Revolution in Military Affairs with Chinese Characteristics

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While China's interest in Revolution in Military Affairs (RMA) dates back to the mid-1980s, the Western hi-tech precision military action in the 1991 Gulf War; the 1999 Kosovo war; the 2003 Iraq war and the continuing Afghan campaign have all convinced it to opt for the RMA, albeit within the limits of Chinese technology, organisation, and defence budget. With mechanisation and information technology as its watchwords respectively for the next few decades, the 16th and 17th Communist Party Congress of 2002 and 2007 voted for the gradual and concerted implementation of RMA in specific areas of military doctrines, organisation and equipment. This decision is bound to impact the Asian region in the coming years. The Chinese RMA will focus on information warfare, electronic warfare, asymmetric methods, C4ISR modernisation, rapid mobility, long-range precision strikes, space warfare, missiles and joint operations. In the short term, China is poised to apply RMA in selective areas for mitigating its security concerns, and over the long-term has plans to leap-frog into more advanced areas.

Introduction

The People's Republic of China (PRC) and its People's Liberation Army (PLA) have of late shown a keen interest in undertaking a RMA in its future military orientation and strength, national security, regime security and as an important aspect of military modernisation. Any RMA implies a paradigm shift from a continental and territorial focus to a five-dimensional (land, air, sea, space and electro-magnetic) spectrum, from traditional warfare based on infantry, armour, artillery, ships, aircraft and other related aspects to a qualitative technological and information-based superiority in combat, and an agile organisational based on a scientific and systemic management, etc. A no-contact, zero casualty war, rapid response elite units, battlefield digitalisation, long-range, terminally-guided precision strikes, BVRs, etc. are some other features of the RMA.

China's interest in the RMA aspects like IW, EW, C4ISR and space warfare dates back to the 1980s and predates the post Gulf War 1991 debates on the subject.

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However, these remained elementary in nature. From the mid-1990s, there has been burgeoning literature on the subject that indicates a growing Chinese interest in studying, adapting and implementing RMA aspects suitable to the country. Termed as "military revolution" [*junshi geming*], but more aptly updated as "new military revolution" [*xin junshi geming*], there have been vigorous RMA debates in China.[1] These in turn have influenced the formulation of various doctrines, organisation, equipment/systems, training and the like.

Triggers for Chinese RMA

Chinese interest in RMA is linked to its perceptions about its national security challenges. The main security challenges facing China, as reflected in the four official white papers issued in 1995, 1998, 2000 and 2002 on defence and arms control include problems related to national, economic and military security, territorial integrity and sovereignty. These have a bearing on issues related, as much to, the on-going economic modernisation as to Taiwan, the South China Sea islands, the Senkaku Islands and unresolved border disputes with India. While the PLA has evolved its 'local war under hi-tech conditions' military strategy to overcome these military challenges, some of its adversaries are also in the process of transiting into RMA modes.[2] Specific concerns for China in this regard are the US military deployments in the Pacific island of Guam with reports of the placing of several land attack cruise missiles (LACMs) and SSBNs; the US military presence in Japan and South Korea; advanced military technology transfers to Taiwan; preparations for a ballistic missile defence (BMD) system in the East Asian region; the swift spread of information and electronic technologies; the reported US plan to set up a space force by 2015; and the development of electromagnetic pulse weapons and the like.[3] After the Gulf War of 1991, the Kosovo bombings of 1999, the 2003 Iraq War and the current Afghan campaign, Chinese military writers are of the opinion that any military attack on China - should it ever happen - could be in the form of precision strikes, the paralysing of C4ISR networks, strategic targets, etc.[4] Future hi-tech warfare is likely to be fraught by electro-magnetic waves, especially between China and Taiwan Straits, given the heavy deployment of coastal batteries, radar systems, and the electronic equipment based on ground, air and sea-based platforms on either side.

One frequent posture taken by Chinese thinkers on the subject is that the on-going global RMA and the Chinese technological lag in these aspects is detrimental to its national security in the coming decades given China's objective for a "peaceful rise" in the region in the next two decades.[5] Such considerations are also based on assessments that obsolete Chinese military equipment (supplied to Iraq from the 1970s) fared miserably in the face of Western precision strikes, as in the 1991 Gulf War.[6]

Apart from the relatively low technological levels of the PLA, there are other important concerns as well. For You Ji, the strategic significance of Chinese RMA goes far beyond its military impact. While economic interventionism through imposing sanctions has not made for effective intervention by the Western countries, he argued that for:

> …the Chinese the connection between political intervention and military intervention is dangerous for its national security. The RMA has become the actual mechanism to put this theoretical concept into practice in the real world politics…. To the Chinese leadership the danger of RMA as applied against China does not lie in its effect of mass destruction in military terms but its political consequence in destabilising the country's social stability and government. [7]

This contention appears to be not too far-fetched if we examine the concern of the *PLA Daily* in this regard. For, it is necessary for the PLA forces to urgently catch up with advanced countries in mechanisation and IT applications:

> Our military is in a special stage. On the one hand, it has not completed its tasks of mechanisation, and on the other hand, it should move towards informationisation. However, a great disparity exists between the level of modernisation construction and the requirements given by the military's mission. If we lack a sense of worry, are complacent with the present situation, and continue to work according to outdated routines, we will fail to grasp excellent opportunities and will be unable to carry out the fundamental function of ensuring national security and stability.[8]

Other statements of the PLA further amplify such concerns regarding the security of "information territory" - one of the key aspects of the RMA.[9] Since "information territory", is defined as "the virtual space and its physical carrier existing in the electronic equipment used by the infrastructure system, government and non-government institutions and even individuals" in "key" information network systems like finance and statistics, energy, telecommunications, transportation and the military. Any threat to such "territory" could lead to a national security disaster. According to Yang Liu and Wang Donghua, threats from hackers and the adversary's digitalised troops "will bring economic loss or inconvenience to social life, or, worse still, throw politics, economy and military and social order into chaos."[10]

Additional triggers for Chinese interest in RMA are the gradual rise of technocrats in China who stress the development of civil and military-technical aspects. This is reflected not only within the civilian leadership of Jiang Zemin, Hu Jintao and others but also within the military hierarchy. Two decades of four modernisations with the latter two focused on science and technology and military modernisation have created a bigger constituency within the civil society and PLA that advocates more infusion of advanced technologies. The recent elevation in the 16th and 18th Party Congresses of Cao Gangchuan, Liang Guanglie, Ma Xiaotian and Guo Boxiong and other defence R&D personnel further strengthens such a view. The mid 1980s transformation of the PLA has enhanced professional trends, the impact of which can be seen in their all pervasive influence in China.

Chinese Views on RMA

During the mid-1980s the PRC witnessed a strategic transformation (*zhanlue zhuanbian*) that saw the modernisation of the PLA (demobilisation, reform, reorganisation of various aspects of the defence establishment, institution of ranks and grades, professionalism, etc.). During this period, the Chinese Academy of Military Science, National Defence University, Academy of Electronics Technology and other think tanks have initiated discussions to evolve appropriate concepts and methods for fighting hi-tech future wars.[11] Chinese assessments of the 1991 Gulf, 1999 Kosovo, 2001 Afghan and 2003 Iraq wars are instructive in underlining the need for study and application of RMA.

According to Wang Chunyu, the main reason for the defeat of the Iraqi forces, even as they achieved limited successes in the concealment and camouflage of the troops, lay in its adoption of a "passive" defence policy in IW. According to him, the situation was different in the Kosovo War where Yugoslavia "took the initiative to contend for information superiority with the NATO forces. As a result, it gained remarkable results in battle, shooting down an F-117A stealth aircraft and a large number of cruise missiles." Hence, for success in IW, he advocated "positive offensive defence" by "taking offence as the main feature in operation". [12]

According to Chen Hu, the US mobilised its ground forces in 2003 unlike in the 1991 and Kosovo events, due to its air, ground and information warfare superiority over the Iraqi forces. Despite this superiority, says Hu Wenlong US forces are constrained by the following problems: da bu zhao [it cannot hit]; da bu zhen [it cannot hit correctly] and da bu hen [it cannot strike fiercely]. Hence its ground forces have been pressed into service in Iraq.[13]

In the assessment of the then Deputy Chief of General Staff, Xiong Guangkai on RMA during these wars, the performance of Western weaponry was not flawless specifically in the losses caused by "friendly killings"; PGMs jammed by Iraqi GPS jammers; impairment of hi-tech weapons in smoke screens laid out by Iraqis; failure to achieve the "zero casualty" goal, etc. Nevertheless, according to Xiong, during the "decapitation strikes", "shock and awe" operation and "exploit the victory and clean up" operation in March-April 2003, the US displayed more sophisticated RMA aspects like combined arms divisions, "rapid dominance" on the battlefield, space and electromagnetic forces, psychological and intelligence warfare and high power microwave munitions and joint stand off weapons. For instance, the US forces launched 800 cruise missiles (as against 288 in 1991), 90 military satellites used (as against 33 in 1991, 50 in 1999 and about 50 in 2001 war) for uninterrupted intelligence supply.[14]

These views indicate that the Chinese have understood the importance of IW in future warfare.[15] The six methods of IW- viz., operational security, military deception, psychological warfare, electronic warfare, computer network warfare, and physical destruction - are being studied carefully and used in operations and exercises with varying successes.[16] Information combat methods like information deterrence, information dismemberment, information interdiction, information "pollution" (through virus and fraud) and information attacks have been prescribed for this effort.[17] However, several precautionary measures have also been incorporated. For instance, in order to counter the fallout of the Asian financial crisis of 1997-1998 and May 1999 US bombings of the Chinese Embassy building in Belgrade, the PLA proposed the setting up of a "multi-field three-dimensional security system" with defence security as its core to include information security, network security, and financial security.[18] Within the defence sector, importance of computer technology in automation control, precision guidance technology, laser technology, detection technology, space technology, stealth technology, and electronics technology was emphasised.[19] The 16th and 17th Party Congresses with their stress on mechanisation and IT application in the PLA has added further momentum to the study and application of RMA aspects.[20] The Chinese security experts in 2008 defined the RMA as follows:

> Fundamental reforms that thoroughly change the characteristics and patterns of military operations so as to greatly enhance operational effectiveness of the military through advanced technology and weapons systems combined with innovative military doctrines and organisational mechanisms.[21]

Doctrinal Changes

Traditionally, the PLA is guided by the People's War defence strategy. Soon changes were made in this strategy to incorporate modern aspects of warfare, including in the technological and organisational spheres. The dominant school of thought in the PLA currently supports the concept of a Local War while the RMA school is still to take off.[22] Yet, the influence of the RMA discourse is increasing among the PLA rank and file.[23] At another level, there may not be any sharp conflict between the two because several similarities, like fighting with hi-tech weapons, outweigh the differences. Nevertheless, the main hurdle is the ability of China to master RMA aspects and implement them to suit Chinese conditions. For this, it needs to adapt doctrines that suit not only its technological and organisational profile but also its historical moorings in warfare methods. It is difficult, however, to say that a distinct Chinese RMA doctrine has evolved by now. At best, such a prospect may unfold in the coming decades.[24]

To recount a few views from the PLA on future wars with RMA components, the following may be considered. Due to changes in the RMA and the consequent importance accorded to "information-intensified weapons systems", Chang Mengxiong of System Engineering Institute believed that: "The strategy, tactics, and campaigns suited to the information-intensified battlefields of the 21st century will differ from those of today. The distinction among the three will become blurred, and specific ingredients of each will change."[25] According to Wang Baocun and Li Fei of Academy of Military Science, the impact of information warfare on future combat would be in the nature of integration.

> War zone combat operations will be integrated. As information-age units will have real-time information for rapid mobility both day and night, "the decentralized campaigns developed in the industrial age will no longer exist, being replaced by integrated combat operations in the entire theatre of operations.[26]

In asymmetric warfare methods, attacking the "Achilles heel" of the adversary –the armoured corps of the Russians or the C4ISR of the US- as mentioned by Paul Godwin, are increasingly attracting the attention of the Chinese.[27] In future naval campaigns, according to Shen Zhongchang, Zhang Haiyin and Zhou Xinsheng of the Naval Research Institute, long-range combat, missiles, three-dimensional, electronic warfare and smart weapons will be integrated. According to them, "As the possibility of remote warfare and more powerful weapons can make conventional tactical naval strikes universally achieve their campaign-strategy objectives, future naval warfare campaigns and tactics are likely to be integrated in many cases."[28]

Chinese writings on RMA aspects indicate the focus on IW, EW, and rapid response in pre-emptive strikes on the adversary's communication and strategic hubs by cruise missiles, conventional missiles, laser weapons, space dominance and the like. Doctrinal influences on Chinese RMA are broadly in the following aspects: active defence, "self-defence and counter-attack only after being attacked"[29], defence and offensive orientations in IW, EW and space, interception and jamming, electronic counter-measures, joint operations and "preparing in advance"[30]. Some have also argued for ushering in "military ethics of a harmonious world"[31] or even a "new thought war".[32]

Impact on the Organisational set-up

Drastic changes in the organisational structure of the armed forces are expected once the RMA is initiated across the board. Such changes are visible not only in the professional military outlook but also in a "lean and mean" armed force, emphasis on quality rather than quantity, higher technical educational standards, NCOs, integration of service arms for enhancing efficiency in combat operations, C4ISR, information applications, automation of field command, digitalisation, etc.

The PLA traditionally has emphasised on numbers in combat operations. PLA sources indicate that most of the military campaigns that the PLA fought in the past involved hundreds of thousands of troops, mainly infantrymen. However, the advent of modern concepts requires introduction of qualitatively better troops than quantitatively higher numbers.[33] In this context, the Chinese leader Deng Xiaoping in 1975, while attending an enlarged meeting of the CMC as the then Chief of General Staff, criticised the PLA as being guilty of "bloating, laxity, conceit, extravagance and inertia"[34] and that "an over-expanded and inefficient army is not combat-worthy".[35] According to this line of argument, to cite the *PLA Daily*, the armed forces should be reorganised so as to make them "miniaturised" muscular mechanisms. [36]

To trim the troops numbers a demobilisation programme for 500,000 men was announced in 1997, to, in the words of Jiang Zemin, enhance the "military quality" of the troops.[37] Another 200,000-troop cut was reported in the latter half of 2003 that accounted for ten such attempts since 1949.[38] According to CMC, such reductions would optimise the PLA organisation. "Further reducing the scale of the army will help us concentrate our limited resources to speed up the army's information technology construction."[39] It was reported in 2010 that further demobilisation will be undertaken by the PLA.

The inherited command and control structures of the PLA are in the form of a chain from the Central Military Commission (CMC) and the four general -staff, political, logistics and armament - departments (the latter formed in 1998) at the central Beijing level; at the regional level with seven Military Regions (MR) (reduced from 11 in 1985) and; at the Field Army levels (converted in to 21 Group Armies). During the mid 1980s the PLA command was further reorganised. The PLA began to reorganise six of its 21 group armies by 2001- two in the Shenyang MR, and one each in Guangzhou, Lanzhou, Jinan and Nanjing MRs.[40] Three others were reorganised, including the 28th Group Army in the Beijing MR, the 64th in Shenyang and the 67th in Jinan MR. Reports indicate the reorganisation of the 24th and 63rd Group Armies in the Beijing and Jinan MRs to reduce the total to18 or 19.[41]Among the three types of the Group Armies- A, B and C- the A Type located in the North and Northeast of China, have more electronic warfare equipment and probably are more geared for RMA warfare than the others. Relatively, there is greater degree of mechanisation and informationisation in the Beijing, Shenyang and Jinan MRs than in the others.

China is toying with the idea of making the MRs into US-type Theatre Command Posts with proper integration of various services. The key question in MR reorganisation still remains as to how to make the command structures function in an efficient manner by integrating all services in both peacetime and during warfare.[42] According to a PLA officer, as cited by You Ji, "The revolution in information technology changes with each passing day the battleground structure, operation modes and concepts of time and space, which dictates overhaul of the traditional "centralised" and "tier-by-tier" administrative/command structure."[43]

China has started raising rapid response force units after the 1991 Gulf War in the three armed services and the Strategic Rocket Forces.[44] Of the original 24 Group Armies seven are of the rapid response [kuaisu fanying] force (RRF) type and are the "main" constituent of the Chinese ground forces' combat capabilities. These seven are the Group Army 1, 13, 21, 27, and 38, 39 and 54- all designated as Type A.[45]

The RRFs were instituted in the 15th Airborne Army, marines and other forces. The Beijing MR reportedly formed a 'special reconnaissance troops' on the pattern of the US Green Berets.[46]In addition to the RRFs in the main armed services of the country, the PLA also has started establishing 18 rapid reaction engineer units to counter natural disasters. While the concept of digital soldiers and their equipment was advertised at the bi-annual Zhuhai military show in 2002, it appears that the Chinese capabilities to leap-frog in this aspect are in the realm of a long-term perspective, rather than in the short term realisation.

Chinese military and strategic level communication networks and automation are the responsibility of general staff department's communications department that is considered to be the Signal Corps headquarters.[47] The C3I system [sanxi xitong] has received considerable attention since September 1982 when the PRC ordered all the armed services to introduce and improve the rapid transmission of battle commands.[48] In 1993, a pan-China fibre-optic cable system was reportedly laid with the help of relevant civilian organisations.[49] Developments in modern military communications of China are reportedly seen in six areas, viz, digital technology, optical fibre cables, computer controlled switches, multipurpose terminals, multitasking networks and automation.[50]

Chinese writings obliquely refer to future plans to set up a "network force" and "sky troops" but there is no concrete evidence of any such formal units. In 1996 China reportedly established "Information Security and Research and Development Laboratory at Beijing with an advanced IW team for "organised software combat".[51] In 1999, the *PLA Daily* reportedly announced a campaign to recruit computer hackers to be trained as "cyber warriors" at PLA schools.[52]

However, to guard against cyber-warfare attacks, the PRC in April 2000 enacted a national defence information security act, after reports indicated that Taiwan has been beefing up its information warfare task force following attacks from computer hackers in the mainland in August 1999 on Taiwanese government-run websites.[53] On February 10, 2001 the CMC issued provisions to the four general departments on "Security and Confidentiality of Computer and Information Systems" for strengthening security procedures within the PLA.

Conclusion

From the above analysis it can be deduced that the Chinese responses to the RMA in the initial phases of its development were reactive in nature following the Western military technological actions in the 1991, 1999 and 2003 wars. But China has taken a keen interest in implementing certain aspects of the RMA in the recent period. Chinese initiatives on the RMA are based on its perception of veritable challenges to its national security emanating from the recent trends in the hi-tech warfare, interventionism, and protection of information systems. China has made changes in its military doctrines, organisational set-up and equipment profile for an enhanced informationisation and training programme, though these still remain far below the Western standards. Gradually, however, realisation dawned on the PLA that the Chinese RMA has to take into consideration several "Chinese characteristics" of contending schools of thought in the historical development of its armed forces, technological backwardness, and financial compulsions.

Optimistic assessments of the Chinese ability to transform their armed forces in RMA fields is not less than two decades, though China has belied several of such assessments in the past in its economic, military modernisation, and space programmes, through sheer hard work and perseverance. The task of transiting into RMA, nevertheless, is gigantic if not insurmountable. Other problems include military-technological infrastructure upgradation, efforts to ensure fool-proof information secrecy, defence budgetary increases, etc.

Many analysts in China argue for developing RMA according to Chinese characteristics. They stress the pitfalls of adopting Western concepts of RMA and hence the need for adapting RMA to suit Chinese needs. Specifically, several Chinese understand that RMA in the Western context emerged following a syntheses of several science and technology, industrial, economic and cultural breakthroughs. China, with its relatively backward socio-economic and technological sectors would have to leap-frog these hurdles in the "catching up" with the global RMA trends. They also warn against the spread of the political influence of the West and advocate internet filters, firewalls, etc.

Chinese RMA efforts will impact Asian security in the coming years - the US and Taiwan in the short term and others in the long-term - in both positive and negative ways depending on how China evolves its policies in this field. idsa

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Notes:

1 See Biqin, Liang, ed. *Junshi Geming Lun: Theory of Military Revolution*, Beijing: Academy of Military Science Publications, 2001.

2 See Ta-hwa, Moh, "*Zhonggong junshi shiwu geming zhifenxi yizixun zhanzheng de tantao",* The revolution in PRC military affairs: War in the information age, *Dalu Yanjiu* [Mainland China Studies, Taipei, Vol. 41, No. 11 November 1998 pp. 45-56.

3 See Wanqi, Liu, "*Xinxihua zhanzheng de 'jue ming shashou' - dian ci mai zhong wuqi* ", Electromagnetic Pulse Weapon – IW's assassin's mace, *Dangdai Shijie* Contemporary World, No. 7 (2007) pp. -56

4 Feng Haiming, "*Dangdai gaojishu jubu zhanzheng zhanlue zhidao fazhan de xin dongxiang*" [New trends of development in strategic guidance in contemporary hi-tech local wars] *Zhongguo Junshi Kexue* [Chinese Military Science] (Beijing) vol. 45 no. 4 1998 pp. 162-64; Zhang Yihong, "How did the Persian Gulf War affect the Chinese Army?" December 28, 1998 at <http://www.kanwa.com/english/981230b.html>; and on the 1999 war, "Three topics on anti-air raid operations" *Liberation Army Daily* April 27,1999 in British Broadcasting Corporation, *Selected World Broadcasts Part 3 Asia-Pacific* (hereafter *SWB FE*) *SWB FE/3529 G/8* May 8, 1999. See also Li Yu, "*C4I xitong zai xin junshi geming zhong de yingyong*" [Application of C4I system in RMA] *Hangkong Kexue Jishi* [Aviation Science and Technology] No. 3 (2006) pp. 21-23 and Yao Youzhi, "*Shijie xin junshi biange de zhanlue xing te zheng ye yingxiang*" [The characteristics and impact of the new global military innovation] Guofang Keji Jichu [Basic Knowledge on National Defence Technology] (March 2004) pp. 3-5

5 See, for instance the unpublished Ph.D. thesis Guan Liping, "*Xin junshi biange dui dangdai guoji zhengzhi de yingxiang*" [The Impact of New Military Innovation on Contemporary International Politics] Thesis submitted to Central Party School (Beijing) May 2005

6 For technology as the factor in the RMA, see Wen Shuangfa, et.al. "*Keji jinbu yu xin junshi geming*" [Technology Progress and RMA] Guoji Ziliao Xinxi vol. 4 (2008) pp. 40-43

7 As cited in You Ji, "Revolution in Military Affairs" A New Guide for China's Military Modernisation" accessed on February 23, 2004 at <http://idun.itsc.adfa.edu.au/ADSC/RMA/RMAPAPERS/Ji.htm>. Another Chinese scholar had suggested that this issue is a double edge sword for China and the Chinese communist party. See Huang Daoyu, "*Zhongguo xinxihua jianshe de lishi fazhan ji duice yanjiu*" [Study on the historical development and strategy of China's informationisation construction] unpublished Ph.D. thesis submitted to Central Party School May 2004

8 "Reinforcing sense of worry" *Liberation Army Daily* February 26, 2003 in *FBIS-CHI-2003-0227* February 28, 2003

9 See Fang Qingde, "*Zhongguo guojia xinxi anquan yu celue yanjiu*" [Study of China's national information security and strategy] Ph.D. thesis submitted to Hebei Normal University, April 2008

10 See Yang Liu and Wang Donghua, "Attention should be given to the information territory" *PLA Daily* December 3, 2003.

11 See Michael Pillsbury Ed. *Chinese Views of Future Warfare* (Lancer Publishers; New Delhi, 1998) First published in 1997; Pillsbury Ed. *China Debates the Future Security Environment* (Washington, DC: National Defence University, 2000) and James Mulvenon, "The PLA and Information Warfare" in Mulvenon and Richard H. Yang Eds. *The Peoples Liberation Army in the Information Age* (Santa Monica: RAND Corp, 1999) pp. 175-86.

12 Wang Chunyu, "The key to success in informationized war is to take offensive action" *PLA Daily* December 2, 2003

13 See Chen Hui: "Notes on the War in Iraq: Why Has the U.S. Military Launched its Ground Offensive So Soon?" *Xinhua Domestic Service* March 22, 2003 in *FBIS-CHI-2003-0322* March 24, 2003

14 Xiong Guangkai, "On Revolution in Military Affairs" in his *International Strategy and Revolution in Military Affairs* (Beijing: Qinghua University Press, 2003) pp. 167-85

15 See also Pillsbury 2000 *op.cit*., for the relative influence of the RMA school within the PLA; Wang Houqing, "Military revolution and military operation research" *Liberation Army Daily* September 1, 1998 in *FBIS-CHI-98-268* September 29, 1998

16 Toshi Yoshihara, *Chinese Information Warfare: Phantom Menace or Emerging Threat?* (Carlisle, PA: Strategic Studies Institute, 2001)

17 See Chen Hua and Geng Haijun in "Launching a war against the central information system" *Liberation Army Daily* January 2, 2002 p.11 in *FBIS-CHI-2002-0130* February 5, 2002

18 See Lu Baiyuan, *1999 Guoji Xingshi nianqian* [*1999 Survey of International Affairs*] (Shanghai: Jiaoyu Chubanshe, 1999) pp. 15-16. See also "Military puts forward five-azimuth three-dimensional security concept" *Ming Pao* (Hong Kong) July 7, 1999 in 2000 in *SWB FE/3581 G/7-8* July 8, 1999

19 See Qi Huajun, "High-tech military technology in the future" *Sichuan Ribao* October 26, 1999 in *SWB FE/3678 G/13* October 29, 1999

20 "PLA Deputies at NPC Panel Discussion Pledge to Mechanize, Modernize Through IT" *Xinhua* March 17, 2003 in *FBIS-CHI-2003-0317* March 18, 2003

21 See English-Chinese, Chinese-English Nuclear Security Glossary (by the U.S. National Academy of Sciences and Chinese People's Association for Peace and Disarmament) (Washington, DC: National Academies Press, 2008) p. 62

22 See Charles F. Hawkins, "Competing Schools of Military thought inside the PLA" March 2000 at <http://www.taiwansecurity.org/IS/IS-0300-Hawkins.htm>.

23 Zhang Yuanwei, "*Junshi gaike zai junshi geming zhong de zuoyong*" [The effect of military reform under RMA] *Lilun Guancha* [Theoretical Observation] vol. 2 No. 56 (2009) pp. 69-70

24 Timothy L. Thomas, "Behind the Great Firewall of China: A Look at RMA/IW Theory from 1996-1998" at <http://www.call.army.mil/fmso/fmsopubs/issues/chinaarma.htm>.

25 Chang Mengxiong, "Weapons of the 21st Century" in Pillsbury Ed 1997 p. 253

26 Paul HB Godwin, "Compensating for deficiencies: Doctrinal evolution in the Chinese People's Liberation Army: 1978-1999" in James Mulvenon and Richard Yang eds. *Seeking Truth From Facts: A Retrospective on Chinese Military Studies in the Post-Mao Era* (RAND Corp; Santa Monica, 2001) pp. 87-117 and Finkelstein's response to these observations in Ibid.

27 Shen Zhongchang, Zhang Haiyin and Zhou Xinsheng, "21st-Century Naval Warfare" in Pillsbury Ed. 1997 pp. 266-67

28 Wu Jun, Sun Xiangli and Hu Side "The impact of Revolution in Military Affairs on China's Defense Policy" (Beijing: Institute of Applied Physics and Computational Mathematics, nd,) (2003?)

29 See Liu Xue, et.al. "*Xin junshi geming beijing xia dui zuozhan shiyanshi de xuqiu*" [Demands for combat laboratories in the background of new military revolution] *Zhongguo Xibu Keji* vol. 10 no. 8 Issue 241 (March 2011) pp. 78-79

30 See Shi Xingcheng, "*Xin junshi gaike tiaojian xia de junshi lunli yanjiu – Lun hexie shijie de junshi lunli goujian*" [Study of Military Ethics under RMA conditions – Establishing harmonious world military ethics] Ph.D. thesis submitted to Hunan Normal University December 2007

31 Wu Chongjie, "*Xin sixiang zhanzheng yu zhanlue fanxuanchuan*" [New Thought War and Strategic Counter Propaganda] Ph.D. thesis submitted to Fudan University April 2004

32 See Luo Wenbo, "*Xinxihua zhanzheng yu jundui guanli lilun chuangxin xuqiu*" [Innovation and demands of military personnel management theory and IW] *Zhongguo Jiti Jingji* (China Collective Economy) No. 16 (June 2010) pp. 66-67

33 Deng Xiaoping, *Selected Works of Deng Xiaoping (1975-82)* (Beijing: Foreign Languages Press, 1984) p.91

34 Ibid p.11

35 See *Liberation Army Daily* September 16, 1997 p.6 excerpted in *Inside China Mainland* (Taipei) (December 1997) pp. 31-32.

36 Jiang Zemin cited by *Xinhua* April 23, 1999 in *SWB FE/3518 G/9* April 26, 1999. See also Yu Baozhong and Yang Mingwei, "Lun Jiang Zemin dongzhi shijie junshi geming sixiang" [On comrade Jiang Zemin's ideas on global RMA] *Mao Zedong Sixiang Yanjiu* [Study of Mao Zedong Thought] Vol. 25, no. 1 (January 2008) pp. 114-17

37 See Srikanth Kondapalli, *China's Military: The PLA in Transition* (New Delhi: Knowledge World, 1999) for the previous nine demobilisation efforts and for the current, Robert Sae-Liu, "The great Chinese puzzle" *Jane's Defence Weekly* September 24, 2003

38 CMC obliquely cited by Wu Jun, Sun Xiangli and Hu Side, *op.cit*.

39 PLA has plans to convert these group armies from a division-based structure to a brigade-based structure. See Robert Sae-Liu, "PLA reorganises group armies" *Jane's Defence Weekly* September 15, 1999 p.33

40 Robert Sae-Liu, "The great Chinese puzzle" *Jane's Defence Weekly* September 24, 2003.

41 See Andrei Pinkov, "How is reform carried out in the Chinese military command system?" November 7, 1998 at < http://www.kanwa.com/english/981210a.html>. According to a September 1987 definition of a "theatre of war" [*zhanqu*], it is "a strategic region mapped out by a country, starting from overall strategic needs, and based on geography and the direction of strategy. Generally speaking, each theatre is an independent, or relatively independent, battlefield." See Editorial Committee of Inside Mainland China, *A Lexicon of Chinese Communist Terminology* 2 vols. (Taipei: Institute of Current China Studies, 1997) [hereafter *The Lexicon*] vol. 2 p. 458. It was reported that Nanjing MR has been upgraded to a theatre command post for operations against Taiwan, a process initiated with the "Strait 96 Number One" joint exercises of 1996

42 See You Ji, op.cit. However, according to You Ji, the current efforts of the Chinese leadership are only to stress the "individual aspects of IW" rather than any overwhelming RMA influence due to the dominance of the Local War proponents within the PLA leadership.

43 See Andrew ND Yang and Milton Wen-Chung Liao, "PLA Rapid Reaction Forces: Concept, Training and Preliminary Assessment" in James C. Mulvenon and Richard H. Yang Eds. 1999 pp. 48-58; and "China's Rapid Reaction Force and Rapid Deployment Force" at <http://www.ndu.edu/inss/China_Center/chinacamf.htm>. According to one version, all Type A Group Army's located in the north, northeast are of rapid response capable. See *Chinese Military Digest, 1999* at <http://www.gsprint.com/cmd/cmd.htm>

44 See "*Junshi Kongjian*" at <http://www.tl.ah163.net/personalhomepage/aaa/aaa/lj/s-lj.htm>; and International Institute of Strategic Studies, *The Military Balance 2002-2003* (London: Oxford University Press, 2002) p. 139

45 Li Chengfeng "Challenging the Limits of Survival; "Record of a Certain Beijing MR Special Reconnaissance Force's Wilderness Survival Training" *Xiandai Junshi* [Contemporary Military] No. 260 September 11, 1998 pp. 19-22 in *FBIS-CHI-98-296* October 26, 1998

46 This is based on David Finkelstein, "The General Staff Department of the Chinese People's Liberation Army: Organization, Roles & Missions" in James Mulvenon and Andrew ND Yang Eds. *The People's Liberation Army as Organization: Reference Volume v1.0* (Santa Monica: RAND Corp., 2002) pp. 160-66

4 *The Lexicon* vol.2 pp. 62-63

48 Finkelstein 2002 *op.cit*. pp. 161-62n

49 See Li Xuanqing and Ma Xiaochun, "Armed forces' communications become 'multidimensional" *Xinhua* July 16, 1997

50 See "Chinese Plan Cyber Warfare" August 4, 1999, available at http://www.newsmax.com

51 "Chinese Army recruits 'Hackers'" August 4, 1999 at <http://www.newsmax.com>

52 Wendel Minnick, "Taiwan upgrades cyber warfare" *Jane's Defence Weekly* December 20, 2000 p.18