效能评估研究], *Military Operations Research and Systems Engineering* [军事运筹与系统工程], Vol. 19 No. 4, December 2005, 62-66

44 Gao Yu et al [高 宇], "Evaluation of Close Air Support Combat Capability of Fixed-Wing Aircraft" [固定翼飞机近距空中支援作战能力评估], *Ordnance Industry Automation* [兵工自动化], Vol. 40 Issue 5, May 2021, 51-52

45 Gao Yu et al [高 宇], "Evaluation of Close Air Support Combat Capability of Fixed-Wing Aircraft" [固定翼飞机近距空中支援作战能力评估], *Ordnance Industry Automation* [兵工自动化], Vol. 40 Issue 5, May 2021, 52-53

46 Wang Hao et al [王浩], Research on Air Assault Brigade Combat Effectiveness Evaluation based on Fuzzy Comprehensive Evaluation Method [基于模糊综合评判法的空中突击旅作战效能评估研究], Journal of Information Engineering University [信息工程大学学报], Vol. 22 No. 2, June 2021, 369-373

47 Wang Kang et al [王康], Evaluation of Equipment Requirements for Army Air Assault Troops Based on Simulation of Combat Effectiveness [基于作战效能仿真的陆军空中突击部队装备需求方案评估], *Journal of Academy of Armored Force Engineering* [装甲兵工程学院学报], Vol. 29 No. 3, June 2015, 4-7

48 Rong Ming, Hu Xiaofeng and Yang Jingyu [荣明, 胡晓峰, 杨镜宇], Research on Resilience of the Operational System of Systems based on a Test Bed [基于试验床的作战体系弹性评估研究], *Journal of System Simulation* [系统仿真学报], Vol. 30 No. 12, December 2018, 4711-4717

49 Ding Jianfe et al [丁剑飞], Analysis on Construction Methods of Indicator Systems for System of Systems Effectiveness Evaluation [关于体系作战效能评估指标体系构建方法的研究分析], *Journal of Command and Control* [指挥与控制学报], Vol 2 No. 3, September 2016, 239-242

50 See for example Du Wei and Wu Congjui [杜伟, 吴从晖], "Research on Effectiveness Evaluation Methods for Digital Force Operational System of Systems" [数字化部队作战体系效能测度方法研究], *Modern Defense Technology* [现代防御技术], Vol. 43 No. 3, June 2015, 25-34

51 Zhu Xuegeng et al [朱学耕], "Assessment of the Combined Battalion's Dynamic Combat Capabilities Based on the Triangular Fuzzy VIKOR Method" [基于三角模糊VIKOR的合成营动态作战能力评估], *Fire Control & Command Control* [火力与指挥控制], Vol. 45 No. 10, October 2020, 143-148

52 Liu Yibing, Wang Kai, and Pu Wei [刘忆冰, 王凯, 蒲玮], "Combat Effectiveness Evaluation of Armored Combined Battalion Equipment System of Systems based on Gray Hierarchy Analysis Method" [基于灰色层次分析法的装甲合成营装备体系作战效能评估], *Journal of Ordnance and Equipment Engineering* [兵器装备工程学报], Vol. 39 No. 10, October 2018, 96-99

53 Lu Jie et al [逯杰], Where is the "New" Quality of New Combat Effectiveness [新质战斗力"新"在何处], *PLA Daily*, 16 April 2024, http://www.81.cn/szb_223187/szbxq/index.html?paperName=jfjb&paperDate=2024-04-16&paperNumber=07&articleid=929275

54 Ma Quan [马权], Seeking New Quality Combat Capabilities from Emerging Fields [向新兴领域要新质战斗力], *PLA Daily*, 30 April 2024, http://www.81.cn/szb_223187/szbxq/index.html?paperName=jfjb&paperDate=2024-04-30&paperNumber=07&articleid=930248

55 Li Chuanfang, Xu Ruiming, and Mai Qunwei [李传方, 许瑞明, 麦群伟], "A Summary of Research on Combat Capability Analytic Methods" [作战能力分析方法研究综述], *Military Operations Research and Systems Engineering* [军事运筹与系统工程], Vol. 23 No 3, September 2009, 77-78

56 Zhang Shikun [张世坤] et al, An Overview of the Operational System of Systems Evaluation Method [作战体系评估方法综述], *Command Control & Simulation* [指挥控制与仿真], Vol. 43, No. 6, December 2021, 1-2

57 Cheng Kai et al [程恺], "Evaluation Method of Operational Effectiveness based on Support Vector Machine "[基于支持向量机的部队作战效能评估], *Systems Engineering and Electronics Technology* [系统工程与电子技术], Vol. 33 No. 5, May 2011, 1055-1058

58 Zhang Shikun [张世坤] et al, An Overview of the Operational System of Systems Evaluation Method [作战体系评估方法综述], *Command Control & Simulation* [指挥控制与仿真], Vol. 43, No. 6, December 2021, 2

59 Dai Yaozong, Shen Jianjing, and Guo Xiaofeng [代耀宗, 沈建京, 郭晓峰], "Research on Combat Effectiveness Assessment Methods" [作战效能评估方法研究], *National Defense Science & Technology* [国防科技], Vol. 38 No. 5, October 2017, 107-108

60 Zhang Shikun [张世坤] et al, "An Overview of the Operational System of Systems Evaluation Method" [作战体系评估方法综述], *Command Control & Simulation* [指挥控制与仿真], Vol. 43, No. 6, December 2021, 3-5

61 Li Chuanfang, Xu Ruiming, and Mai Qunwei [李传方, 许瑞明, 麦群伟], "A Summary of Research on Combat Capability Analytic Methods" [作战能力分析方法研究综述], *Military Operations Research and Systems Engineering* [军事运筹与系统工程], Vol. 23 No 3, September 2009, 77-78

62 Cheng Kai et al [程恺], Review of Operational Effectiveness and Evaluation Methods [作战效能及其评估方法研究综述], *Journal of Systems Science* [系统科学学报], Vol. 22 No. 1, February 2014, 91-92; Dai Yaozong, Shen Jianjing, and Guo Xiaofeng [代耀宗, 沈建京, 郭晓峰], Research on Combat Effectiveness Assessment Methods [作战效能评估方法研究], *National Defense Science & Technology* [国防科技], Vol. 38 No. 5, October 2017, 107-108

63 Dai Yaozong, Shen Jianjing, and Guo Xiaofeng [代耀宗, 沈建京, 郭晓峰], "Research on Combat Effectiveness Assessment Methods" [作战效能评估方法研究], *National Defense Science & Technology* [国防科技], Vol. 38 No. 5, October 2017, 107-108

64 Niu Ya and Wang Qi [牛亚, 王奇], Grasp the Development Trend of Joint Operations Assessments [把握联合作战评估发展趋势], *PLA Daily*, 8 February 2024, http://www.81.cn/szb_223187/szbxq/index.html?paperName=jfjb&paperDate=2024-02-08&paperNumber=07&articleid=925074

65 Xue Yanxing [薛闫兴], "Combat Assessments Must be Timely and Efficient" [作战评估须及时高效], *PLA Daily*, 7 May 2024, http://www.81.cn/szb_223187/szbxq/index.html?paperName=jfjb&paperDate=2024-05-07&paperNumber=07&articleid=930525

66 Fei Shiting [费士廷], "Strengthen Mission and Deepen Reform and Innovation" [强化使命担当 深化改革创新], *PLA Daily*, 8 March 2024, http://www.mod.gov.cn/gfbw/qwfb/16292166.html

67 Gu Zhenjun [谷振军], Improve New Quality Combat Effectiveness and Promote High Quality Development [提升新质战斗力 推动高质量发展], *PLA Daily*, 19 March 2024, 7

68 Lu Junjie [吕俊杰], "A Brief Introduction to "New Quality Combat Effectiveness" [浅说"新质战斗力"], *PLA Daily*, 27 May 2010, 10

69 Dong Zifeng [董子峰], "Combat Effectiveness: Towards a New Realm of "information Dominance – Deeply Grasping the Contemporary Connotation of Accelerating the Transformation of Combat Effectiveness Generation Model" [战斗力: 走向"信息主导"新境界 ——深刻把握加快转变战斗力生成模式的当代内涵], *PLA Daily*, 24 February 2011, 10

70 Chen Dianhong et al [陈典宏], "Operational

Evolution – Observation from the Sothern Theater Joint Staff Group" [运筹的迭变——来自南部战区联合参谋群体的观察报告], *PLA Daily*, 6 December 2023, 1

71 "Comprehensively Promote In-depth Development of Military-Civilian Integration and Strive to Create a New Situation in Strengthening the Military in the New Era"[全面推进军民融合深度发展 奋力开创新时代强军兴军新局面], *PLA Dailly*, 13 March 2018, 7

72 Wei Wenhui [魏文徽], "Clench Your Hard Fingers into a Fist" [把硬指头攥成铁拳头], *PLA Daily*, 14 July 2021, 3; Kevin McCauley, "Cultivating Joint Talent: PLA Education and Training Reforms," Foreign Military Studies Office," USA TRADOC, February 2023, https://fmso.tradoc.army.mil/2023/2023-02-10-cultivating-joint-talent-pla-education-and-training-reforms-kevin-mccauley/ ; Li Jianwen et al [李建文], "A Certain Air Force Brigade in the Northern Theater Command Regards Solving Difficult Problems as a "Millstone" for Training and Rectification" [北部战区空军某旅把解决棘手难题当作整训整改"磨刀石"], *PLA Daily*, 13 April 2024, http://www.mod.gov.cn/gfbw/wzll/bbzq/16300654.html

73 Yang Huan [杨欢], "Comprehensively Understand the New Quality Combat Effectiveness" [全面认识新质战斗力], *PLA Daily*, 24 April 2024, http://www.81.cn/szb_223187/szbxq/index.html?paperName=jfjb&paperDate=2024-04-24&paperNumber=02&articleid=929842

74 Xu Chunlei and Zhang Lu [许春雷 张露], "Fully Liberate and Develop New Quality Combat Capabilities"[充分解放和发展新质战斗力], *PLA Daily*, 23 April 2024, http://www.81.cn/szb_223187/szbxq/index.html?paperName=jfjb&paperDate=2024-04-23&paperNumber=07&articleid=929774

75 Xu Chunlei and Zhang Lu [许春雷 张露], "Fully Liberate and Develop New Quality Combat Capabilities"[充分解放和发展新质战斗力], *PLA Daily*, 23 April 2024, http://www.81.cn/szb_223187/szbxq/index.html?paperName=jfjb&paperDate=2024-04-23&paperNumber=07&articleid=929774

76 Ma Ying [马瑛], "A Preliminary Understanding of Accelerating the Supply of New Quality Combat Capabilities" [对加快新质战斗力供给的初步认识], *PLA Daily*, 2 May 2024, http://www.81.cn/szb_223187/szbxq/index.html?paperName=jfjb&paperDate=2024-05-02&paperNumber=03&articleid=930341

77 Zhao Weibo and Fan Yajie [赵韦博 and 范雅捷], "Grasp the Intrinsic Connection between New Quality Productive Forces and New Quality Combat Capabilities" [把握新质生产力与新质战斗力内在联系], *PLA Daily*, 9 July 2024, http://www.81.cn/szb_223187/szbxq/index.html?paperName=jfjb&paperDate=2024-07-09&paperNumber=07&articleid=934855

78 Ma Weifang [马卫防], "Strengthen the Idea of Seeking Combat Capability Through Reform" [强化向改革要战斗力的思想], *PLA Daily*, 19 December 2023, http://www.81.cn/szb_223187/szbxq/index.html?paperName=jfjb&paperDate=2023-12-19&paperNumber=07&articleid=921739