



CHAPTER 15

**Guesses About the Role of Information  
Technology in North Korea's Defense  
Modernization**

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**Origins and Evolution of the Civilian IT Campaign in  
the DPRK<sup>146</sup>**

Under the guidance of Chairman Kim Jong Il, North Korea's nation-wide economic, political, and social campaigns typically begin and end abruptly, according to the leader's whims. North Korea's information technology campaign gained prominence early in 2001 with these instructions in the New Year's Address:

*A central task for building up the economy  
this year is to steadily forge ahead with the*

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*work to reconstruct the overall people's economy with modern technology while revamping the existing economic basis and maximizing its power. The technological reconstruction of the people's economy is a main link in the economic work at present, and it is a pressing task that cannot afford to be delayed any longer. We should renew all plants and enterprises with modern technology and build new production bases based on the latest science and technology. The entire society should give importance to science and technology and promote technological innovation.*<sup>147</sup>

The roots of the IT campaign can be traced at least as far back as the 1980s, when Kim Il Sung became acquainted firsthand with European science and technology during his 1984 European trip.<sup>148</sup> In the late 1980s, North Korean students were sent to Europe for technology training and soon a few technology institutes began to operate in North Korea. Most of students who had been abroad were withdrawn in the early 1990s. But in the mid-1990s, under Kim Jong Il's leadership, more vigorous efforts were made to promote technology, including the establishment of an electronic industry ministry devoted to IT in 1999. The year of 1999 was also designated as the "year of science." But the emphasis that the 2001 New Year's Address placed on technology signaled the beginning of a full-fledged IT

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<sup>147</sup> Quoted from a translation of the New Year's Address as broadcast on the domestic Korean Central Broadcasting Network, January 1, 2001.

<sup>148</sup> Information about North Korea's promotion of the IT industry may be found in Bae Seong-in's "North Korea's Policy Shift toward the IT Industry and Inter-Korean Cooperation," *East Asian Review*, Vol. 13, No. 4 (Winter 2001), pp. 59-78.

campaign, a national economic campaign that replaced the military-heavy industry campaign begun in 1998, which in turn had replaced the agriculture-light industry-foreign trade campaign of the early 1990s, which had replaced the original military-heavy industry campaign that had been the hallmark of Kim Il Sung's Stalinist industrial strategy since the Korean War.

Just weeks after the 2001 New Year, Kim and a retinue of top generals toured technology facilities in Shanghai. Upon their return, the North Korean press went into high gear to push the new IT campaign. *The Nodong Sinmun* provided its readers with articles about the basics of computers and the Internet. Everyone was urged to learn how to use a computer. The number of economic officials sent abroad to study foreign economies and technologies increased.

The basis of modern technology is information. The goal of IT is to efficiently collect data, transform it into information, rapidly disseminate the information to whomever needs it, and apply the information to tasks. For the military, information gathered and communicated in a timely fashion has always conferred an advantage, from Paul Revere's revolutionary message, "The British are coming!" to the recent RMA planning for a networked battlespace. In addition to its use in battle, information plays a vital role in weapons manufacture, logistics and, in the broader sense, as a major factor in the design of military strategy.

### **Assumptions and Observations about the Military Applications of Information Technology in the DPRK**

Because of the extreme secrecy with which the North Korean government conducts its affairs and sequesters its

society, our knowledge of IT in its civilian society is limited. But this lack of knowledge is nothing compared to our ignorance about the role of IT in the North Korean military. In the numerous articles that appeared in the North Korean press quoting the "Dear Leader's" thoughts on IT, we can find no mention of its military use, even though North Korea, by its own proud admission, is a "military-first" society. The number of weapons in the KPA can be estimated, but military computers and software, and military doctrine on IT, are largely invisible to the curious eyes of foreigners—even electronic eyes. By all accounts, the U.S. intelligence organizations were thoroughly surprised by North Korea's ability to launch a space vehicle in August 1998, a feat that depended importantly on the use of computers and information technology.

One strategy for estimating the role and impact of IT in the North Korean military is to start with several widely-accepted assumptions and observations, and then draw inferences from them. A first assumption is that the KPA gets the best of the available resources. This, we are told by the North Korean press, is the core idea of Kim's "military first" policy. So we assume that if the military wants technology and equipment to handle information, it gets more than the civilian sector. Not that civilians have much IT to boast of. There are less than a million and a half telephones for 23 million people, and only a few thousands of cell phones operating in Pyongyang. There are also 100,000 personal computers, mostly with 386 and 486 processors. The North Korean economy has the ability to manufacture only a few thousand computers a year. There is no public Internet connectivity, except at a few Pyongyang hotels and Internet cafes (fifty cents a minute) and in a few elite government organizations such as Kim Il Sung University and the Korean Computer Center. There

are also local area networks connecting some government organizations in a few big cities, as well as limited connections between the major cities.

What the KPA wants in the way of IT, we do not know. However, we do know what military equipment it has, and therefore can guess the kinds of information technologies which would be necessary to manufacture and operate that equipment.

A second assumption is that the KPA has closely studied the conduct of recent U.S. military operations, in which IT has played an increasingly important role. According to the North Korean press, the U.S. forces and the South Korean military are the North's major security threats. Unless the North Korean generals have formulated a military strategy relying entirely on unconventional warfare, it might be assumed that they want the same kinds of IT-based systems that the Americans and South Koreans would employ in a future Korean conflict. The core areas for "digitization" that the ROK military develops (according to its Defense White Paper 2000) are C4I, logistics and support, network security, and personnel education. These may be the general IT interests of the North Korean military, as well.

A third assumption is that even though the North Korean military has first call on national resources, the KPA, like the civilian society, also suffers from serious resource shortages, including shortages of electricity. The KPA is also short of foreign exchange needed to buy modern technology, which in any case is embargoed.

A fourth assumption is that the KPA can never match the South Korean and American forces in IT, and that Kim Jong Il and the KPA generals realize this. North Korean IT is probably 30 years behind world standards. What this

backwardness means is that in head-to-head combat, North Korean IT will be overwhelmed by the allies' IT-based capabilities and IT-based countermeasures. In any conceivable large-scale conflict with the U.S.-ROK forces, North Korea will lose the battle.

An interesting question is whether Kim Jong Il and his generals understand this, or whether they believe their own propaganda that boasts of the KPA's invincibility. Realistically, they may be looking for a way to use IT to snatch some measure of victory from the certain jaws of defeat. North Korea's asymmetrical advantage lies in its special forces and its forward-deployed artillery positions above Seoul. One might assume that the KPA is particularly interested in how IT can make its special operations forces more effective and lethal. For that purpose, relatively simple communication and positioning technology could be the answer. After all, the main goal of these troops is to disrupt the enemy, not to defeat him.

Speaking of alternatives to victory, could the IT revolution contribute to enhancing the DPRK's deterrent capabilities and strengthening its bargaining position while avoiding conflict? North Korean missiles and nuclear resources may have provided a good deterrent up to this point, along with the KPA's forward-deployed artillery. But, as more advanced allied weapons are introduced in the battlespace, these deterrents may lose some of their potency and credibility, and may need to be enhanced by the introduction of new military technologies on the North Korean side, too.

### **IT "Revolution" Meets the KPA's Military Doctrine**

It is prudent to assume that the KPA generals want new tanks, planes, ships, and so forth; i.e., the traditional

military hardware. For these weapons, they would need IT-based enhancements to make the weapons a match for similar allied weapons. But the essence of IT warfare is on a different scale from the weapons used to fight a war, whether they will be tanks, planes, or ships. The important question to ask is where the IT revolution fits into the North Korean military doctrine and planning.

A tentative answer to this question may be found by looking at the objectives of North Korean military strategy. According to the North's public statements, the first objective is to protect Kim Jong Il, and the second objective is to protect the homeland. It is debatable whether the traditional goal of reuniting Korea under communism should be considered a third objective. How might IT help (or hinder) achievement of these three objectives?

Consider KPA military doctrine formulated to achieve these objectives. The four military lines (first made public in 1962 and subsequently enshrined in the constitution) are well known: first, to arm the entire population; second, to fortify the entire country; third, to make soldiers politically reliable; and fourth, to modernize the KPA. Given its capability to link multiple entities across great distances, IT would seem ideally suited to the first and second goals. And certainly it is important to the goal of modernizing the military. However, IT's role in making soldiers more politically reliable is questionable -- more on this in a moment.

And then there is a fifth military line, not included in the above list, but obviously more important than these four: namely, that the leader completely controls the KPA. "Controls" not simply the way a democratic state's leader is the commander of the military, but controls with detailed

knowledge of all significant operations and military attitudes -- a kind of control achieved through planting "spies" throughout the organization. The importance of this degree of control is evidenced by the fact that Kim Jong Il's first government appointments were to head up the military: Kim became supreme commander in 1992 and chairman of the National Defense Commission in 1993. With the elevation of the NDC to the top spot in the political hierarchy in 1998, and with more security organizations coming under the direct control of the NDC, the importance of control over the military has been further emphasized. How does IT support this preeminent military line?

In North Korea, the leader's lines of communication to the military (more broadly conceived than chain of command) are three in number. The official chain of command goes from Kim Jong Il as chairman of the NDC down through the General Staff Bureau of the Ministry of People's Armed Forces to the KPA. For political control, the line goes from Kim Jong Il as general secretary of the WPK Central Committee and its Organization and Guidance Department, as well as the WPK's Central Military Committee, to the General Political Bureau of the MPAF and on down to the political officer attached to every KPA unit. The security line goes from the NDC down through the State Security Department, whose agents operate throughout the KPA (and elsewhere). Even among the security services (e.g., Ministry of People's Security or MPS, SSD, Security Service -- all at the administrative level of the MPAF), Kim maintains separate lines of communication.

The virtues of unity of command are well recognized, but there is also something to be said for multiple lines of control (e.g., military and political) as found in the North



Korean military. Kim does not completely trust anyone. By employing these multiple lines of oversight, Kim can verify through one channel that his orders are being carried out in another channel. The people who are watched most closely are the top generals themselves. And it has been reported that Kim Jong Il's permission is required to conduct military exercises even at the battalion level. The KPA is truly the army of the party and the leader, and political officers at every level see to it that the army remembers its duty.

Multiple vertical lines of communication, and lack of horizontal lines, also help assure Kim Jong Il's personal security. The only way that people at the lower levels of a dictatorship can effect changes in governance is by overthrowing the people at the upper levels. Numerous coup attempts against Kim Jong Il and his father have been rumored over the years. Kim has every reason to fear that the information-sharing power of IT might be turned against him. After all, one of the great virtues of IT is that by its protean nature it can be used to accomplish multiple goals.

How does the IT revolution fit into this command structure? Consider two different IT revolution models. In the top-down "Wizard of Oz" or "Big Brother" model favored by the Kim regime, IT can be used to improve communications up and down the chain of command. In the ideal case, Kim Jong Il could speedily receive reports from the lowest level of the army, and issue orders on his personal authority to every soldier. In practice of course, this would be a clumsy way to deploy IT, and in a contest of power with a truly networked force, a losing way. One defect of the top-down model is that the human decision element, which at every level would have to synthesize reports (on the way up) and expand control commands (on

the way down), would slow down and distort the communication. This is to say that the "friction of war" would defeat the IT structure. Moreover, at the very top, Kim Jong Il would have to process a tremendous amount of information and make countless decisions. It is known that human beings—even very intelligent ones like Kim Jong Il—can keep only seven (plus or minus two) ideas in their working memory, and they can focus on only one difficult task at a time. Kim Jong Il would be overwhelmed with information, and the demands of decision-making would result in so much stress that the quality of his decisions would suffer. To complicate matters, Kim cannot rely on personal military experience to make decisions because he has never commanded troops in battle. If he tries to run a war, he is likely to be as poor a general as Saddam Hussein.

The more advantageous way to employ IT is to network combat entities (people, equipment, organizations, etc.) so that they can communicate with each other as well as communicate up and down the chain of command. Under broad guidelines, every soldier needs to be empowered to observe, decide, and act. This form of IT-supported action promotes battlespace awareness and timeliness of response. Networking enables entities to coordinate their actions to pursue one goal, and then reconfigure themselves into other virtual organizations to pursue other goals. Networking also eliminates the traditional links between observing, deciding, and acting entities, and between those entities and their "platforms" of ships, airplanes, supply bases, etc. Unity of effort replaces unity of command. If IT were widely adopted by the North Korean military, its soldiers would truly become "one is a match for a hundred" soldiers, rather than cannon fodder for the allies' precision-guided munitions.

Compared to the traditional chain of command, the networked system of war fighting is “controlled chaos.” But chaos is incompatible with the command style of socialism practiced in North Korea. Given this incompatibility, it is unlikely that Kim and his generals will soon promote a networked military based on the recent advances in IT. Rather, IT is more likely to be used to improve top-down command. And IT could also be used in the North Korean military projects that do not require widespread networking, such as weapons development and manufacture.

Another obstacle to the adoption of IT in the North Korean military is the lack of the supporting infrastructure required to build, operate, and maintain IT-based systems, not to mention the shortage of educational facilities to train soldiers in the use of IT. Although a major attraction of IT for Kim is the belief that its adoption and use will not require the heavy-industry infrastructure, which North Korea is unable to provide, he will soon learn that IT cannot exist apart from an infrastructure built by heavy industry. The essence of IT, after all, is information analysis and movement, which is no substitute for having the physical infrastructure that a modern society needs. Any attempt to adopt IT without this infrastructure will be wasteful, because the IT-based systems will not work, and the information processed by the new technology will have nothing to be applied to. In short, information technology does not make things; it makes things work better.

Yet another obstacle to the adoption of IT in North Korea is that it opens another avenue by which North Korea can be attacked. Whereas it is difficult for a foreign military force to attack and destroy an underground North Korean munitions factory, it may be possible to electronically attack the plant through communication channels and

disrupt its operation. To prevent such attacks, North Korea would need hardened lines of communication and strong electronic warfare countermeasures.

### **IT Progress of Our Own Style**

Information technology is Kim Jong Il's latest great enthusiasm, contemporaneous with his promotion of such endeavors as ostrich and catfish farming, but considered by him to be more promising. It is inevitable that North Korea, like the rest of the world, will make more use of IT in its military sector. The North Korean press even boasts that a command economy is better suited to the rapid promotion of IT than is a market economy:

*Socialism of our own style has decisive advantages in developing the information industry . . . since [in] the planned economy . . . the creative strength of the masses can be broadly organized and tapped.*<sup>149</sup>

This view is wrong.

Moreover, the North Korean press already depicts IT revolution as the brainchild of one man:

*With how much fervent respect and admiration do we look up to the Great Leader, Comrade Kim Jong Il? We, who, following the heaven-sent distinguished General of Paektu, having been victorious in the arduous march, and thinking in our hearts of the Great Comrade Kim*

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<sup>149</sup> Yi Un-chan, "General Understanding of the Age of Information Industry," *The Nodong Sinmun*, Pyongyang, DPRK, April 22, 2001, p. 4.

*Jong Il, whom we grew to know more passionately in the midst of suffering, are firm in our conviction that our country will become strong in the development of the information industry as well.*<sup>150</sup>

If people adopt that kind of attitude, IT will promote progress as well as -- but no better than -- the nearly futile efforts of the arduous march.

For the last fifty years the Kim dynasty has gone to great lengths to keep information out of the hands of the people. The IT revolution may wreak havoc with that policy of secrecy. At the moment, North Korea seems intent on developing a domestic nationwide intranet cut off from the World Wide Web. Perhaps the military may try to develop its own IT-based network separate from the civilian corporate, public, and governmental intranets. But even limited domestic interchange of information is a threat to the Kim regime -- a threat from its own people.

For many decades, the United States has employed COCOM, and now the Wassenaar Agreement, to keep North Korea from acquiring most of the advanced technologies, including information technologies. Perhaps this embargo effort is misguided. It might not be such a bad idea if IT-based products and services became widely available in North Korea, including throughout the military. A measure of the IT revolution might be insufficient to combat the IT-based military capabilities of the United States, but it will be sufficient to politically awaken the

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<sup>150</sup> "Century of Science," a political essay read on KCBN, April 22, 2001.

North Korean people to the falsehoods and tyranny of their government.

