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CYBER DRAGON

Inside China's Information Warfare and Cyber Operations

My ability to understand Chinese at all, much less sufficiently to exploit the various sources used herein, is purely the result of my mother and the time she spent as an educational Drill Instructor.

And, my thanks to the Heritage Foundation. In a world where the focus too often has shifted to fund-raising and the intellectual close-in battle, it is an oasis where one has the opportunity to engage in longer-term study and analysis, to dig deeper and think wider.

1 Chapter

Setting the Stage: China's Evolving Views of Information

As a society that has revered learning and education for millennia, China has a long history of valuing information. As a disadvantaged, developing country for much of the past century, Chinese leaders, whether imperial, republican, or Communist, have recognized the importance of increasing their access to technical and military information in order to help improve China's standing and capabilities. As a Marxist–Leninist dictatorship for the past several decades, the Chinese Communist Party (CCP) leadership has understood the importance of controlling information, as a central element of retaining power.

This evolving view of the relationship between information and power has crystalized in the past half century, as the world economy has globalized, and as information has become even more integrated with development. Beginning in the 1970s, the proliferation of microelectronics, computers, and telecommunications technology has accelerated the ability to gather, store, manage, and transmit information. Information technology, including computers and telecommunications systems, has permeated all aspects of society and economies and become an integral part of a nation's infrastructure.[1] Chinese analysts have dubbed this process "informationization" (*xinxihua;* 信息化).

From the Chinese perspective,

Informationization is a comprehensive system of systems, where the broad use of information technology is the guide, where information resources are the core, where information networks are the foundation, where information industry is the support, where information talent is a key factor, where laws, policies, and standards are the safeguard.[2]

In the face of this broad trend of economic, political, and social information-ization, Chinese analysts have concluded that threats to national interests and security have also become informationized.

The spread of information technology means that potential adversaries have unprecedented access to each other's national economy, as well as the broader population and the top decision-makers. Just as the bomber and long-range missile allows an opponent to directly strike a nation without having to first break through ground or naval defenses, so too information technology outflanks traditional military forces. The proliferation of information technology into society and economies makes them vulnerable to a range of new pressures and threats.

These threats extend beyond information networks (e.g., vulnerability to denial-of-service attacks) and component computers (e.g., computer viruses, malware). Instead, the very information itself can constitute a threat, if, for example, its content erodes the morale of key decision-makers, popular support for a conflict, or the will of the military to fight. Consequently, China's interpretation of its national interests has expanded, in step with the expanding impact of information writ large on China.

This growing importance of information technology inevitably influences the nature of warfare. Informationized societies and economies lead to informationized wars, which in turn require informationized militaries to fight them successfully. This reflects the interplay between the military and the larger economy and society. Mechanized military forces are a reflection of the Industrial Age, including both industrial economies and an industrialized society. Correspondingly, an informationized society will create an informationized military, while an informationized military can be produced only by an informationized society and economy. In the Chinese view, the People's Liberation Army (PLA) and broader security establishment must be prepared for "informationized warfare" (xinxihua zhanzheng; 信息化战争).

In December 2004, Hu Jintao, in his role as chairman of the Central Military Commission, gave a major speech wherein he charged the PLA with a set of "historic missions for the new phase of the new century," commonly referred to as the "new historic missions." The speech essentially provided guidance for what the PLA should be preparing for, given changes in the international strategic context and national development. One of the new historic missions was to "provide strong strategic support for maintaining the nation's interests." While those interests still center on issues of territorial integrity and national sovereignty, they now also extend to outer space and the electromagnetic spectrum, and into the information domain.[3]

INCREASING INFORMATIONIZATION

As early as the 1980s, the People's Republic of China (PRC) began to pay attention to information technology. This was one of the original seven focal areas for Plan 863, the Chinese National High-Technology Research and Development Plan established in 1986, which sought to promote and accelerate China's capabilities in key technological areas.[4] Initial efforts in this domain included promoting fiber-optic technology in order to facilitate the creation of a Chinese information superhighway, as well as the development of large-scale parallel and distributed computing and symmetrical multiprocessing.[5] China also promoted its own personal computers, the "Legend" brand.

As information technology rapidly advanced throughout the 1990s, China's leaders recognized its growing impact and sought to ensure that China would not be left behind. In 1991, China first joined the Internet, as the Institute of High Energy Physics leased a direct international line to the United States.[6]

In 1993, the PRC established the State Economic Informationization Joint Council. While China had already spent a decade moving away from the stifling hand of centralized economic control, traditional state planning was still heavily emphasized. This new council promoted advances in information technology to gather more and better economic data to assist national development planning. It soon became evident, however, that rapid global advances in information technology had impacts beyond the narrow focus on economic data and national planning. These advances made information technology itself important—and also required thinking beyond computers and fiber optics to information networks and the human capital needed to design and manage them.

Similarly, Deng Xiaoping had already made clear that China could not hope to modernize in isolation and threw open the doors to foreign trade and investment. His successor Jiang Zemin expanded this view, pushing for China to establish a broader presence on the Internet, at that point still an entity largely limited to the United States. In Jiang's view, it was essential that China be plugged into the global information network if it was to sustain its modernization efforts.

THE LEADING SMALL GROUPS

In the People's Republic of China (PRC), power and authority are bifurcated between the Chinese Communist Party (CCP) and the Chinese government. The CCP's Political Bureau (Politburo), the top 24 members of the party's 200-member Central Committee, and especially the Politburo Standing Committee (PSC), seven to nine members of the Politburo, are the leadership cohort of the party. Policy issues are decided by the Politburo or the PSC.

Policy is implemented by the machinery of the Chinese government, through the various ministries and commissions. While all ministers and senior leaders are party members, they are not necessarily of sufficient party rank to be on the Politburo. This can create divides, such as in foreign policy. As of 2016, no Chinese foreign minister has been a member of the Politburo, much less of the PSC, since

the late 1990s. In essence, the foreign minister is not part of the foreign policy–setting system. This system is replicated throughout the PRC political structure, from national to provincial and township levels.

In order to ensure proper coordination between policy setting and policy implementation, there is a system of "leading small groups" (*lingdao xiaozu;* 领导小组), or LSGs, that brings together relevant senior party leaders and ministers and heads of other government bureaucracies at each level of governance. There are three types of national-level LSGs:

- Permanent LSGs that focus on ongoing issues of strategic importance
- Term-oriented LSGs that focus on single programs, such as the Olympics or nuclear development
- Task-oriented small groups that are assembled for shorter-term tasks—often in response to crises, such as earthquakes[7]

While LSGs are typically headed by a principal member of the party leadership at the relevant level, there is no single template governing the organization of the various LSGs. Their staffing varies from group to group, with no standard operating rules, as far as is known.

LSGs serve as venues to bring various stakeholders together, providing background information and generally informing participants (and their home bureaucracies) of the state of policy setting and policy implementation on their topic. LSGs can solicit expert opinions and reconcile views among stakeholder entities.

They also ensure policy implementation. Meetings of the LSGs usually involve updates to key leaders in both the party and the state on how given policies are being implemented. They also present an opportunity for mid-course corrections, incorporating new information and responding to recent developments.

An important part of any LSG is its central or general office, which contains the staff who support LSG meetings. The members of the general office provide background information and research in response to member requests and can arrange for outside testimony, and its director helps set the agenda for meetings.[8]

The Central Group for Internet Security and Informationization, created and headed by Xi Jinping, therefore helps coordinate policy implementation regarding these issues, bringing together the key elements of the party leadership and state ministries. It is expected to typically meet several times a year to provide Xi and other members with updates on how those policies are being implemented. Reporting to Xi and other members of the LSG, as the head of its general office (which is apparently also referred to as the Cyberspace Administration of China), would be Lu Wei. Mr. Lu also serves as head of the State Internet Information Office, the governmental counterpart to the Cyberspace Administration of China.

China's information networks, in terms of both international and domestic connectivity, steadily grew throughout the 1990s. In 1996, the State Council Informationization Work Leading Small Group (LSG) was established. Headed by Vice Premier Zou Jiahua, it promoted broader use of information and information technology across all parts of the Chinese government. Information technology and informationization was incorporated into the Ninth Five-Year Plan (1996–2000), emphasizing the construction of China's telecommunications infrastructure. This included domestic digital mobile communications equipment and program-controlled switchboards. China's networks would be assembled from Chinese-manufactured hardware.

The Chinese simultaneously introduced a series of information programs, part of the "Golden projects," to push Chinese information exploitation forward. These included the following:

- *Golden Bridge* (*jinqiao;* 金桥). An information infrastructure to facilitate the movement of economic information
- *Golden Card* (*jinka;* 金卡). A nationwide payment system promoting the use of credit and debit cards in what had been a cash-driven economy
- *Golden Tax* (*jinshui;* 金税). Computerization of the nation's tax system, to reduce fraud and tax dodging while simplifying tax payments[9]

It was also during this period that the Chinese "Golden Shield" (*jindun;* 金盾) project was initiated. While China was interested in joining the global telecommunications network, it sought to control what could be accessed. Even as China was taking its first steps into connectivity, research was under way to ensure that those connections were firmly under the control and supervision of the CCP and its censors. The Golden Shield project, popularly known as the "Great Firewall of China," constituted an initial step of defending the PRC from unauthorized information proliferation from without—and within.

Informationization is based on more than technology, however. As information was increasingly emphasized, new bureaucracies arose and industries were reorganized. Chinese informationization efforts were guided by the slogan of "Thorough planning, national leadership; unified standards, joint construction; mutual linkages, shared resources." This reflected efforts to standardize and unify Chinese information technology, increasing compatibility and reducing duplication. In 1998, the Ministry of Information Industries (MII) was organized to supervise China's information industry development. This entity seems to have eclipsed the State Council Informationization Work LSG.

This consolidation was apparently insufficient. In December 1999, the State Informationization Work Leading Small Group was formed. It was headed by Wu Bangguo, a member of Jiang Zemin's Politburo Standing Committee. This LSG promoted further informationization. It was very limited in authority and organization, however, and relied on the MII for its support and staffing.[10]

Yet another reorganization occurred less than two years later, with the establishment of a revived State Informationization Leading Small Group (SILSG) in August 2001, under Premier Zhu Rongji, one of the key architects

and supporters of broader Chinese economic reform (and number two in the CCP hierarchy at the time). This series of reorganizations reflected not only the need to promote informationization but a sense of its growing importance, as more and more senior leaders were included in each iteration of this LSG.[11] As one Chinese observer noted, "Compared with the 1999 State Informationization Work Leading Small Group, the newly organized leading small group's membership was more senior," including the head of the State Council, two members of the Politburo Standing Committee, and two other members of the broader Politburo.[12] This likely reflects the larger effort by Jiang and the senior party leadership to refocus Chinese informationization efforts from building an information *economy* to an information *society*.

In 2002, at the 16th Party Congress, informationization was formally recognized as essential for growing Chinese "comprehensive national power" (*zonghe guojia liliang*; 综合国家力量). General Secretary Jiang Zemin emphasized the Chinese path to industrialization and economic modernization would depend on the information sector. Jiang noted that information technology was the "logical choice" if Chinese industrialization was to accelerate, especially since informationization would generate other benefits, including raising the overall level of scientific and technical awareness, reducing resource consumption, and developing Chinese human resources. Therefore, "we must give priority to the development of the information industry and apply IT in all areas of economic and social development."[13]

In the 10th Five-Year Plan (2001–2005), national informationization was among the 16 priorities. To achieve this, the government would:

- Promote the information technology sector
- Increase the accessibility and use of computers and computer networks
- Expand the use of digital and network technologies
- Further expand the national information infrastructure, including broadband and telecommunications networks[14]

As Hu Jintao rose to the top leadership positions in 2002 and 2004, the Chinese leadership shifted gears on broader economic policies. Hu and his premier Wen Jiabao were far less enamored of economic reform than their predecessors Jiang Zemin and Zhu Rongji. Nonetheless, they recognized the importance of expanding the role of information technology in the PRC.

In 2005, the Chinese government promulgated the "National Strategy for Informationization Development, 2006–2020." This charted a course for China's efforts to expand and deepen information technology. Major priorities would be increasing the level of informationization in the national economy and society; expanding information and communications infrastructure (e.g., making broadband more widely available); promoting the application of information technology in healthcare, education, and government operations; and improving Chinese global competitiveness in information-related

technology production, including the development of more sophisticated computer programs and applications. Chinese information security systems would meanwhile be strengthened, and informationization of public security ministries would be enhanced.

In 2007, after the 17th Party Congress, the SILSG included five members of the Politburo (out of 24). Not only was this a substantial slice of Chinese political power, reflecting highest-level attention, but military and internal security interests increasingly dominated.[15] This was further reinforced the following year, when the PRC consolidated much of the information technology and aerospace sectors into a new superministry, the Ministry of Industry and Information Technology (MIIT), which also oversees the military industrial complex (through the State Administration for Science, Technology, and Industry for National Defense, or SASTIND).

All of these measures ultimately reflected the interest of the Chinese leadership in expanding its comprehensive national power, which could happen only if information technologies were incorporated and integrated into the broader society. This is the essence of informationization, from the Chinese perspective.

These efforts have borne steady fruit, as China's presence on the Internet and level of computerization has steadily expanded. In 2000, according to the International Telecommunications Union (ITU), China had Internet usage penetration of less than 2 percent, with some 22.5 million users in a population of 1.28 billion. This had more than doubled by 2002, to 59 million users, representing 4.6 percent penetration.[16] By December 2013, the China Internet Network Information Center (CNNIC) reported some 618 million Chinese Internet users, marking a 45.8 percent penetration rate. The CNNIC also reports that 93 percent of Chinese businesses used computers and 83.2 percent used the Internet while much of China accesses the Internet via their mobile phones (the foremost means of Internet connectivity in the PRC).[17] Many Chinese used the Internet for shopping (302 million in 2013), engaged in mobile online gaming (215 million), and instant messaging (532 million). As the CNNIC noted, mobile instant messaging has rapidly expanded because "such applications as information sharing, communication, payment and finance have been added [to mobile communication] based on social contact elements, which has greatly increased user stickiness," that is, willingness of users to stay at a given site.[18] China is clearly on the path toward becoming an information society.

MAINTAINING CONTROL OVER INFORMATION: THE CASE OF CHINESE NEWS

As information has assumed a greater role in economics and society, it has also become a central part of national security considerations. This includes not only generation of military power but a broader revolution in what

constitutes a security threat. For China's leaders, this radical alteration in the central means of generating power and influencing society has required incorporating information management into both peacetime and wartime security planning. This is typified in how the CCP strives to control news, even in the era of informationization.

In some ways, this effort at controlling the various forms of new media is an updating of the Chinese leadership's traditional approach to security. The CCP has always tried to control what information reaches the populace. While the Chinese news environment is more open today than it was during the Mao Zedong era, with a major proliferation of media outlets, the Chinese government continues to exercise very strict control over news media. Indeed, Reporters without Borders ranked China near the bottom of nations for press freedom, ranking it 176 out of 180 countries in its 2015 World Press Freedom Index.[19]

The Chinese news environment has become much more complex, as nonofficial news outlets now exist alongside the state-run news agency Xinhua and state-run national media organizations such as China Central Television (CCTV), *People's Daily,* and provincial-level entities. It is important to recognize that these new entities may not be state run, but they are not a truly private or free press. Many commercially oriented newspapers were spawned by state media organizations to raise additional revenue. *Southern Weekly,* for example, was spun off from Guangdong Province's official newspaper *Nanfang Daily.*[20]

Many of these new media organizations have proven to be very popular. In 2011, a dozen commercially published Chinese newspapers had circulations exceeding one million.[21] These nonofficial outlets enjoy substantial readership because of higher levels of credibility with the broader population. "Official media sources are considered to be experts on the position of the state and aimed at manipulating public opinion. In contrast, nonofficial media sources are seen as reporting from the perspective of the public in a less biased way."[22]

In reality, however, nonofficial media operate under only slightly looser reins than their official counterparts. Indeed, "asked about whether media commercialization has brought about greater independence, journalists and editors commonly answer, 'There is no fully commercialized and private media'" in China.[23]

The CCP's Central Propaganda Department (CPD) exercises close oversight of all Chinese media (including cultural as well as news products). The CPD, in conjunction with state entities such as the State Council Information Office, the General Administration of Press and Publication (GAPP), and the State Administration of Press and Publication, Radio, Film, and Television

(SAPPRFT), as well as their respective subsidiary provincial-level party propaganda departments, ministries, and offices, regularly reviews the content of all Chinese media. This includes not only news broadcasts but television and radio programs, films, and so on.[24] The CPD regularly issues directives on news topics, dictating what topics should, and as important *should not,* be covered. These directives also provide guidance on which specific perspectives should be allowed, should be encouraged, or are forbidden.[25] Depending on the topic, these instructions often apply not only to official state-run media but to nonofficial media as well.

On July 23, 2011, two high-speed trains were involved in a horrific collision outside Wenzhou city in Zhejiang Province. The crash killed some 40 people and injured hundreds more. Initial reporting on the subject was sparse but soon became critical of authorities. Chinese journalists reported that the Railway Ministry had buried some wrecked cars rather than examining them carefully and suspended rescue operations too early. CCTV and newspaper commentators questioned whether the emphasis on rapid national development had overridden safety concerns.[26]

Chinese press censorship began almost immediately. The CPD instructed Chinese journalists not to question official accounts, stating, "Do not question, do not elaborate."[27] Initially, these instructions were not always obeyed. By the following week, however, stricter controls had been imposed. The CPD issued directives warning reporters not to draw any conclusions regarding China's larger effort to promote bullet train development. News media were instructed to write "stories that are extremely moving, for example people donating blood and taxi drivers not accepting fares."[28] Many media sites pulled articles, focused on more upbeat aspects, and often deleted older, more critical stories.[29]

In some cases, censors are much more decisive and overt in their actions. In 2013, the nonofficial newspaper *Southern Weekly* wrote a front-page editorial calling for greater adherence to the Chinese constitution. The Guangdong provincial propaganda ministry (under whose purview *Southern Weekly* operates) replaced it with an essay praising the CCP. Within hours, and over the course of the following week, the national-level CPD issued several directives regarding the rewriting of the newspaper's front page. At first, it forbade any discussion of the situation. It then dictated exactly how it could be described in other news media. Eventually, other newspapers in China were also directed to publish an op-ed that had originally appeared in *Global Times* (a commercial newspaper in the *People's Daily* publishing group), which criticized the originally planned op-ed. Interestingly, the CPD's directive also noted that "external hostile forces are involved in the development of the situation."

DIRECTIVES FROM THE CENTRAL PROPAGANDA DEPARTMENT REGARDING *SOUTHERN WEEKLY*

The Central Propaganda Department's (CPD's) instructions on how to cover the *Southern Weekly* story in January 2013 provide useful insight into how the CPD tries to shape and mold public perceptions. While the CPD initially sought to prevent any discussions, within a week, it had evolved toward influencing the story instead, as seen in these directives provided by China Digital Times. This evolution, and overall rapid response, suggests a flexible organization able to adjust course on short notice.

Central Propaganda Department: Urgent Notice: Upon receipt of this message, controlling departments in all locales must immediately inform all reporters and editors that they may not discuss the *Southern Weekly* New Year's greeting on any public platforms (January 3, 2013).

中宣部：紧急通知，各地主管部门务必于第一时间逐一通知到所有媒体记者、编辑，不得在任何公开平台讨论关于南周新年献辞事件。[30]

Central Propaganda Department: No media, official Weibo accounts, or individual Weibo accounts are to republish or comment on the *Southern Weekly* incident. Do not share the *Global Times* opinion piece or the incendiary Dragon TV program about the New Year's greeting. Henceforth, it is forbidden to republish reports on the aforementioned incident (January 4, 2013).

中宣部：各媒体官方微博及个人微博不转、不评南方周末事件，不转环球时报评论及东方卫视新年献词惹热议节目。今后对同一事件的报道均不得转载。[31]

Central Propaganda Department: Urgent Notice Concerning the *Southern Weekly* New Year's Message Publication Incident: Responsible party committees and media at all levels must be clear on three points related to this matter: (1) party control of the media is an unwavering basic principle; (2) this mishap at *Southern Weekly* has nothing to do with Guangdong propaganda department head Tuo Zhen; (3) external hostile forces are involved in the development of the situation. Every responsible work unit must demand that its department's editors, reporters, and staff discontinue voicing their support for *Southern Weekly* online. Starting tomorrow, media and websites in all locales must prominently republish the *Global Times* editorial "Southern Weekly's 'Message to Readers' Is Food for Thought Indeed" (January 7, 2013).

中宣部：关于南方周末新年献辞出版事件的紧急通知，各级主管党委和媒体，对于此次事件，必须明确以下三点：一，党管媒体是不可动摇的基本原则；二，南方周末此次出版事故与广东省委宣传部长庹震同志无关；三，此事的发展有境外敌对势力介入。各主管单位必须严格要求其部门的编辑、记者和员工不得继续在网络上发言支持南方周末。各地媒体、网站明天起以显著版面转发《环球时报》的社评《南方周末"致读者"实在令人深思》。[32]

The intervention of the CPD carries with it the threat of punishment for noncompliance. Violations of CPD-issued guidelines can lead to fines, job dismissal, jail time, or even closure of a given outlet. In 2006, an ongoing effort by the Chinese leadership to rein in the press saw the closing of *Bing Dian* ("Freezing Point"), a weekly newspaper with ties to the official outlet *China Youth Daily*. Chinese authorities stated that *Bing Dian* had been shut down for publishing an extended study of Chinese middle-school textbooks that claimed the textbooks incorporated major official distortions of history.[33]

Even the publication or discussion of the CPD's guidance is potentially punishable, should any given instruction be deemed a "state secret."[34] In July 2014, the SAPPRFT declared that "Journalists must never violate rules or provide any information about their professional conduct to other domestic or foreign media and websites."

"Professional conduct" was defined as "any kind of information, source material or news product" acquired or made by "reporters, editors, broadcasters, anchors, as well as other newsroom staff who provide support to them", including "state secrets."[35]

The potential for sanctions aimed at not only individual journalists but their affiliated outlet seeks to inculcate a culture of self-censorship by both. For a nation as large as China, self-policing is much more efficient than externally imposed oversight. Investigations and closer monitoring can then focus on more persistent troublemakers and potential threats.

These restrictions also inhibit professional exchanges and cooperation with foreign media, another potential vulnerability in Chinese media control. The same instructions note that Chinese journalists are strictly prohibited from serving as a contributing writer, columnist, correspondent, or reporter with foreign media organizations. Chinese citizens who work as assistants to foreign media organizations are regularly harassed or arrested.[36] In essence, the government seeks to limit those who best understand the Chinese media structure from tutoring or educating their counterparts.

Chinese Efforts to Control Foreign Media

Chinese authorities try to exercise similar influence over foreign news organizations. China allows only a limited number of J-1 resident foreign journalist visas, thereby restricting the number of people who may operate officially as journalists. Even that low number is granted only after a tortuous process.[37] Journalists from Bloomberg News and the *New York Times* could not get their visas renewed after their organizations published stories detailing corruption in China's leadership ranks.

When a *New York Times* reporter raised this issue during a joint press conference between President Barack Obama and President Xi Jinping, the Chinese leader made clear that the fault lay with Western news organizations.

"Media outlets need to obey China's laws and regulations," Xi said, before launching into a metaphor suggesting that news outlets'

credentialing problems were the organizations' own fault. "When a car breaks down in the road, we need to get off the car to see where the problem lies. . . . In Chinese, we have a saying: The party which has created the problem, should be the one to help solve it."[38]

Journalists seeking to enter China for specific stories have little better time of it. Obtaining a J-2 temporary journalist's visa requires securing formal letters of invitation from Chinese-based organizations. This effectively makes hosts responsible for the behavior (including questions and stories) of foreign journalists; not surprisingly, this further discourages openness to foreign reporters. It also limits visiting journalists from reporting on any other issues during their stay. Interviews can be difficult, if not impossible, to obtain, and movement can be monitored, if the journalist strays far from his official focus.

Even when foreign journalists are able to enter the PRC, their access remains limited. The Chinese Foreign Ministry only expanded its press briefings to five times a week in 2011, after holding to a twice-weekly schedule since 1999. Not until 2014 were foreign journalists able to attend the monthly press conference that the Ministry of Defense began holding in 2011. Furthermore, many of the press briefings have been scripted, involving extensive negotiations on what topics would and would not be allowed, how the questions would be phrased, and even in what order questions would be posed.[39] The goal is not to *provide* information but to shape how any information that *is* allowed to disseminate may be presented and therefore perceived.

Chinese efforts to control dissemination and interpretation of information have modernized as the technology has improved. Foreign media organizations that cover China now often experience attacks against their computer networks, especially if they cover stories that embarrass the Chinese leadership or are otherwise sensitive. In 2012, Bo Xilai, party secretary of the provincial-level city of Chongqing, became embroiled in a massive scandal. His wife was charged (and later convicted) of murdering a British national. The Chongqing police chief fled to the U.S. consulate in nearby Chengdu and may have tried to defect. Eventually, Bo himself was expelled from the CCP and later arrested on charges of corruption. All of this was highly controversial and embarrassing to the Chinese leadership, which was in the midst of a power transition from Hu Jintao to Xi Jinping. The U.S.-based website Boxun.com, which provided extensive coverage of the Bo scandal, experienced unremitting attacks on its website, eventually forcing it to shift hosting companies.

Later in 2012, Bloomberg News, the *New York Times,* and the *Wall Street Journal,* which had all reported on Chinese corruption issues, found themselves under concerted, intensive computer hacker attacks.[40] These attacks included theft of various reporters' passwords and penetrations of the companies' e-mail systems to determine reporters' contacts, as well as apparent monitoring of reporters' stories and investigations.

UNDERSTANDING HOW THE PLA THINKS OF FUTURE WARS

If information is central to maintaining the CCP's grip on power, the PLA has concluded that it is also vital for fighting and winning future wars. The Chinese military has devoted substantial energy over the past 25 years to understanding the nature of Information Age wars and preparing itself for them. This has required overhauling the entire PLA, including core concepts such as its strategic guiding thoughts and basic operational principles, and has led to the creation in 2015 and 2016 of several new services as well as complete restructuring of the PLA's administrative headquarters and war-fighting commands.

Nor is this process complete. It is clear, from the PLA's own writings and statements, that it is still both carefully analyzing other people's wars and broader international trends and engaging in close assessments of its own capabilities.

In order to modernize itself and accommodate these changes, the PLA has had to keep its own officers and troops informed about its thinking on informationized warfare. To do this for a military over two million strong, it has produced a variety of reference materials, textbooks, teaching materials, as well as professional readings. This volume examines a wide array of such writings, in order to provide an understanding of how the PLA discusses information and warfare.

These Chinese writings generally fall into five broad categories:

- *PLA reference materials.* These comprise volumes such as official military encyclopedias and military dictionaries. These are materials used by the PLA itself to provide consistent definitions and explanations of key concepts and reflect the corporate knowledge of the PLA.
- *PLA textbooks.* These are recently published books that are required readings for PLA officers at institutions of professional military education. These provide a common foundation of knowledge for PLA officers.
- *PLA teaching materials.* In addition to PLA textbooks and reference materials, the PLA publishes an extensive array of supplemental teaching materials. These complement the textbooks and reference materials, as part of a professional military educational curriculum. They flesh out concepts laid out in the textbooks, often providing more extensive analysis, exploration of key concepts, and enumeration of guiding concepts

and basic principles of operations. There are typically study-aid-type
questions at the conclusion of each chapter, further identifying key con-
cepts and terms.

- *Professional military journals.* Any organization as large as the PLA will
  have professional journals to facilitate debates about future concepts,
  airing of various points of view, and informing the overall body of new
  developments. The PLA is no different; indeed, it publishes a range of
  newspapers and journals not only for the entire PLA (e.g., *People's Lib-
  eration Army Daily, China Military Science*) but for narrower audiences
  (e.g., *Journal of the Academy of Equipment*).
- *Professional reading materials.* The PLA also publishes various volumes
  on more specific topics. These are not teaching materials or textbooks
  but are study guides and volumes of "frequently asked questions." These
  provide important insight into Chinese views of fundamental opera-
  tional issues.

From this array of materials, this volume will try to provide the reader
with some insight into how the PLA talks and writes about the interplay of in-
formation and future security. It will begin with an introduction to the PLA.
The next three chapters will explain the key, interrelated concepts of "infor-
mationized warfare," "information warfare," and "information operations," as
the PLA uses those terms.

Because the Chinese see future space operations as a key determinant of
who is likely to dominate the information environment, Chapter 6 will review
recent Chinese military writings on space-related activities.

As the PLA has never been organized entirely along Western military lines,
Chapter 7 will provide an overview of some key Chinese military organiza-
tions charged with implementing information warfare. It will also provide
some initial thoughts on the 2016 reorganization of the PLA and how it might
affect Chinese informationized warfare efforts.

It is important to caution that this volume is *not* an assessment of how
well the PLA can wage "local wars under informationized conditions." The
PLA has not fought a war since it concluded hostilities with Vietnam in the
early 1980s, so it is impossible to know with any precision how it will perform
in any future war, its first in a generation or more.

Rather, Chinese writings provide insight into PLA aspirations—where it
hopes to wind up, rather than necessarily where it is. These aspirations and
interim objectives in turn provide a framework for assessing current and fu-
ture Chinese activities and efforts. It is sobering to consider, however, that the
PLA of today hews closely to the aspirational doctrine laid out by the PLA in
the 1990s.

EXECUTIVE SUMMARY

The Chinese leadership believes we now live in the Information Age. Over the
past quarter century, the leadership of the People's Republic of China (PRC)
has been increasingly focused on moving China into the Information Age.
From the perspective of the Chinese Communist Party (CCP) leaders, this
is a matter of national as well as regime survival. The new currency of "com-
prehensive national power"—the measurement of a state and society's power,
which includes military, economic, political, diplomatic, science and technol-
ogy, and cultural components—is measured in terms of information.

*Information has become decisively important in the conduct of current and
likely future wars.* In the view of the Chinese People's Liberation Army (PLA),
the rise of the Information Age means that future wars will be contests in the
ability to exploit information. Such informationized warfare will be the hall-
mark of the Information Age, as mechanized warfare was for the Industrial
Age. Wars will be decided by the side better able to generate, gather, transmit,
analyze, and exploit information. This will require the PLA to sustain its ef-
forts to focus more on quality than quantity and to improve its ability to con-
duct joint operations.

*The PLA is reorienting itself, at a fundamental level, to better conduct infor-
mationized warfare, information warfare, and information operations.* The PLA
has never been organized entirely along Western lines; there has always been
a lesser emphasis on services and greater focus on different functions (espe-
cially with a political department). This divergence will grow in the future, as
the PLA modifies itself to fight informationized wars. The resulting overhaul
already touches on every aspect of the PLA, including not only its equipment
but its doctrine (how the equipment will best be used), its training, and even
its organizational layout, in terms of both peacetime administration and war-
time command.

*Informationized warfare blurs the lines between peacetime and wartime, be-
tween what is considered military and what is considered civilian.* Part of this
overhaul is necessary because, in the Information Age, peace and war, military
and civilian are increasingly indistinguishable. One cannot wait until the out-
break of war to gather intelligence, influence psychological outlooks, develop
antisatellite systems, or design computer software weapons. The interlinkages
of information infrastructure mean that all of these elements are melded to-
gether. The preparation and conduct of informationized warfare will therefore
include activities in peacetime, aimed at civilian and commercial entities, as
well as wartime operations against adversary military systems.

*Informationized warfare is more than just cyber warfare; cyber warfare is
just one piece of the larger whole.* In the Chinese view, informationized warfare
extends beyond cyber activities and is instead about establishing "information

dominance." This involves being able to gather, transmit, analyze, assess, and exploit information more quickly and more accurately than one's adversary. It includes the conduct of political warfare, which shapes and influences friendly, adversary, and third-party views and assessments. Winning future wars will depend upon winning information dominance, while denying it to the adversary.

Establishing information dominance involves waging information warfare. This encompasses a range of military operations, including warfare in the electromagnetic domain, warfare across networks, and warfare of the mind and perception, that is, electronic warfare, network warfare, and psychological warfare. There will be special emphasis placed on targeting the adversary's command and control and intelligence organizations and infrastructure, at the strategic, operational, and tactical levels of conflict, as these are the most important networks, systems, and commanders. Information warfare also entails establishing space dominance, because of the extent to which various nations depend on space-based systems for collecting and transmitting their information. In all of these cases, what matters is the information, rather than the hardware or software per se. Information has itself become not only a resource but a weapon.

Information warfare is comprised of an extensive array of information operations. These include reconnaissance operations, offensive and defensive operations, and deterrence operations, in the electromagnetic, network, and psychological realms. It also includes the employment of physically destructive means against key information infrastructure targets, ranging from satellite constellations to landlines and command posts. Just as information warfare is about more than computer network warfare, information operations involve more than just interfering with information systems.

Information warfare is fundamentally shaping the PLA, including its organization. Several of the major reforms announced in 2015 and 2016 are aimed at sharpening the PLA's ability to secure information dominance. This includes the creation of a new service, the PLA Strategic Support Force, which will bring under a single bureaucratic umbrella all the key combat elements that the PLA believes are central to waging information warfare—space forces, network warfare (cyber) forces, and electronic warfare forces.

For American decision-makers and analysts, understanding the context of Chinese information activities is as important as determining the specific actions being undertaken. Influencing Chinese information operations requires understanding the context within which they occur. Deterring them from waging informationized wars requires holding at risk what the Chinese leadership values. Only by understanding the Chinese leadership's perspective can the United States effectively counter the PRC. Even then, given the high priority accorded to improving China's comprehensive national power, and

the PLA's relentless preparations to fight and win future informationized wars, success is not assured.

A NOTE ON TRANSLATIONS

There is an Italian phrase *Traduttore, traditore,* which roughly means "translator, traitor." It captures the idea that translation is, at best, imperfect. There are many different ways to translate any given phrase, and capturing the nuance as well as the literal translation is always a challenge.

In the first place, there are always different ways to translate any given phrase. *Ronghe* (融合) may be translated as "melded" (as I have in this volume) or as "fused" or "integrated." All of these meanings are clearly synonymous.

This is further complicated, however, because in some instances, the same phrase has very different meanings, depending on the context. Thus, the Chinese term *zuozhan* (作战) will sometimes mean "operations" and in other instances mean "combat."

Similarly, the Chinese term *weishe* (威慑), while translated as "deterrence," also embodies the idea of "coercion."

In still other cases, different phrases all translate to the same phrase in English but cover different aspects that the English phrase embodies. Thus *zhengti* (整体) and *yiti* (一体) are often translated as "integrated," but there are differences in nuance and intensity.

Finally, translations are always somewhat idiosyncratic, based on the choices and mental associations of the translator.

In general, I have tried to include the Chinese characters where there may be some confusion or disagreement, so that the reader can be aware of the specific Chinese term.