CHAPTER 16

CIVIL-MILITARY INTEGRATION AND PLA REFORMS

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In December 2015, the People's Liberation Army (PLA) formally launched reforms that have been described as the "most wide-ranging and ambitious restructuring since 1949."[1] Central Military Commission (CMC) Chairman Xi Jinping announced his intention to pursue these changes by calling them the "only way to develop a strong military and the key to deciding the future of the PLA."[2] The PLA's new plan set several goals for 2020: achieving "breakthrough development" in joint operations command system reforms and leadership management system reforms, as well as "significant results" in military force reductions, reforms to improve defense policies, and civil-military integration (CMI) development.[3] CMI's inclusion as a key pillar in a transformative reform agenda confirmed its importance to the PLA's overall modernization, and China's unwavering embrace of it as a national strategic imperative.

CMI began slowly taking root in China as a military modernization strategy in the 1990s, and has since become steadily more institutionalized within the PLA and China's national security sector.[4] Chinese reliance on CMI in military and economic development has increased significantly under Xi Jinping, who has called for CMI to extend into more technology

areas, cover more military and economic activities, and generate more tangible achievements.[5] He has provided a theoretical justification for change by arguing that China's CMI has entered a new phase, transitioning from its initial institutionalization toward a deep integration of the civil and military sectors. To spur a greater focus on CMI's importance, in March 2015 Xi announced that it would be raised to a "national strategy" [*ba junmin ronghe fazhan shangsheng wei guojia zhanlüe*, 把军民融合发展上升为国家战略], and this decision was ratified by the Politburo a year later.[6]

Chinese commentators have voiced their support for this policy direction by emphasizing the critical importance of CMI, arguing that it is a "strategic requirement" [*zhanlüe xuqiu*, 战略需求] and the only way to build a military capable of winning informationized wars.[7] As a recent article in *Qiushi* argued, "CMI has become the one and only choice for strengthening national comprehensive strength and defense competitiveness. . . . If a state does not pursue CMI then it is difficult to preserve technological dominance."[8] The same article also asserted that CMI development had become a new area of fierce competition between states, and any major country that did not quickly adopt CMI would inevitably fall behind its rivals.[9]

While Chinese CMI reforms have received saturation coverage in China, they remain underexplored elsewhere, hindering efforts to understand their potential impact on the PLA's current round of reforms. In particular, CMI has emerged as an integral part of Chinese efforts to promote defense science and technology development and bring additional resources more efficiently into defense modernization. Its success or failure will in turn have a corresponding influence on a broad range of PLA activities, and as such, it is helpful to better understand China's efforts to implement CMI, as well as its problems and prospects.

This chapter provides an overview of four aspects of China's push for civil-military integration. First, it surveys the broad impetus and objectives for CMI, highlighting why Chinese leaders consider it so vital to the overall PLA reform program. Second, it describes the operationalization of CMI, noting where and how China has tried to pursue CMI reforms. Third, it

focuses on some of the key problems that have hindered the effectiveness of CMI reforms. Finally, the chapter discusses the creation of the Central Commission for Integrated Military and Civilian Development [*junmin ronghe fazhan weiyuanhui*, 军民融合发展委员会], and how it offers a credible new path for resolving some of the most entrenched CMI obstacles.

Broad Impetus for Civil-Military Integration

China's impetus for pursuing CMI as a core component of its PLA reforms is in large part a result of its reckoning with modern technology-driven warfare. After the first Gulf War, Chinese military strategists reached a consensus on the decisive role played by technology in military conflicts, and the reforms that have followed were geared toward creating a PLA that was better equipped and better prepared to fight on the battlefield. The many U.S. military engagements since 1991 have only reinforced for Chinese strategists that modern warfare has transitioned from the mechanized warfare of the industrial age to the informationized warfare of the network age.[10] This change has dramatically affected Chinese thinking on military modernization and the role of civil-military integration in their national security strategy. In particular, it has focused Chinese strategic attention on the issues of technology development and resource allocation.

Technology Development

The 2013 edition of the Academy of Military Science's *Science of Military Strategy* addressed the importance of science and technology (S&T) for military development at length: "Science and technology is the key foundation for combat strength," and "the ferociously fast development of new and high technology . . . has profoundly changed the content and mode of combat strength."[11] CMI theorist Hou Guangming also analyzed the changing impact of technology on the PLA, noting in a 2014 book on innovation in the Chinese defense industries, from the "state's perspective, the global revolution in military affairs continually promotes upgrades in high-tech weaponry, and the core of military competition is changing toward science

and technology."[12] Thus, the race to upgrade defense technology has become an overarching strategic imperative, and PLA strategists have stressed that China's weapons development pace will be inadequate if the country fails to catch up in technology innovation.[13] This imperative has already been enshrined in policy documents, as the 18th Party Congress in 2012 concluded, "[s]cience and technology innovation is a strategic support for raising social productivity and comprehensive national strength, and we must place it in a core position within our national security posture."[14] Xi Jinping amplified this mandate in 2016 when he stated that the "state needs the strategic support of science and technology more urgently than any other time in the past" and warned that China was in a precarious position in terms of its ability to innovate. He stated, the "situation that our country is under others' control in core technologies of key fields has not changed fundamentally, and the country's S&T foundation remains weak."[15] Most recently, China included similar sentiments in the 19th Party Congress final report, which stated, "We must keep it firm in our minds that technology is the core combat capability, encourage innovations in major technologies, and conduct innovations independently."[16]

China's efforts to overcome its deficiencies in defense science and technology are hampered by the fact that the resource commitment needed to reach and maintain technological parity with other major military powers (let alone preeminence) is enormous. Chinese analysts have made numerous references to the increasing costs of next-generation weapons platforms, citing, for example, that the research and development (R&D) expenditures for global first-generation fighters were under Rmb 500,000, while the cost to develop fourth-generation fighters was between Rmb 10 and 40 billion.[17] The financial requirements for R&D alone, exacerbated by how long the R&D cycle now stretches, pose a significant resource challenge. Chinese analysts have also drawn attention to the rapidly rising cost of military operations, both in terms of finances as well as materiel consumption.[18] Compounding these issues, the government is also confronting the enormous cost of transforming its economy in an effort to build China into an S&T power.

Resource Allocation

Given these demands on its finite resources, China's official policy statements have repeatedly warned that the country's much-publicized defense budget increases would be insufficient to meet the PLA's development needs.[19] The head of National Defense University's China Institute of National Defense Finance Studies [*zhongguo guofang jinrong yanjiu hui*, 中国国防金融研究会] highlighted the PLA's budgetary constraints in a May 2016 speech, stating, "[r]ight now . . . we face the reality that there is an intensified contradiction between the rigid demand for increases in defense investment and the state's fiscal situation. In relying solely on state finances for defense investment, we are already unable to support major advances in the development of our defense."[20] This dynamic has arguably worsened over the last 2 years, as China's official defense budget increase was well below media expectations in 2016, and rose by an even smaller margin in 2017, thanks in part to slower economic growth.[21] While China's official defense budget does not capture all of its defense-related spending, it does capture most defense expenditures.[22] Moreover, to the extent that China's economic growth has slowed to a "new normal," declining defense budget increases are most likely not overly disproportionate with trends in its total defense-related spending.[23]

As a result, there are no expectations that China can achieve its defense modernization goals solely by increases in the defense budget. Chinese leaders have been clear that the solution to this problem will not be guns-versus-butter budgetary tradeoffs that prioritize short-term military needs at the expense of economic imperatives. Their reluctance to raise defense spending more dramatically stems in part from the belief that it would harm economic growth (and thus the foundation for long-term military strength), as well as from the common perception that one of the major causes for the fall of the Soviet Union was its ruinous attempts to match U.S. military spending.

CMI Reforms as Strategic Response

China's current CMI reforms have evolved directly from concerns about resource constraints versus the need to promote defense modernization.[24]

Xi Jinping has stated that they are the product of research into how best to coordinate building the country's economy and defense capabilities, and indeed, they reflect what has been a slow evolution in policy toward broader, deeper civil-military resource-sharing.[25] As currently conceived, CMI reforms offer a way to ease PLA competition for resources by broadening and strengthening the resource base that China can use for building up defense. Phrased another way, they involve the "leveraging of dual-use technologies, policies, and organizations for military benefit."[26] Their basic prescription is the abandonment of governing norms that closed off [*fengbi*, 封闭] military and defense institutions from the rest of the country, and granted them their own dedicated resources, management systems, and policy and standards environments. Instead, Chinese CMI seeks to dramatically increase cross-fertilization and sharing between military and civilian institutions in a growing spectrum of activities like technology development, logistics, finance, and training. It seeks to merge civilian and military development resources into a combined system that pursues substantially more cost-effective "coordinated development" [*xietiao fazhan*, 协调发展] and resource-sharing [*ziyuan gongxiang*, 资源共享] to satisfy the requirements for China's national security and economic strategies.[27] CMI's idealized application is a situation in which "military" and "civilian" development is organically blended into a single whole, the distribution of civil and military resources are optimized, and the overall efficiency of resource utilization is improved to the point where "one kind of resource investment produces multiple kinds of benefits" [*yizhong ziyuan touru chansheng duozhong xiaoyi*, 一种资源投入产生多种效益].[28]

While CMI touches on a wide range of activities, it is primarily concerned with an efficient allocation and use of resources [*ziyuan peizhi he shiyong*, 资源配置和使用].[29] Chinese analysts have often taken inspiration from the example set by U.S. moves toward CMI, which they feel considerably lightened the U.S. military's burden on overall spending.[30] To that end, China seeks to create coordinating institutions and mechanisms between military, political, economic, and social organizations that reduce

allocative redundancies, achieve multiplier effects, and eliminate working at cross-purposes. As one analyst argued:

> Under the premise of preserving core national defense building abilities [baochi hexin guofang jianshe nengli, 保持核心国防建设能力], [CMI] should fully bring about the market's determinative utility in resource allocation, and promote dual directional flow of resources between the military and local areas in things like technology, industrial arts, equipment, facilities, labor, capital, and information. It should make national defense construction even more fully utilize the fruits of economic and social development, and actively bring into play the important "pull effect" [ladong zuoyong, 拉动作用] that defense and military modernization have on economic and social development. We want a maximized "military benefit" for economic construction, and a maximized "economic benefit" for defense construction.[31]

In this fashion, China's leaders feel they can create savings and make government spending more effective by doing things like minimizing redundant development efforts, such as when defense and civilian institutions are separately receiving grants to conduct similar research on the same technologies; finding cheaper civilian sources for generic goods and services that do not need to use specialized military providers; and ensuring consideration for defense needs in economic planning, so that spending and investments are mutually beneficial to the military and local economies.

Chinese strategists argue that CMI reforms can achieve the unification of the "strong army" and "rich country" ideals [*fuguo he qiangjun xiang tongyi*, 富国和强军相统一], providing a blueprint for overcoming structural impediments to military and economic development. Their support for the reforms is enhanced by the fact that CMI serves as a compelling strategic response to four major characteristics of modern informationized warfare. First, Chinese leadership has reached an analytical conclusion that military development and economic development are mutually dependent to a greater

extent than ever before. They believe it is impossible to be a global military power without also being a global economic power. This viewpoint took root decades ago, when Deng Xiaoping's military reforms were conditioned by his belief that a country's military strength was dependent on its economic base. However, the resource requirements for modern warfare are so extensive now that Chinese analysts are especially conscious of how vital an advanced economy is to PLA modernization. As Yu Chuanxin, one of the Academy of Military Science's more prolific CMI experts explained, China's pursuit of a strong military requires a leading economic and S&T foundation, which is only possible if China's economy develops further, productivity levels increase, and its strength in S&T advances to the global forefront.[32] At the same time, Yu argues that given the complex and increasing security threats facing China from foreign and domestic enemies, its economy and society need a strong military that can ensure security, stability, and peace.[33] The defense sector can also contribute to economic development through multiple channels, such as the transfer of defense technologies for civilian use, integrating defense conglomerates into the broader economy, and contracting out for goods and services needed by the military. Therefore, national security and economic development should be thought of as a "single piece of steel" [*yikuai zheng gang*, 一块整钢] that serves China's fundamental national interest.[34]

The second characteristic of modern warfare that favors a move toward CMI reforms is that technology is increasingly dual-use, blurring [*mohuhua*, 模糊化] the lines between military and civilian.[35] CMI analysts regularly claim that over 80 percent of technologies in the equipment used by leading military powers are dual-use, highlighting an imperative to more effectively promote civil-military technology sharing in China.[36] In addition, the narrow but deep specialization needed to develop next-generation technologies has ensured that an ever-increasing number of industries are involved in defense technology development and production. Chinese researchers have cited statistics claiming that products from more than 1,000 industrial technology categories were involved in the equipment used to conduct combat operations during the first Gulf War, up from

the roughly 160 used for World War II.[37] These trends have only accelerated. As such, the limitations of relying primarily on military and defense industry resources to pursue defense-related S&T have been brought into stark relief. The technology demands of modern combat are so great that they far exceed [*yuan yuan chaochule*, 远远超出了] the research and production capacity of military academic, research, and defense industry institutions.[38] CMI analysts have been critical of how slow China has been to adapt to these dual-use trends, citing widespread wasteful duplication in R&D efforts—stemming from bifurcated military and civilian research streams—as well as serious difficulties in converting R&D discoveries into the production of new defense technologies.[39]

China's slow response to dual-use dynamics has clear consequences in an era in which the civilian sector has increasingly become a source of major technological innovation.[40] As one analysis in *Qiushi* observed, in the "20th century, defense science and technology was the locomotive for technological revolutions, and the main direction for the spread of new technology was from military to civilian sectors. However, disruptive technological change in the 21st century now usually starts in the civilian sector."[41] As this implies, in an increasing number of technology fields, civilian R&D has surpassed the capabilities of military and defense industry research institutions.[42] Therefore, China has national security interests in helping its civilian technology sector develop as quickly as possible, as well as in ensuring that the PLA is able to rapidly absorb and apply whatever advanced technologies it produces. Given how fast technology is changing, an inability to develop or apply advanced S&T capabilities can have progressively dire effects on a country's security.[43] This logic was clearly evident in China's New Generation Artificial Intelligence Development Plan [*xin yidai rengong zhineng fazhan guihua*, 新一代人工智能发展规划], released in July 2017, which established a goal of making China the world's premiere global artificial intelligence innovation center by 2030, and also explicitly promoted a CMI strategy to ensure that corporate and civilian advances in artificial intelligence could be leveraged for national defense.[44]

The third characteristic of modern warfare relevant to CMI reforms is its unprecedented resource demands, which has created incentives to more fully eliminate the distinction between peacetime development and preparation for war. "Combining peacetime and wartime preparations" [*pingzhan jiehe*, 平战结合] has long conditioned party leaders' approach to domestic development strategies, but Chinese analysts have begun to advocate for a more extreme version due to their assessment that victory in a conflict between major powers is no longer determined by simple measures, such as numbers of ships and planes or industrial capacity. Instead, winning is determined by comprehensive national security systems, encompassing the whole of a country's national security resources. Everything is brought to bear in a major conflict, and the state that is able to fuse its disparate resources together to exert the most strength is likely to emerge victorious. As a result, they argue that China must approach its military reforms from a systems engineering perspective, in which multiple disparate elements work together toward an overall goal. The factors involved in winning informationized conflicts—the investments to promote S&T development, reforms to promote innovation, infrastructure to support rapid deployments, training to ensure that troops can handle the complexities of informationized operations, and so forth—must be defined to include a very broad range of activities so that areas not normally viewed through the prism of defense are included in military reform and development strategies. Moreover, given the importance of these factors, they must be addressed continuously, not simply when security concerns are more urgent.

In recognition of these conditions, Chinese CMI analysts now describe war between states as a contest between entire systems [*tixi duikang*, 体系对抗], encompassing (to a much more consequential degree than in previous eras) political, economic, scientific, technological, and cultural strength.[45] As such, failing to recognize the interdependence of defense reforms with the country's overall policy environment is untenable: "In the information era the lines are increasingly blurred between concepts like security and development, economic and military development, civil and military,

peacetime and wartime, frontlines and rear areas, and military-use versus civilian-use. These concepts are being increasingly fused together."[46]

The last characteristic of modern warfare that makes CMI a compelling strategic response to military reform requirements is that informationized war has increased the value of quality over quantity. China has enshrined this as official policy under Xi Jinping, who has stated that streamlining the PLA's "scale, structure, and power composition" is an important part of the PLA's ongoing reforms.[47] As he noted in a July 2017 Politburo study session, "Quantity should be reduced and quality improved to build capable and efficient military forces, which should be science and technology–oriented rather than relying on labor intensity."[48] To this end, Xi has continued the PLA's longstanding efforts to shed excess manpower. In January 2016, the CMC announced a plan to cut the PLA's size by 300,000, focused in part on noncombat organizations and personnel [*fei zhandou jigou he renyuan*, 非战斗机构和人员].[49] Chinese commentators have noted that the troop cuts are a sign that the PLA will change "from big to strong" [*you da dao qiang*, 由大到强], but the consequence of moving toward a leaner, meaner fighting force is that the PLA will be increasingly reliant on civilians, reserves, and militias to fulfill certain noncombat roles and responsibilities.[50] CMI's focus on promoting civil-military resource-sharing and using civilian capabilities to support the military is therefore well aligned with the needs arising from a smaller PLA.

Operationalizing Civil-Military Integration

Having established why China wants to pursue a CMI development strategy, this section examines how and in what areas it has tried to apply CMI. It is important to recognize that even though China has been promoting CMI reforms in earnest for over 10 years, in most areas the reforms are still at early stages of development. At the start of this process the basic infrastructure for CMI—organizations to administer, regulations to govern, and institutional mechanisms to facilitate—needed to be established either from scratch or from rudimentary foundations.[51] Defense conversion [*jun zhuan*

min, 军转民] was the only component of CMI reforms that could be considered solidly institutionalized, but this was due to policies that began at the start of the post-Mao era.[52] China was unprepared to implement the other main components of what it wanted to accomplish with CMI—namely, promoting the flow of civilian technology, talent, capital, and information into the defense sector and encouraging a freer cross-exchange of civil and military resources. As a result, initial CMI reforms focused on identifying organizations with managing responsibilities for particular activities, crafting first-step regulations that removed barriers to civil-military coordination and/or facilitated better cooperation, creating better information flows between relevant civil-military actors, and pushing relevant actors to engage in CMI reform tasks.[53] It was about laying groundwork rather than producing immediate results.

The process of breaking down civil-military barriers and establishing cross-cutting civil-military resource-sharing has moved slowly precisely because it upended entrenched norms and interests. CMI reforms required disruptive change, but Chinese leaders' own unfamiliarity with CMI and their uncertainty about its impact helped pushed them toward a cautious policy approach. As one 2008 analysis observed, "CMI is a big issue and new topic, and our understanding and research is still in its initial stage."[54] Therefore, much of what China's leadership promoted for CMI prior to Xi Jinping's administration amounted to relatively basic reforms that took piecemeal steps to realign institutional behavior, such as changes that allowed private companies to begin to contract goods and services to the PLA, or the effort to encourage joint research, technology transfer, and personnel training agreements between civil and military companies, universities, and research institutions.[55] The focus was in reorienting political, corporate, and military leaders toward collaborative development processes in which they had little to no experience.

China's effort to create a basic infrastructure for CMI has been complicated by the fact that the operationalization of CMI reforms are unavoidably complex, involving interaction between an array of political, military, and

corporate organizations in different administrative levels and geographic areas, and across multiple areas of responsibility. It is at least "cross disciplinary" [*kua lingyu*, 跨领域] and "cross-departmental" [*kua bumen*, 跨部门], but is more accurately understood as a "system of systems for coordinated military and economic development."[56] Xi Jinping has described it in similar terms, stating that "CMI development is a systems engineering issue, requiring systemic thinking, systemic methods, and systemic science in making relevant policy prescriptions."[57] As such, the activities that are potentially affected by CMI reforms, and the institutions involved, are vast, and the interaction between all of them conditions how effective the reforms will be.

Due in part to this complexity, China focused its initial CMI reform efforts in only four high-priority areas: weapons and equipment development, social support for the PLA [*jundui shehuihua baozhang*, 军队社会化保障], defense personnel training, and defense mobilization.[58] In each of these areas, China identified CMI reform goals, authorized or created managing organizations to oversee activity, modified or created rules and regulations to support activity, and reviewed implementation to identify ways to improve outcomes. It also developed multiple channels for information-sharing so that relevant actors could be more aware of CMI resources and opportunities.[59]

In practice, thanks in part to relentless advocacy for CMI reforms from political and military leaders, and political expectations for results, a broad swath of Chinese actors at both central and local levels has engaged in CMI activities. With so much room to improve, and so many actors involved, this participation has generated some notable positive outcomes. These include steadily broader and more substantive participation in PLA contracting work from civilian-owned companies, fueled in part by the PLA General Armament Department's launch of the online All-Army Weapons and Equipment Procurement Information Network [*quan jun wuqi zhuangbei caigou xinxi wang*, 全军武器装备采购信息网] in January 2015. The Web site, now operated post-reorganization by the CMC Equipment

Development Department, became the PLA's first authorized clearinghouse for defense procurement notices. More than 1,000 projects were put up for competitive bid in both 2016 and 2017—in theory, promoting cheaper, more efficient supply services—and the PLA hopes to double that number by 2020.[60] CMI's positive results also include the PLA's increased reliance on contractors for basic supplies and simple military services such as barracks maintenance, heating supply, power supply, and cleaning, which is already common in more urban areas and is increasingly getting adopted in lower level and more remote areas.[61]

Positive developments aside, the operationalization of CMI reforms has thus far not fully met the government's aspirations. Anecdotal evidence and the complaints of Chinese leaders (see below) suggest that implementing CMI reforms has not unleashed pent-up energies for CMI. The government has so far been willing to let CMI participants use a certain amount of initiative in implementing CMI measures, in the hopes that self-interested behavior would help discover best practices, but civil and military leaders have not aggressively embraced new opportunities for collaboration and resource-sharing. This could be interpreted as a signal that there is opposition to the reforms, but Chinese leaders and strategists have instead blamed the slow pace of meaningful compliance on the government's inability to effectively respond to the difficulties involved in implementing the reforms.

Operationalizing CMI Reforms under Xi

Xi Jinping did not immediately seek to leave his mark on China's CMI policies when he first took office, but in early 2015 he initiated major new theoretical guidelines for CMI work that have shaped reforms since. At a meeting with PLA representatives in advance of the 2015 National People's Congress, he announced a new phase in CMI reforms, stating, "China's CMI development has just entered a transitional phase, from initial integration [*chubu ronghe*, 初步融合] to deep integration [*shendu ronghe*, 深度融合]."[62] It was at this same meeting that Xi elevated CMI to a national strategy, setting CMI reforms on their current path of serving as a core component of the PLA

reform program. Both of these ideas reflected Xi's belief that a CMI development strategy could "break new ground in the PLA's capability building."[63]

In promoting this new phase of CMI development, it is notable that Xi—despite the mixed record of success in China's CMI reforms to this point—decided to dramatically expand the scale and scope of implementation. He has called for using CMI in a broader range of activities and raising the level and degree of integration wherever it is applied. While retaining CMI's focus on weapons development, social support for the PLA, training, and mobilization, Xi has called for expanding CMI processes into new areas, specifically citing sea, space, and cyberspace [*haiyang, taikong, wangluo kongjian*, 海洋、太空、网络空间] as priorities.[64] He has also ordered China's academic, corporate, and research institutions to take the initiative in discovering, cultivating, and applying cutting-edge technologies that can help build up China's military and national defense capabilities.[65]

In addition to new technology areas, Xi wants CMI reforms to focus more on organizational innovation, specifically in "three systems" [*san ge tixi*, 三个体系]:

- a *management system* that features unified leadership and coordination between the PLA and local governments
- an *operational system* in which work is led by the state, driven by demand, and unified by market operations
- a *policy system* that features a well-conceived set of policies (which covers all necessary areas), a complete set of policy linkages, and effectively encourages desired outcomes.[66]

Essentially, Xi is calling for CMI processes to begin working the way policymakers have hoped they would.

Indeed, Xi has been critical of the pace of progress made so far in CMI reforms, specifically flagging the country's inability to quickly generate new ideas and concepts to guide CMI activity; the government's inability to keep up with the demand for CMI-related policies, legislation, and operating mechanisms; and a lack of top-level, unified management systems. Notably,

he has also complained that CMI reform work was not being pursued with enough intensity [*gongzuo zhixing lidu bugou*, 工作执行力度不够].[67] As he has stated, "We can do some things even better and some things even faster with respect to using CMI in S&T areas . . . and we will more quickly transform our military toward models based on quality and efficiency and concentrated science and technology."[68]

Problems in Implementing CMI

Xi Jinping is not the only critic of CMI's operationalization, as scholars and political and military experts have been cataloging its unresolved problems for years. The critiques are motivated by the sense—clearly shared by Xi—that given how important CMI reforms are for PLA modernization, they have advanced far too slowly. For all the legitimate progress that has been made, it is still true that China has only succeeded in establishing a basic framework for CMI. Moreover, critical reforms such as the restructuring of defense industry scientific research institutions into corporations have taken much longer than originally expected, and are only now getting started.[69]

Thanks to the lack of transparency regarding China's defense spending, it is hard to gauge how effective CMI has been at promoting a more efficient use of defense resources. However, it is telling that experts still discuss CMI's ability to usher in a more productive use of resources in aspirational rather than empirical terms, and this style of argumentation suggests that there is not yet a wealth of relevant data to cite. In terms of CMI's impact on defense science and technology, despite some encouraging signs of technological progress in advanced critical technologies like quantum communications, Chinese leaders have stated that China still lacks sufficient international core competitiveness in technological innovation.[70] This is, of course, a matter of national security concern given how strength in science and technology is considered vital to China's security and its ability to develop into a more advanced military power.

Problems with Execution

Despite the government's clear prioritization of CMI reforms, Chinese analysts have observed a lingering (and at this point, increasingly problematic) lack of buy-in from actors impacted by the reforms. Some military and civilian operations still remain closed off [*fengbi yunxing*, 封闭运行] because administrators are not actively seeking out opportunities to work across the civil-military divide. Other officials act as if national defense was not an economic concern and vice versa.[71] Analysts have also cited a widespread persistence of "no action, no initiative, no self-reliance" [*deng, kao, yao*, 等, 靠, 要] behavior among lower level officials, arguing that they too often wait for higher level administrators to deal with CMI implementation problems instead of taking them on themselves. In addition, analysts accuse some local officials of not treating CMI reforms with a sufficient level of importance, noting that they promote local interests at the expense of consideration for CMI development, as if CMI were only a priority for the national government or the military.[72]

These critiques point to issues of misaligned incentives between national and local officials, but Chinese officials and analysts have avoided describing the problem in those terms. Instead, they have blamed these issues on a persistent superficial understanding of CMI, relating to what it entails, why it is important, and how it should guide behavior. The annual report on CMI development overseen by the Ministry of Industry and Information Technology and National Development and Reform Commission has found that some Chinese believe that any contact between civilian and military actors is evidence of successful CMI, and therefore limit their ambitions to simple activities that promote army-government and army-civilian unity rather than working on more substantive aspects of CMI. Some organizations have also overemphasized one component of CMI, as if it was simply about civilian support for the PLA or military interaction with civilian political and economic sectors, without understanding that CMI now prioritizes mutually beneficial bidirectional interaction.[73] This latter problem is especially prevalent in the defense industries, where companies with long

experience and comfort in developing products for the civilian market focus on that aspect of CMI without expending much effort to utilize civilian resources in their operations. These assessments of the problems affecting CMI implementation are directly reflected in how Chinese leadership has responded, with calls for better education and guidance from the top.

The flip side of concerns about apathy is that with so many units participating in reforms—across industrial sectors; across military, political, academic, and business activities; and across central and lower level administrative units—CMI operationalization has been overly fragmented. The participants in a 2012–2013 year-long consultative investigation into the defense industry's CMI development strategy, sponsored by the Chinese Academy of Engineering, found that individual industries and departments were pursuing idiosyncratic CMI strategies that had them scattering off in different directions.[74] China's military, economic, and political institutions at different administrative levels (for example, national, provincial, municipal, and so forth) established organizations to manage CMI work within their specific jurisdictions, but there was little regular coordination between them, and coordination work was slow, cumbersome, and consultative, not collaborative. In general, these institutions were working individually, but not collectively, to advance CMI policies. They were not used to the level (and extent) of coordination being asked of them, and in the absence of clear guidance and authoritative pressure, it has been easier to remain in their comfort zone.[75] This is problematic for a policy that requires cross-sectoral, cross-industry, and cross-administrative cooperation to work optimally. Indeed, CMI work—in the words of one recent commentary—has thus far only been implemented to a "narrow, shallow, and superficial" degree.[76]

Problems with Top-Level Coordination

Chinese analysts have blamed the above problems on ineffective top-level design [*dingceng sheji*, 顶层设计], a suboptimal outcome that stems from the inescapable fact that Chinese CMI is a massive management challenge. It requires coordination and cooperation among the leading institutions

in charge of the military, national economy, administrative institutions, and industrial sectors, and affects a broad, cross-sector range of activities, including science and technology, education, and the economy. Traditionally, this level of coordination has not been ingrained within Chinese institutions, and in the absence of strong national guidance with clear incentives, Chinese actors have found it much easier to avoid the effort and sacrifice required to make dramatic behavioral changes. This resistance has made the generic benefits of CMI—integrating economic and military development into unified strategic planning and allocating resources more efficiently—much more difficult to achieve.[77]

These problems reflect China's inability to effectively coordinate the more complex aspects of CMI policymaking among CMI's leading stakeholders. Functional departments under the State Council and CMC have had oversight over individual aspects of CMI, like defense industries, defense S&T development, civil air defense, national defense transportation, and defense education, but none has had clear lines of authority over the others to lead and coordinate action. As a result, although there is a consensus among both military and civilian leaders concerning the importance and urgency [*jinpoxing*, 紧迫性] of CMI, there are still significant differences between military and local civilian actors [*jun di zhijian de renshi piancha bijiao da*, 军地之间的认识偏差比较大] regarding the concrete steps to accomplish these goals. Areas of contention include determining civil-military functions, division of responsibilities, and operational processes.[78] China has also failed to settle on ways to routinize stable operational processes for interagency coordination, as well as for other CMI management activities such as linking available resources to requirements and implementing civil-military resource-sharing.[79]

Experts have consistently argued for years that many of the problems in CMI implementation are due to the central government's disjointed management of the issue, which affected its ability to educate and guide behavior. Until January 2017, when the government launched the new Central Commission for Integrated Military and Civilian Development

(discussed below), China had avoided giving any single institution leadership over the CMI portfolio. Most likely, this was due to the fact that CMI straddled both military and economic activities but was only designed to affect some aspects of military and economic development. Thus, a supra agency with managing authority over only a limited range of its subordinates' activities was not practical or feasible. Instead, China relied for years on the Department of CMI Promotion [*junmin jiehe tuijin si*, 军民结合推进司]—a subordinate unit in the Ministry of Industry and Information Technology—to serve as the government's highest administrative body devoted solely to CMI work.[80] In practice, the department only had limited value in advancing reforms, as it had no discernible ability to set or enforce CMI policy and lacked the authority to play much of a managing role. It was ostensibly charged with promoting greater integration between civil-military S&T institutions, but since the actual management of these institutions fell to a host of other higher ranking agencies (among them the Ministry of Science and Technology, Ministry of Commerce, National Development and Reform Commission, and State Administration for Science and Technology for National Defense), it could do little to affect actual behavior. As a result, its activities were restricted to serving as a CMI facilitator, in which it acted as an information resource for CMI opportunities and brought various stakeholders together to find opportunities to deepen CMI development.[81]

The problem of diffused national leadership over reforms was exemplified by the 2010 Opinions on Establishing and Improving a "Civil-Military Integration" and "Locating Military Potential in Civilian Capabilities" Weapons Research and Production System [*guanyu jianli he wanshan junmin ronghe yu jun yu min wuqi zhuangbei keyan shengchan tixi de ruogan yijian*, 关于建立和完善军民融合寓军于民武器装备科研生产体系的若干意见] issued by the Central Military Commission and State Council. This document was the most authoritative guideline for the CMI reform agenda through the 12th Five-Year Plan (2011–2015), and in that context it is worth noting how many institutions were given responsibility for CMI implementation. The Opinions were addressed to the People's governments in

each province, autonomous region, and provincial-level city, the ministries and directly managed organizations under the State Council, the People's Armed Police, each of the PLA's services and branches, the four PLA general departments, each military region, each military district, the Academy of Military Science, the National Defense University, and the National University of Defense Technology. They called on "relevant departments" in the PLA and State Council to formulate concrete methods and policies to address CMI requirements, to focus their planning on developing links between units involved in CMI, and to implement CMI policies in close coordination with each other, based on their (unspecified) division of responsibilities. They also called on local governments and military equipment management departments at each level to actively work in concert and implement a full set of measures to ensure the smooth advancement of development for the CMI weapons research and production system. As one analysis highlighted, this guidance—in a top-level document that shaped CMI development in weapons research and production for years—placed overall managerial responsibilities in the hands of at least 20 different institutions under the CMC and State Council.[82]

China sought to mitigate these problems by creating top-level coordination groups, such as the Inter-Ministerial Coordinating Small Group for the Development of the (CMI) Weapons Research and Production System, which debuted in 2012. Led by the Ministry of Industry and Information Technology, the small group featured senior officials from 23 military and civilian departments.[83] It has met every year since its launch, and according to reports the meetings typically focus on discussing each member's respective efforts to support the current CMI priorities.[84] While this information-sharing is presumably helpful, the body is not equipped to resolve conflicts or disagreements, given that all members are on the same levels of the administrative hierarchy.

A diffused management of CMI was less consequential when China's key tasks were focused on developing a basic institutional framework for CMI. However, as CMI has progressed along its development path, the

problems of disorganized management of CMI have become more obvious and acute. They are not only confined to the issues of coordination and superficial implementation, described above. As Chinese analysts have argued, inadequate management has also affected the pace of technology innovation, created widespread unnecessary duplication in investment and policies, failed to sufficiently encourage competition, and ultimately led to a huge amount of waste [*juda langfei*, 巨大浪费].[85]

Improving Top-Level Design

Given the difficulty in resolving the management issues described above, Chinese CMI experts have promoted the creation of a national-level managing organization with the authority to oversee top-level design of CMI reforms.[86] These calls have now been answered. China launched a Central Commission for Integrated Military and Civilian Development [*junmin ronghe fazhan weiyuanhui*, 军民融合发展委员会]. This commission, announced on January 22, 2017, is chaired by Xi Jinping, and its original members included three other Politburo Standing Committee (PBSC) members (Li Keqiang, Liu Yunshan, and Zhang Gaoli) as vice chairmen, as well as CMC Vice Chairmen Xu Qiliang and Fan Changlong.[87] According to news reports, the commission was specifically created to provide unified leadership of CMI decisionmaking, acting as a top-level coordinating organization overseeing the most significant issues affecting CMI development. It reports directly to the Politburo and PBSC, and its importance is reflected in the fact that Zhang Gaoli was chosen to lead the commission's General Affairs Office [*bangongshi*, 办公室].[88] As the *South China Morning Post* article on his appointment observed, the head of the General Affairs Office is more typically a lower grade leader, so it is unusual that a PBSC member was chosen to lead the commission's day-to-day operations.[89]

In a sign of how important its work is considered, the commission has already met three times—in June and September 2017 and in March 2018. At the September 2017 meeting, Xi called on members to strengthen top-level design of CMI development and urged them to insist on making key

breakthroughs, while focusing both on present and long-term strategies for CMI development.[90] The members also reviewed accomplishments since the first meeting and discussed work items relating to the passage of recent CMI guidelines, including the Guidelines for Defense Science and Technology Industry Development During the 13th Five-Year Plan (2016–2020), Opinions on Promoting Deep Development of Civil-Military Integration in the Defense Science and Technology Industries, and Opinions on Implementing Deep Development of Civil-Military Integration in Military Logistics During the 13th Five-Year Plan.[91] The commission's third meeting called for strengthening the leading role of strategy and ideology, for the CMI development strategy to take root in each region and department, and for reforms to achieve effective results in key domains, regions, and industries. It also highlighted the need for key reform breakthroughs, such as quickly eliminating barriers to defense conversion [*jun zhuan min*, 军转民] and civilian participation in the defense industries [*min can jun*, 民参军] and hastening key reforms in areas like defense S&T industries, PLA equipment acquisition, pricing of military supplies, and unbalanced civil-military taxation policies.[92]

While the launch of the commission is an important step for the management of CMI reforms, none of the management challenges that existed before its creation has melted away. It must still deal with a sprawling network of institutions (with a diverse set of functions) that implement CMI directives. It also still faces the problem of misaligned incentives between national- and local-level actors, as party leadership appears to expect lower level compliance with CMI directives without acknowledging that they may be at odds with corporate and organizational interests. However, CMI operationalization is now led by a higher authority that can issue concrete guidance, push authoritatively for greater interagency cooperation, and more credibly demand a focus on overarching goals. In addition, the commission allows the government's CMI management system to move toward a more rational division of labor—where top-level management organs make policy decisions, interministerial coordinating organs allow leaders

from relevant departments to consult with their counterparts, CMI departments lead, and relevant departments carry out centralized management.[93]

Conclusion

Xi Jinping's assessment that China has only just emerged from its initial phase of CMI development serves as a useful reminder that CMI is still a work in progress, with fundamental questions about how to operationalize and manage it still unsettled. In particular, despite full agreement on the abstract need for CMI, China's aspirations for it involve an extremely complex level of system of systems (interministerial, cross-sectoral, center-local, and civil-military) cooperation, and substantive buy-in for this degree of integration is not yet widespread. As described in this chapter, Chinese actors throughout the CMI universe have shown varying levels of commitment to CMI reforms, and while the sustained drumbeat of pressure from top-level leadership makes it unlikely that disinterested actors can fully resist efforts to deepen CMI, they can surely limit how far CMI behavior is institutionalized. As such, China's prospects for fully integrating CMI processes into day-to-day PLA functions remain in doubt, and the track record suggests that even positive returns will involve a longer and more difficult process than the party currently acknowledges.

However, China is clearly improving its understanding of CMI-related policy challenges and has shown a commitment to working through them despite their obvious complexity. Even before the creation of the Central Commission for Integrated Military and Civilian Development, one of China's leading voices on CMI strategy argued that China had started the process of taking on the deep-rooted obstructions that had hampered CMI development.[94] This effort is reflected in the designation of CMI as a national strategy in 2015, and Xi's engagement on the issue, which has created a new urgency to generate substantive CMI returns. According to the reform timeline that the CMC described when it announced its PLA reform plan in January 2016, CMI reforms would be a focus from 2017 to 2020. As such, the effort to adjust, optimize, and improve its workings is

just getting started, and still has 3 years to go.[95] It is too early to assess how well it has gone.

The government has set a goal of "breakthrough" development in CMI by 2020, and while this is a vaguely defined objective, there is reason for Chinese leaders to think it is reachable. An institutional framework for CMI operations is already in place, a better management structure has been devised, and invested leaders have accrued several years' worth of watching CMI in practice and working through policy solutions to emergent problems. As a result, although CMI reforms have thus far not delivered on their promise, and still face significant hurdles, there is more of a chance for CMI to take hold. If it does, it will mark a turning point in the PLA's reforms, with tangible and significant multiplier effects in areas such as defense science and technology, logistics, military education, and mobilization. By the same token, it would be equally important if China continued to struggle with CMI implementation. A failure to deepen CMI reforms would serve as a drag on the PLA's reform process and impair China's ability to fully meet the challenges—as it currently sees them—of modern informationized warfare.

Notes

[1] Joel Wuthnow and Phillip C. Saunders, *Chinese Military Reforms in the Age of Xi Jinping: Drivers, Challenges, and Implications*, China Strategic Perspectives 10 (Washington, DC: NDU Press, 2017), 1.

[2] Cao Zhi, Li Xuanliang, and Wang Shibin, "Xi Jinping: Unswervingly Implement Comprehensive Reforms for the Strong Army Strategy and Take the Path of a Strong Army with Chinese Characteristics" [习近平: 全面实施改革强军战略坚定不移 走中国特色强军之路], Xinhua [新华], November 26, 2015, available at <http://news.xinhuanet.com/politics/2015-11/26/c_1117274869.htm>.

[3] Ibid.

[4] As Chinese analysts have noted, China has a long tradition of integrating military and civilian resources and functions, including the "PLA, Inc." that thrived under Deng Xiaoping. However, the People's Republic of China had not previously used civil-military integration (CMI) as a modernization strategy.

[5] Jiang Luming, "The Overall Strategy for National Security and Development" [统筹国家安全和发展的总方略], *China Defense Daily* [中国国防报], June 2, 2016, 3, available at <www.81.cn/gfbmap/content/2016-06/02/content_146372.htm>.

[6] Ibid., 3.

[7] Jiang Luming, "Why Civil-Military Integration Has Been Raised to a National Strategy" [军民融合发展缘何上升为国家战略], *PLA Daily* [解放军报], February 3, 2017, 7; Wang Weihai, "Uphold Taking the Strong Army Road of Civil-Military Integration with Chinese Characteristics" [坚持走中国特色军民融合强军之路], *Qiushi* [求是], August 2, 2017, available at <www.qstheory.cn/wp/2017-08/02/c_1121421061.htm>.

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[9] Ibid.

[10] Jiang Luming, *A Selection of Lectures by Jiang Luming* [姜鲁鸣讲稿自选集] (Beijing: National Defense University Press [国防大学出版社], 2014), 71.

[11] Shou Xiaosong, ed., *The Science of Military Strategy* [战略学] (Beijing: Military Science Press [军事科学出版社], 2013), 267–268.

[12] Hou Guangming and Li Cunjin, *Applied Research in Methods to Promote Defense Industry Innovation* [军工企业创新方法推广应用研究] (Beijing: Science Press [科学出版社], 2014), 1.

[13] "Suggestions on Implementing Innovation-Driven Development in Defense Areas, and Promoting Civil-Military Integration-Style Development" [关于在国防领域实施创新驱动发展战略, 推进军民融合式发展的建议], in *Civil-Military Integration Development Strategy* [军民融合发展战略], ed. Chinese Academy of Engineering [中国工程院] (Beijing: Higher Education Press [高等教育出版社], 2014), 440.

[14] Hou and Li, *Applied Research in Methods to Promote Defense Industry Innovation*, 1.

[15] "President Xi Says China Faces Major Science, Technology 'Bottleneck,'" Xinhua, June 1, 2016, available at <http://news.xinhuanet.com/english/2016-06/01/c_135402671.htm>.

[16] Xi Jinping, "Secure a Decisive Victory in Building a Moderately Prosperous Society in All Respects and Strive for the Great Success of Socialism with Chinese Characteristics for a New Era," Xinhua, October 18, 2017, available at <www.xinhuanet.com/english/download/Xi_Jinping's_report_at_19th_CPC_National_Congress.pdf>.

[17] Li Jia, He Siyuan, and Lu Pei, *The Civilian Contracting Big Screen Has Opened,* [We Discuss] *Preferred Platform Companies* [民参军大幕开启, 优选平台型公司] (Guiyang, China: Hua Chuang Securities [华怆机械军工], June 24, 2015), 9. To be clear, in this instance the authors are speaking of worldwide generations of fighters, rather than Chinese fighter generations specifically.

[18] Yu Chuanxin, *Actual Combat Series on National Defense and Armed Forces in the New Situation* [实战化的军民融合] (Beijing: PLA Publishing House [解放军出版社], 2015), 005–006.

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[51] The current Chinese term for CMI [*junmin ronghe*, 军民融合], which conveys the kind of thorough integration of civilian and military resources that the government now promotes, became canon after it appeared in the 17th Party Congress's final report in 2007.

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[53] The best example of these types of reform measures was the "Opinions on Establishing and Improving a 'Civil-Military Integration' and 'Locating Military Potential in Civilian Capabilities' Weapons Research and Production System" [*guanyu jianli he wanshan junmin ronghe yu jin yu min wuqi zhuangbei keyan shengchan tixi de ruogan yijian*, 关于建立和完善军民融合寓军于民武器装备科研生产体系的若干意见] that the Central Military Commission and State Council released in 2010, which set the CMI reform agenda in defense science and technology through the 12th Five-Year Plan (2011–2015).

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