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The People's Liberation Army on Wargaming

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China has a long history of engaging in wargaming and exercises as part of military planning. The Chinese biography of Sun-Tzu (545-470 BC) recounts the tale of Sun-Tzu employing the emperor's consorts as troops to demonstrate military activities and maneuvers. In the Warring States period (475-221 BC), the philosopher Mozi is said to have dissuaded the state of Chu from attacking the state of Song by playing wargames against Song's warlord Lu Ban, demonstrating that any attack Lu might mount would face already prepared countermeasures.

During the rule of Mao Zedong, however, the People's Liberation Army (PLA) was discouraged from pursuing greater military professionalism. Mao worried that a professional military might resist Party control, constituting a separate power base. Moreover, Mao feared a professional military might reach conclusions that contradicted or diverged from Party ideology. Consequently, PLA professional military education (PME) suffered under much of the Mao era (1949-1976). During the Great Proletarian Cultural Revolution (1966-1976) in particular, many PME institutions were shut down and military education in general was badly disrupted. During this period, it is not clear how much wargaming was conducted, nor who was responsible for their staging, if they were conducted at

all.

After Mao passed from the scene and Deng Xiaoping established control of the People's Republic of China in 1978, Chinese professional military education efforts recovered somewhat. Unlike Mao, Deng did not view military professionalism with the same degree of suspicion (although Party control of the military remains paramount, to this day). Various PME institutions that had been closed during the Cultural Revolution were reopened. Unfortunately, due to disruptions to the broader educational system, the role of Chinese PME in the years immediately following the reopening of military education institutions was reduced to providing a rudimentary basic education to military officers, to prepare for the possibility of the Cold War turning hot.

Deng subsequently revised the strategic assessment of the period, concluding that the prospect of a major nuclear war in the near term was low. The pressure on the PLA to be constantly readying for war therefore abated. But this reassessment also meant that the PLA's budget was slashed, as Deng emphasized economic development over military programs. The PME system itself was overhauled to focus more on individual training, rather than wholesale unit training (as the urgency for preparing for war receded). It was at this time that [the PME system](#) began to be tasked with providing analysis and support for PLA development, as well as training future officers.

Consequently, for much of the first decade of Deng's control, PME was spotty, as the PLA itself was roiled by shifts in national as well as military-specific policies, including a massive million-man downsizing. This began to change in the 1980s with the establishment of the Chinese National Defense University (NDU). The first Gulf War (1990-1991) compelled the PLA to further reassess the role of military professionalism and PME. Like many other nations wary of American power, China took lessons from this conflict. They now understood that the next war would not be a replay of World War II with more advanced weapons, as they previously assumed. The combination of highly increased weapons effectiveness and the far more complex nature of modern, high-tech warfare, led the PLA to conclude that its preparations for conflicts like the Gulf War—"local wars under modern conditions," as they termed it—were insufficient. This required the PLA to commit far more substantial resources to studying the nature of future wars, and preparing for them.

As a result, in the 1990s the Chinese PME system was stabilized and the PLA tasked it to help prepare the PLA's officer corps for "local wars under modern, high-tech conditions." This longer-term stability, including a formal acknowledgement of its role in preparing PLA officers, meant that the PME structure could also develop deeper, more sustained programs in certain key areas. One of these is operational planning analysis, an essential part of the PLA's efforts to develop wargaming. In 1979, China first established an [operational planning analysis](#) research structure and began to apply lessons learned from industry towards military operational problems.

Operational planning analysis incorporated aspects of computers, information technology, and other new elements of science and technology to warfare, in ways that had not been possible in the ideologically charged Mao era. As the PLA sought to inculcate officers with greater familiarity with modern technology, the increasingly complex and sophisticated problems of modern warfare could no longer be addressed solely through classroom discussion. This lent impetus to the creation of a number of forms of [computerized wargaming and operational modeling software](#), such as "Joint 99" and the "Red Star System." PLA writings suggest, however, that the military as a whole viewed these programs with skepticism. It was found that "[leaders don't trust it](#), offices aren't familiar with it, units don't wish to use it."

This may have been due to a lack of focus in Chinese computerized wargaming development. Should computer programmers or military officers play the lead role? One PLA critique of early wargaming efforts suggests that they were clunky, with poor coordination between users and programmers. Moreover, Chinese computerized wargaming efforts were apparently diffuse and redundant. Major PME institutions such as the Ground Forces Staff College at Shijiazhuang, as well as the military region headquarters, and possibly service headquarters, apparently all had their [own computerized wargaming centers](#). The result was wasteful and uncoordinated, with only limited degrees of commonality among the various games. Nor did the games necessarily support the goal of expanding joint, informationized training.

It is in the midst of this period, in 1997, that Hu Xiaofeng (currently a major general) came to the fore. According

to Chinese news reports, Hu seems to have been transferred from the National University of Defense Technology (NUDT) to the National Defense University in 1997, reportedly by order of the Central Military Commission (CMC) itself, to take charge of the PLA's computer wargaming effort. Hu had been one of the first students to be enrolled in Dr. Qian Xuesen's Systems Engineering and Mathematics Department. Thus, Hu's academic pedigree was impeccable, being associated with the man identified as the father of China's nuclear and space programs. Hu attracted the attention of senior military leaders because of his familiarity with systems engineering, and the belief that Chinese wargaming would have to incorporate aspects of this field.

At the same time, however, Hu also had a military background. He was among the first students to enter the PME system after the revival of the national testing system, and had enrolled at the newly reestablished National University of Defense Technology. There are indications he also [worked extensively on military information systems](#) after graduating.

Hu's efforts seem to have received highest level support from within the PLA. This was important, since Hu apparently initially had trouble attracting sufficient talent to help write the various necessary programs. His efforts may have been facilitated, even accelerated, by the decision in 1999 to consolidate various warfighting laboratories and wargaming efforts within a single organizational structure and a unified training information system. Hu was made the chief designer and subject matter leader for the PLA's entire laboratory development effort, and [NDU was made the central institution](#) housing it.

Hu and his team [engaged in extensive research](#), visiting multiple military regions to interview hundreds of officers, and writing over ten million lines of code in the course of their development effort. Their initial product, apparently introduced in the early 2000s, was the "Whetstone" (or "Sword Sharpening") series of operational-level command training models. These were [China's first efforts](#) at a computer-based, war-zone level, intranet-based campaign exercise. Hu subsequently designed the first strategic-level computerized wargames, the "Absolute Victory" series, incorporating economic and political elements into the military systems. He seems to have also designed an "immersion style" [multi-player networked gaming system](#), to facilitate strategic level decision-making. These efforts garnered for Hu high-level recognition, including awards for advancing both the national level of science and technology and military science and technology. In 2007, Hu apparently began designing a computerized wargaming system that would link strategic- and campaign-level operations.

PLA writings suggest that, since the renewed focus on developing Chinese wargames in 2007, their wargaming efforts, and specifically their computerized wargaming systems, are intended to support two key areas: command and control decision-making; and decision-making under wartime conditions, including informational uncertainty.

Recent open source discussion of PLA wargaming emphasizes the importance of computerized wargaming in familiarizing commanders with decision-making (*zuozhan juece*; 作战决策), under dynamic, constantly changing conditions. Part of the objective appears to be to accelerate the decision-making cycle, since the informationized battlefield will not allow for delays. [Command and control decision-making](#), especially in "local wars under high-tech conditions," or now under informationized conditions, must focus on the development of plans and responses, often in immediate response to developing circumstances, rather than the previous emphasis on implementing process and procedures developed long in advance of the conflict or situation. Computerized wargames are seen as [promoting closer situational analysis](#), more flexible tactics, and training commanders and staffs to "think more completely, more precisely, more deeply, which will produce more effective levels of command stratagem."

This more flexible, more responsive training, in turn, requires the ability to make clear whether any particular decision is right or wrong, beneficial or harmful. It is also essential to identify key points in the course of a campaign, i.e., which decisions were most important, and at what points were decisions necessary. Identifying such moments and decisions requires a degree of rigor to be credible, and cannot be the function of biases or relationships.

Chinese literature suggests that previous attempts at developing wargaming (not necessarily just computerized wargaming) yielded results that were either scripted, or influenced by subjective assessments. The new,

computerized systems, by contrast, are said to allow more “free play” and autonomy on the part of players, but with the results derived more objectively. When one computerized wargame reported high casualties in the course of an action, [the underlying algorithms could be displayed](#) to allow players to better understand the results.

This need for rigor is especially important, as the PLA apparently is also seeking to incorporate more realism into its wargames. In particular, it is suggested that wargames can help emulate both the time-urgency associated with modern warfare, as well as uncertainty due to lack of complete information. (This latter aspect has been a source of PLA concern and commentary for at least a decade.) Thus, one Chinese press report cites the Deputy Director of the Beijing Military Region Headquarters’ Operations Department as [noting that such systems will allow for more realistic training](#). That same report quotes an unnamed group army chief of staff as observing that the ability to incorporate the fog of war (*zhanzheng miwu*; 战争迷雾) and uncertainty has thoroughly altered the thinking and command styles of commanders and their staffs.

Hu Xiaofeng’s efforts, as well as the perceived utility of computerized wargaming, seems to have led to a growing employment of such systems within the PLA. Intriguingly, it would appear that such games started with simulations of inter-service strategic problems, and are now expanding towards more tactical simulations, at the individual service level. In particular, a number of Chinese press reports in 2013 suggested that [tactical \(*zhanshu*; 战术\) level wargames](#) were employed by military regions, while services engaged in [combined arms \(i.e., inter-branch\) wargames](#), in addition to joint (inter-service) wargames.

This brief paper focuses on Chinese development of computerized wargames. The PLA, of course, engages in non-computerized wargames, military exercises, experimentation, etc. This paper does not claim to be a comprehensive survey of these various PLA efforts.

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