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Informatization and Inter-Korean Relations

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PREFACE

The IT revolution is bringing the global community closer together in terms of both time and space. Advanced computer hardware and software are fundamentally transforming human civilization, and growth of the Internet, spurred by the development of computers, is connecting the world into one network. Without a doubt, we live in a global village.

Today the pace of change is faster than ever. And with the development of information and technology opening a new chapter of civilization, we live in a time that can be compared to the Industrial Revolution that ended medieval times and ushered in the modern age.

Judging from the speed-of-light development of computers and the Internet during the last decade of the 20th century, the rapid changes in lifestyles in the 21st will no doubt surpass our imaginations. Networking, connecting computers and the Internet are by all means the "Big Bang" for the new millennium. As communities in the new millennium are described by adjectives such

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as "intangible," "virtual," "open," "smart," the 21st century will be a world totally different from anything before.

The main players in the new network community are private individuals connected to the global network and organizations on the network. The network simultaneously links billions of private individuals and numerous organization. In this sense, a nation or a government can be considered no more important than a single participant such as a private individual or organization. They are all on an equal footing with one Internet domain, and theoretically, an government Internet site has no more influence than one owned by a private individual. The concept of "central" has become a mere titular idea in the Internet era and "broadcasting" has given its communication role to "narrowcasting."

With the Internet, private individuals have gained a means to easily and directly access other private individuals and organizations around the world. They now have a greater, more powerful influence, and have emerged as key players in the global society. With such developments, relations between South and North Korea, thus far, centered around the two governments, are changing. Internet use is still extremely limited in North Korea, meaning that the change will be in the South. Yet, the North will be unable to avoid the powerful global trend of informatization.

CURRENT STATUS AND OUTLOOK OF NORTH KOREA'S INFORMATIZATION

So far the situation in the North has restricted IT development. Economic sanctions against it, led chiefly by the United States, have effectively isolated the North from the rest of the world. The North itself has minimized contact with the outside world, stressing self-reliance. In addition to these external and internal restrictions, a more powerful, self-imposed restriction stems from the North Korean government's strong policy to control information and

maintain confidentiality. Thus, IT development, which would spread information and open doors to the outside world, has been blocked. Limitations of Internet use in North Korea can be described in more detail. First, the government strictly forbids citizens from searching the Internet. Second, because of the lack of communication networks, the only way to access the Internet in North Korea is through international telephone service lines. Third, hardware essential for data communications, such as computers and modems, are in short supply.

Essentially, information and technology exist only as a government monopoly so as to control information and maintain the Stalinist regime. The concept of IT does not exist, hence, there is no such thing as a market demand for IT services or for companies operating to meet such demands. Even the word "informatization" is unacceptable in the North since the fundamental concept of the term is rooted in democracy and a capitalist market economy. Therefore, informatization as a strategy for national development or improved competitiveness is an unthinkable option so far. Nonetheless, with the global paradigm shifting toward informatization, eventually North Korea will move toward informatization. The signs of its possible movement are as follows:

First, while North Korea is reluctant to join the network mainstream in fear of losing control of information and ideology, it is actively utilizing the Internet, through a tightly-controlled computer network and circuit lines, to access classified information. United States Department of Defense surveys of visits to U.S. military web sites over the past several years, revealed that North Korea frequently enters the sites.[1] The ever-growing accumulation of

1) North Korea is believed to have accessed the web site of the U.S. Department of Defense to gather information on disrupting the U.S. Internet and the state-of-the-art CI system as the Republic of Korea and the U.S. increased CI (command-control-communication-computer) using advanced computer networks. *Yonhap News*, March 26, 1999.

digital information will raise the critical need to store and maintain information in a digital format. This in turn will necessitate digital information and more and more information will migrate through North Korea's limited networks. In the process, the Internet population will grow and the quantity, as well as the quality, of information will rise, exposing the limits of existing networks and calling for the establishment of new advanced networks. In this regard, North Korea's transition to an information society is unavoidable.

Second, North Korean leader Kim Jong-il, proficient in computer and network knowledge himself, makes many instructions in recent years and regularly logs on to the Internet.[2)]

Even though the North strictly controls the Internet, his instructions and interest, ordering North Korean citizens to devote efforts to the IT industry to realize production automation and computerization of the national economy, will eventually lead to a more open and developed IT environment in North Korea.

Among other factors is cost. The true power of information comes not from the information itself, but from the remarkable drop in the cost of information acquisition, which in turn effectively lowers production costs. While the costs of existing resources, such as labor, do not fall, in fact, often rise, information costs keep falling. Gordon E. Moore, the co-founder of Intel Corporation, observes that computing power doubles every 18 months. Prices of computers have dropped to 1/2 million of their original prices and in the past 6 years, chip prices have fallen to 1/70 compared with performance.

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2) When Kim Jong-il secretly visited China in late May 2000, he showed interest in computers and the Internet at Zungkwanchun, China's version of the U.S. Silicon Valley, and ordered Pan-Pacific Economic Development Association of Korean Nationals in Beijing to organize North Korea's official web site, "DPRKorea Infobank" [http://www.dprkorea.com]. According to some reports, Kim receives information and publications on computer equipment on a regular basis from North Korean officials stationed overseas. "Kim Jong-il is an Internet Aficionado." *Electronics News*, June 8, 2000.

Under such circumstances, organizations that successfully replaced existing resources with information system have seen drastic improvements in efficiency. Here lies the secret behind America's economic boom, strong employment, low inflation and continued growth.[3] To become competitive and boost its economy, North Korea has no alterative but to seek IT development.

Eventually North Korea will join the mainstream of informatization. If not, it will ultimately face new and untold challenges and crises. If isolation from the rest of the world and its economic difficulties throughout the 1990s can be labeled as an "analog" challenge, the challenge of the future will stem from failure to move forward in information and technology. Moreover, the "digital" challenge will prove impossible to overcome with any "analog" approach.

As the North has set its telecommunication policy goals as "building a global telecommunication service network using satellites, setting up a comprehensive service network through telephone lines to enable on-line conversations and conferences, text transmission, data exchange and video transmissions,"[4] IT advancement will be unavoidable. Nonetheless, as an inscription on the monument in front of the Postal Department in Pyongyang reads, "Telecommunications shall contribute to building Socialism and to meeting the people's demands," a total opening of the information sector will be impossible, and would be limited to areas that contribute to the national interest.[5]

To stimulate its IT industry and take advantage of the vast digital information available in the information era, North Korea will

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3) Lee Sang-chul, "North Korea Will Change," *JoongAng Ilbo*, June 20, 2000.

4) "Do North Korean residents have Internet access?" *Yonhap News*, March 13, 1999.

5) After the South-North Korean Summit, North Korea on June 20, 2000 through its Central News Agency, reinforced its plans to build a strong socialist nation, quoting Kim Jong-il saying "Reform and opening of doors is a pathway to demise. We can never allow reform or opening of doors. A strong nation is a nation of self-reliance." *JoongAng Ilbo*, June 20, 2000.

aggressively seek cable connections. And these cables connections could be linked through South Korea, since the foundation for informatization depends on strong information infrastructure. As traditional social infrastructure—highways, ports, railroads—determined competitiveness in the Industrial Age, a new form of social infrastructure, information highways, will measure competitiveness in the information era. In addition to building cable network connections to the outside world, the North will seek to establish an Intranet using telephone and cable broadcast connections. Serious efforts to establish information networks notwithstanding, the North will build systems that allow only limited access and have strong firewalls. So, in the end, the future of North Korea's informatization will be determined by the delicate balance between the government's need for informatization and its ability to restrict access.

INTER-KOREAN RELATIONS IN AN INFORMATION SOCIETY

North Korean leader Kim Jong-il commented during the inter-Korean Summit that he enjoys watching South Korean television broadcasts. It is doubtful that the special equipment[6] for receiving South Korean TV programs is exclusively for Kim Jong-il. High-ranking officials and party leaders are, no doubt, also watching South Korean TV. This opens the possibility that South Korean TV could be used as a window to the outside world for Kim Jong-il and the country's elite. If South Korean TV is currently the window to the world for North Korea, when the North allows access to the network

6) Using a receiver such as a demodulator, the North first receives South Korea's broadcast transmission near the border and then using a wireless mircowave equipment, commonly used for baseball broadcasts, transmits it to Pyongyang. An since South and North Korea's mode is different, PAL and NTSC, South Korean TV programs are viewed using convertors or TV sets exclusively for South Korean programs.

community, the South's Internet networks will assume the same role: Both use a common language, and South Korea has accumulated know-how and world-class expertise in Internet using. Consequently, South Korean web sites will be the first destination for North Korean Internet users. Under these circumstances, most IT information between the two Koreas will flow in only one direction—from the South to the North—eventually rendering the North highly dependent on the South for information and expanding the South's influence.

The final diagnosis is that the two Koreas will form a common network community. Despite that outcome, however, informatization in North Korea will still be strictly controlloed, bringing disadvantages along with the usual benefits.

Benefits

In the information age, inter-Korean relations should be strengthened through primary cooperation in the telecommunications sector, and South Korea should lead the reclusive North into opening its doors to the outside world and joining the mainstream of global informatization. For this, the telecommunication network between South and North Korea must be connected. Just as East and West Germany organized the "Telecom 2000 Project" to integrate telecommunication infrastructures,[7] aggressive efforts must be made to establish a common telecommunications network between the two Koreas.

Currently-existing telecommunication lines between South and North Korea include eight lines linking Korea-Japan KDD-Intelsat-Pyongyang-Shinpo, established on August 4, 1999, used for the Korea Energy Development Organization (KEDO) light water

7) In order to advance the level of East Germany's information infrastructure level to that of the West, West Germany organized the "Telecom 2000 Project," investing a total of 60 billion marks between 1990 and 1997.

reactor project, and eight lines linking Korea-Japan IDC-Intelsat-Pyongyang-Wonsan-Onjung-Changjun, established on November 17, 1998 (three lines for tourism, one line for Onjung-ri hot springs, two lines for the Changjun port construction site, two lines for Hyundai Asan Office), used for Hyundai Group's Mt. Kumgang tourism project.

In addition to increasing the number of lines to facilitate communications between the two Koreas, the South must actively seek ways to prompt the North to take part in the global trend of informatization and to aid its connection to the main network. In that process, South Korea must promote North Korea's establishment of an Intranet, and should consider providing aid for Internet access in the North.

Intranet access must be implemented, before anywhere else, at Rajin-Sonbong Free Trade Zone and at the Nampo Industrial Complex. Moreover, South Korea must consider providing computers and modems, as well as the hardware and software required for Internet access. Various equipment and technology necessary for utilizing the existing cable broadcast lines in the North for network communications and aiding the North to use the ".kp" address should also be considered.

By acquiring more and more South Korean hardware and software, the North will become increasingly dependent on the South for information. An example is North Korea's official web site "Chosuninfobank" which uses South Korea's free-of-charge search engine, "Dooraebak," making it dependent on the South for issues related with the program. In order to continue this trend, South Korean software developers should provide software rights to the North at low prices or even at no cost. Individual companies cannot easily negotiate with the North on their own, but once inter-Korean cooperation on telecommunications gains momentum, the two can reach an agreement that will enable South Korean software to be offered to the North.

Sending computers and parts from the South will help the two

Koreas integrate telecommunication networks. However, since North Korea is still designated as a rogue state, and the Wassenaar Arrangement bans the export of technologically-advanced equipment to rogue states, the challenge will be to find a way to send it without violting our national security.

Second, Korean codes and keyboard layouts need to be standardized. In order for North Korea to utilize South Korean software and digital information, a code that standardizes the Korean language is a critical task. North and South Korean keyboard layouts are also different in design especially in that the North places consonants on the right side of the keyboard.

Integrating digital standards will be essential, not only for immediate cooperation between the two Koreas on IT but also with an eye toward future reunification. If South Korea is required to change its existing standard to meet that of the North's, however it will result in huge costs. A prerequisite to integrating digital standards is to set comprehensive criteria for standardization that take all factors—costs, penetration, convenience—into consideration.[8)]

All things considered, standardizing Korean codes in the two Koreas could prove nearly impossible, yet it is a task that must be undertaken to enable the South and the North to share a common system. Considering the potential costs associated with developing a new standard code and replacing existing codes with the new, it will be more economic for North Korea to adopt the South's code system and in turn, for the South to provide some economic aid.

Third, in building an inter-Korean network community, South Korea must take the lead, assuming the role of "information

8) Through four sessions of the International Seminar on Korean Computer Processing held in Yanbian in August 1994, scholars from South and North Korea, China, Japan and the United States prepared the "Proposal on Korean Data Processing Standard" in four areas; computer terminology, computer code systems, alphabet order, and keyboard layout. The proposal, while meaningful as the first IT standard proposal for South and North Korea, has not been adopted by either of the Koreas.

supplier." For this, the South must strengthen its competitiveness as a source of high-quality information. In particular, efforts should be made to integrate various Korean web sites and gather and organize scattered digital information into a systematic database. This is critical, not only for IT cooperation between the two Koreas, but as a means to boost South Korea's international competitiveness.

Inter-Korean cooperation in IT promises significant benefits which will be even greater depending on North Korea's level of informatization. And if North Korea's IT capabilities increase drastically and its people are allowed unrestricted access to the Internet, we will experience virtual reunification—reunification between South and North Korean residents on the Internet:

First, IT cooperation and exchange between South and North Korea on both the social and cultural levels will contribute to positive relations between the two Koreas and future reunification by creating a common Korean community with strong ties on the Internet. Moreover, if separated families can meet through the net, it will contribute greatly to easing tensions on the Korean peninsula and creating a favorable environment for reunification. An "Internet visiting center for separated families" can be set up, allowing separated families to "meet" by way of video screens.

Second, economic cooperation and exchanges will be accelerated and North Korea will expand its social infrastructure for economic development, thus reducing the ultimate cost of reunification. In particular, as mentioned earlier, informatization will greatly reduce production costs.

Third, information exchanges between the two Koreas at a political level will enhance transparency, thus building a stronger foundation for trust.

Concerns

IT cooperation and exchanges between South and North Korea will

facilitate the North's opening of its doors, economic development and reunification on the Korean peninsula. However, as resource distribution is centrally controlled by the government, IT cooperation and exchange between the two Koreas could be misdirected. For instance, social infrastructure such as electricity and telecommunication lines set up jointly by the two Koreas could be misused in order to maintain the socialist regime. Furthermore, regarding electrical and telecommunications facilities, government administrations and the military facilities, are given priority. Since facilities are normally built to meet their needs, we cannot totally dismiss the possibility that inter-Korean cooperation in information and telecommunications could actually harm relations between the two Koreas.

In Dcember 1996, the North recruited overseas Koreans living in Canada, who then began posting information related to the reclusive nation through some twenty Internet web sites. In addition, in January 1997, the North set up a web site for the Korean Central News Agency (http://www.kcna.co.jp), a government propaganda media, in Japan and began posting official news reports. Most sites, which mainly stress the "greatness" of its leader, Kim Jong-il, and tout the regime as the "last socialist state," are clearly not targeting local residents, but South Korean Internet users.

Current South Korean laws cannot regulate simple access to sites set up by the North. Nonetheless, if anyone searching for information with the "intention to benefit the enemy," is subject to punishment according to regulations against the "production and distribution of materials that benefit the enemy" of the National Security Law. In other words, logging on to the sites is not illegal unless information is downloaded or printed and distributed.[9)]

Even if the South Korean government were to ban access to

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9) Simply visiting North Korean web sites such as "Chosuninfobank," is not an issue, but joining a site as a member requires government approval on contacting North Korean residents.

North Korean sites in fear of exposing its Internet users to North Korea's propaganda, it would be virtually impossible to stop users from visiting the sites. Moreover, North Korea can always set up new sites. The situation can be compared to unsuccessful attempts made to block access to Internet pornography.

These developments clearly indicate that in a network community, any willing South Korean resident can gain access to North Korea in the comfort of their homes, whether openly or secretly. Such a change raises potential issues for inter-Korean relation as well as for South Korea's national laws. As long as North Korea's first priority in IT development is disseminating its policies, self-reliance ideology and regime, Internet propaganda targeting South Korean residents will continue regardless of IT cooperation between the two Koreas.

Indeed, it is highly unlikely that the regime will give its people free access to the Internet and will continue to keep them under tight control. Nonetheless, the Internet will eventually open up North Korea. Like other web sites, "Chosuninfobank" featured a bulletin board on which North Korean officials expected to see messages from visitors inspired from the contents of the site. But when posted messages criticized the North Korean regime, administrators quietly closed it down, a strong indication of the effect the Internet can have on the reclusive North. Similarly, the interactive common gateway interface (CGI) was developed to mitigate the inconvenience of the one-way hypertext transfer protocol (HTTP) of the world wide web (WWW). And North Korea's decision to remove CGI from its web sites is counterproductive to Internet development. The Internet will impact the North and the regime will be unable to block that impact merely by closing down a bulletin board. Meanwhile the maturity and confidence of South Korean Internet users that prompted the closing of the board should be given due recognition.

On the other hand, there is still reason to be alarmed over North Korea's propaganda and instigation through the net. Possible concerns associated with inter-Korean relations in the net

community can be viewed according to two aspects: personal and social.

First, the North could try to reach South Korean individuals through the Internet. Aside from South Korean users logging on to North Korean web sites, e-mail could be sent to individual users. E-mail addresses of South Korean users could be identified[10] and under the name of a North Korean organization or a private individual, propaganda mail could be occasionally or regularly sent to users.[11] Considering that aside from e-mail, South Koreans are also the most common users of mobile phones, North Korea could attempt to wiretap mobile transmissions using advanced IT technologies or even leave voice messages on a user's mobile phone.

Given that such attempts are possible even with currently available technologies, it is very likely that the North may try to use IT to spread propaganda in the South. In particular, there is much reason to be concerned about potential attempts by the North to contact private individuals and aggressively try disseminate North Korean propaganda. To some extent, networks guarantee anonymity and secrecy, and since e-mails are exclusive, regulating e-mail contents is virtually impossible. In addition to spreading its ideology and propaganda, the North could attempt a more aggressive approach, intervening in South Korean elections or attempting to sway public opinion.

Second, North Korea could launch a cyber-attack, destroying the South's critical network infrastructure that controls transportation, finance, telecommunications, and the water supply, among others. The threat of a cyber-attack becomes more real as today's wars take

10) A possible scenario is spy activities around IPSs to obtain e-mail address lists of South Korean residents. In addition, once South Korea's resident register is digitalized, the North will aggressively try to obtain personal records beyond addresses and e-mail, on residents. Another concern is the fact that the North is accumulating background information on tourist to Mt. Kumgang.

11) For instance, a South Korean resident could receive a birthday card from Kim Jong-il or a South Korean could send an e-mail to a North Korean.

the form of "information wars," depending heavily on state-of-the-art equipment such as computers. The concept of an "information war" is broad, encompassing the passive approach of protecting the country's telecommunication networks from hacking, crimes and terrorism to the more aggressive approach of attacking and destroying an enemy's telecommunication network if necessary. Unlike conventional wars aimed at claiming casualties, information wars can be waged with a limited budget and with few resources, and yet target and destroy any region in the world. Such properties give information wars striking power that is incomparable to conventional wars.

CONCLUSION

In light of the current information and telecommunication revolution, no region in the world can remain closed. With that in mind, the South Korean government must initiate a resolute policy toward the North and take a more active role to open it. On the other hand, if we try to protect ourselves against exposure to the North, Pyongyang could suddenly take an aggressive approach, to contact and dazzle South Korean residents.

South Korea should take a more proactive approach. It should allow full viewing of North Korean satellite TV, and open all media, including newspapers, radios, and television, to South Korean residents. Futhermore, it should disclose to the public any concerns related to the North Korean media, and allow residents to make a sensible choice among all the options.

At the same time, it must take measures against attempts by the North to attract South Korean residents through various means of telecommunication such as e-mail. Considering the enormous potential of the net community, the only countermeasure will be openness and relying on the people's ability to choose wisely. In other words, the government should be totally open and clear about

its domestic and foreign policies, so as to leave no room for suspicion. And even if a problem occurs, it should be publicized immediately, and the understanding and support of the citizens should be sought. In sum, the only viable option is to set fair policies befitting an open society.

In an intangible virtual community, control through laws and regulations may be impossible. If human history has evolved from communities to civil society, in a sense we are reverting back to a communal society. So it is likely that future societies will governed by common self-regulated rules rather than by laws and regulations.[12)]

Even inter-Korean relations should evolve in a direction emphasizing the individual's ability to govern himself, more than laws and regulations.

While social policies are designed to encourage and support individual self-control, national policies should be designed to protect the country and its people from terrorist cyber-attacks from the North. Considering the possibility that the North could train hackers to infiltrate South Korean IT system in order to seize critical national and personal information and to destroy national key networks, the South Korean government must strategically develop tight countermeasures. In this respect, it may be effective for South Korea to organize an "IT force," just as it created the the Army, Navy and Air Force, as a countermeasure against the North's alleged plan to train a "100,000-man hacker force."

Advancement in information and technology will, in the end, benefit inter-Korean relations by making them more open and transparent. The world is becoming more closely connected, and

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12) As the cycle of social changes become shorter contemporary laws and regulations will become more and more useless. For instance, new types of crimes will appear faster than new criminal laws, evading is application. In this light, in future societies ethics and morals may be stress more than laws. As Confucius says, "law is post-control while decorum is pre-control."

thus, details of even a small development in North Korea is known immediately to the rest of the world through information networks. Not only can information about North Korea's nuclear and missile technologies, be learned, but details about a single North Korean individual can be made available on the net. North Korean society may remain reclusive, but the rest of the world will have an unobstructed view of the society, and this will in turn lead North Korea to open its doors. Therefore, information and technology will provide momentum for reunification on the Korean peninsula.

The social role of an Internet user continues to grow in the network community, and this is being reflected in relations between the two Koreas. The opening of the non-government sector is a powerful and unavoidable trend, and as cooperation and exchanges in the private sector increase, policies will have to become more flexible and moderate.

Under these circumstances, South Korea has very limited options in its policies toward the North. They must be consistent regardless of surrounding situations and fair and balanced enough to secure the support of neighboring countries. Only through these measures can inter-Korean relations advance towards peace and reunification in the network community.