

THE RELATIONS BETWEEN TWO KOREAS UNDER ROH MOO-HYUN ADMINISTRATION: MATTER-ENERGY AND INFORMATION FLOW

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Abstract

Under the Roh Moo-hyun administration(2003–2008), two Koreas continued improvement in relations begun by the previous Kim Dae-jung administration. The flow of matter-energy and information between two Koreas consistently expanded during these administrations. Comparing growth rates in information and matter-energy, we find that the growth rate in information ran faster than that in matter-energy from 1989 to 1994; since 1995, both have run at a similar rate. This shows that the two Koreas recognized the relative advantage of information in relation to matter-energy, but focused on the flow of matter-energy. The two Korean governments recognized the significance of the state of affairs in the region surrounding the Korean Peninsula. At the same time, external pressure had a significant influence on the two Koreas' relationship. Historically, the two Koreas' relationship has been dependent on external pressure from the big powers.

Keywords: Roh Moo-hyun Administration, matter-energy and information, relations between two Koreas.

I. A THEORETICAL BACKGROUND FOR THE ANALYSIS OF THE RELATIONS BETWEEN TWO KOREAS

Generally, for the use of scientific methods to explain and understand social phenomenon (including the phenomenon of international politics), three broad categories exist: positivism, realism, and conventionalism. However, we should consider that these classification methods were built on the base of determinism and reductionism. According to the deterministic theory, all events occurring within the world are determined based on events from earlier times, and they essentially happen without choice according to the rules of dynamics. Accordingly, if we can understand all the forces related to nature and all the states at a certain moment, we can basically calculate all the events occurring in the past and future of the universe. As for reductionism, explanation of events in the world can be found at the lowest levels by reducing the macroscopic world to the microscopic world (for example, atomic theory) by reducing the movement of macroscopic world to the movement of its constituent parts, and by reducing all the things to a simple basic law.

However, as we can see from the development of new science, natural phenomenon cannot be deterministically described and cannot be reduced to some variables. The development of complex systems theory has opened up the possibility that we can overcome the theories of reductionism and determinism by allowing us to find order even in a chaotic state.

The systems thinking between the traditional view from the perspective of the old paradigm and the new view from the perspective of the new paradigm may be different. The traditional systems thinking, which is interested in equilibrium and stability, believed that the system performed goal-seeking, self-regulatory or controlling objectives from an external environment by focusing on maintaining the system through the control of negative-feedback loops. However, the new systems thinking, based on the new paradigm, overcomes a weak point of traditional systems thinking. The traditional systems thinking simply interprets things from a simple functional

The Relations between Two Koreas

dimension without explaining the development process of a new system and the self-regulatory function of a system. However, new systems thinking has been developed to analyze the dynamic change process of systems.

New systems theory (especially, the complex systems theory) allows better explanation and understanding of the complicated phenomena of international politics in that it concentrates on non-equilibrium systems and evolution of the system beyond the structural and functional perspectives of the past. Concepts such as entropy, energy, and information that have been borrowed from non-equilibrium thermo-dynamics may be appropriate concepts in the phenomenal analysis and deployment of dynamic international relations.

It is true that the existing findings on South-North Korean relations have greatly contributed to the improvement of South-North Korean relations and inter-Korean cooperation, thus making it possible for the Koreas to take the reunification process a step further. With the passage of time, some limitations are seen in the analysis of South-North Korean relations, since such relations are diversified and complicated. In particular, the methodological limitations of the analysis of South-North Korean relations emerge, since the study of such relations is affected by the theoretical scarcity in the field of international politics. In this regard, we approach the study of South-North Korean relations in interdisciplinary terms. Specifically, we apply the living system theory from natural science to help improve the South-North Korean relations and contribute to the establishment of unification policies .

South and North Korea have mass-produced vast amounts of data and information through exchange, cooperation, and dialogue. In particular, South Korea has had the Ministry of Unification take the initiative in collecting information regarding South-North Korean relations in a database that uses certain categories. Such information has been classified and analyzed mainly according to issue area. Specifically, the information has been organized into the categories of politics, military affairs, economy, society, culture, education, academic affairs, science, technology, tourism, religion, press, publishing, arts, health, trade, import and export, transport and clearance, economic cooperation, and talks. This has made it difficult to build the information that is not limited to a certain category or may be hidden in various categories.

As relations are made more and more complicated, new issue areas and organizations emerge. This makes the solutions based on the existing issue areas and organizations invalid. Regrettably, South-North Korean relations are classified and explained by the analytical framework of this governmental body recognized to be most authoritative in the analysis of South-North Korean relations on the basis of such issue areas and organizations.

However, if the elements indispensable for every living thing are used as the categories for South-North Korean relations and the ensuing organization of information, it is possible to overcome the narrowness of the information system, establish the consistency of such a system, and discover the hidden knowledge not found by the existing methods.

The existing realist, multilateral, and globalistic paradigms have their own merits. Especially, the realist paradigm has been most used to explain and analyze South-North Korean relations and is still the most dominant paradigm. The multilateral paradigm will become a basic analytical framework, as South-North Korean relations and systems are diversified in the future. Still, these paradigms are insufficient to analyze international relations in the post-Cold War era and to understand South-North Korean relations in the context of the international order. This is because realism does not provide an overview of the development of such relations and multilateralism limits the major actors in international relations to the nation, enterprise, international organization, civil organization, etc. Accordingly, overcoming such limitations requires the use of the living systems theory paradigm that sees South-North Korean relations as living organic activities.

Putting more stress on the whole than the parts, the living systems theory perspective contains system thinking. The living system as complex system follows contextual and procedural basic thinking. Specifically, the most intrinsic characteristics of a system, derived from the correlations

The Relations between Two Koreas

between parts, are the overall ones parts do not have. Emergent characteristics hidden in parts emerge in the process of the interaction in which parts are integrated into the context of the whole.

It is possible to divide subsystems of the living system characterized by a complex system into the basic actors in South-North Korean relations. In addition, it is possible to find hidden patterns and to draw out the emergent information hidden in data by the flow of energy, information, etc., between subsystems on the contextual and procedural basis of interaction. Such active use of complexity science will enable policy decision-makers to analyze and view South-North Korean relations more scientifically in the long and short term and to select policies more easily. Moreover, it will prevent analysts from intervening in the analysis of South-North Korean relations by approaching such relations more scientifically.

First, the predominant frameworks for data and analysis of South-North Korean relations show that there is no consistency in the construction of data and the categories of analysis and that data are built and analyzed mainly according to issue areas. In particular, the unification of categories is lacking in the South-North exchange and cooperation systems that focus on the data regarding human exchange and trade.

The categories of South-North Korean relations data analysis remain at the level of analyzing the data on human and material exchanges and on issue areas such as politics, major personalities, diplomacy, administration, economy, science, and broadcasting. In particular, the interviews with the Ministry of Unification officials showed that such categories are treated as a major method for the analysis of South-North Korean relations. Such categories are effective for the linear and static data analysis of South-North Korean relations, but as relations develop in a more complicated manner, it is highly likely that analysis will be limited to the categories of the existing issue areas due to the data building method. This will make it impossible to accurately analyze the South-North Korean relations, which are getting more complex day after day, thus preventing policy makers from making the best policy selection. Such worry may be eased by the expansion of manpower for study and analysis, but the basic problems remain unsettled. Therefore, it is fundamentally necessary to address the basic problems in order to arrive at the best policies and to save the time and manpower required to build and analyze data and maintain the consistency of categories in building and analyzing the data of South-North Korean relations.

The living system theory assumes that all cells, institutions, organisms, groups, organizations, societies, supranational systems, etc., have subsystems as the fundamental characteristics of life. Beginning with cells, the higher levels of the living system have emerged in the fray-out process. The eight-phase living system has evolved through the fray-out process over 3.8 billion years, with cells and the supranational system sharing the same basic system traits. Every living system has 20 important subsystems (Miller, 1995) and maintains its life, performing its functions and roles. In general, the higher level system is a suprasystem of the lower-level systems that have their own components and is composed of the subsystems, each of which performs one of the acts indispensable for all living systems. Composed of many components complicatedly related to each other, the higher-level systems have emergent structures and processes that are not seen in lower-level systems.

This concept of emergent structures suggests that a system is not composed of components, but creates an autonomous order according to the interaction between components. Accordingly, there is a feedback process hidden between levels. Components are continuously revised, reassembled, and rearranged, as conditions change and actors learn, adapt, and evolve. The more components exist in a structure, the more opportunities are provided within the class level and the speed of evolution is increased. In particular, self-organizing is driven by the complementary action of counterbalancing and amplifying feedbacks. It is necessary to harmonize both with each other. Also, stability and instability and order and disorder are mixed with each other, thus enabling the presentation of images of macro-level types that are emergently caused by inartificiality. The complex system may cause emergent results not predicted at all; for example,

The Relations between Two Koreas

if a small accident combines with the casual environment at the turning point.

Like this, the living system characterized by the complex system maintains the state of energy thermodynamically through the continuous interaction with the environment within its own boundary. The input and output between matter-energy and information is indispensable for the living system. The metabolism of information is also indispensable for the survival of the living system. The input of information from the environment enables the living system to orient itself in time and space and adapt to the changing environment. In addition, such input enables an organism to find food and mates and to accept the feedback from the results of the living system. Furthermore, the information on the status of all the components of a system enables the system to adapt to internal stress. Eventually, information comes from the environment and every subsystem and is used for the guidance, control, and coordination of living systems.

The living system, characterized by the complex system, requires matter-energy and information for survival. Consequently, to apply the living systems approach to South-North Korean relations, it is necessary to reconstruct the information and data regarding inter-Korean relations in 20 subsystem categories and to scientifically analyze the short and long term trends of matter-energy and information exchange between South and North Korea. In other words, it seems more scientific to analyze the major institutions and organizations in South and North Korea that correspond to 20 subsystems of the living system and to apply the results to the analysis of South-North Korean relations.

In 1975, Kenneth N. Waltz in "Theory of International Relations" analyzed the "balance of power theory" as well as the "system theory" and criticized the reductive tendency in these theories. He believed that they were too simplistic yet deceptively complicated(Waltz, 1975). And he contended that "for the study of international politics, reduction and the use of the analytic method won't do." Robert J. Lieber in his book published in 1973 also argued that "the system models are now to be regarded as only 'tools for investigating reality'"(Lieber, 1973). On the other hand, James Grier Miller, a grand system theorist, being conscious of this kind of criticism, insisted that "Living Systems Theory is not reductionist"(Miller, 1995). Miller's "Living Systems Theory" appears to be important enough to attract our critical attention in the sense that international politics resembles a living organism in its complexity. His theory, therefore, implies the possibility that the nature of the problems in the Far East Asian international political system can be explained in their full complexity. Miller's theory, however, is not really new. As a matter of fact, Joseph Frankel in 1979 proposed that one needs to take account of the extensity of the system and measure it by various indices of communication(Frankel, 1979).

In this paper, we regard trade between the two Koreas as a kind of inter-Korean matter-energy exchange for the analysis of the relations between the two Koreas. And because the North Korean system has the unique property of restricting human exchange between the inner and outer system and closing information flows, we may perceive more easily the flow of information exchange with South Korea. Thus, in this paper, the human exchange between the two Koreas is seen as a kind of information flow. In this paper, the historical development of the relations between the two Koreas is examined through the lens of the living systems or complex systems theory before inter-Korean matter-energy and information exchanges are analyzed. This historical review is intended to grasp the change in the relations between the two Koreas in the context of the North Korean nuclear testing.

II. SYSTEM DYNAMICS IN THE RELATIONS BETWEEN THE KOREAS

South and North Korea in an analytical sense compose a set of 'loosely coupled systems' and are part of a subsystem of the higher-level 'international system (Northeast Asian system)'. Even small changes in the international system have had an enormous impact upon the South-North relationship. The systemic change in the international system developed into a fluctuation, followed by adaptive change (cooperative or non-cooperative) that took the form of either regime

The Relations between Two Koreas

change in South-North Korea or full-blown integration of the Koreas. Accordingly, the necessity of each regime in South and North Korea and the change of international system created the relationship improvement between two Koreas(Sim, 2010). Since the late 1960s, the two countries on the Korean Peninsula have periodically attempted to reduce conflicts and tension. In the Cold War period, the two Koreas confronted each other ideologically and militarily. From the time of national division in 1948 until the early 1970s, South and North Korea continued an intense confrontation against each other while denying the legitimacy of the other regime. But as the Cold War confrontation eased, the two Koreas started to improve their relationship. A new mood of peaceful coexistence started to develop in the international arena.

This dialogue between the two Koreas originated from outside pressure rather than from the countries themselves. Inter-Korean relations were sometimes in a reconciliatory mood as dialogue was maintained, but, at other times, tensions increased after a provocation by North Korea(Sim, 2010).

In the late 1980s, with the end of the Cold War, South Korean President Roh Tae Woo began seeking diplomatic ties with China, the Soviet Union, and East European communist countries. Although these new bilateral relationships had the potential to isolate North Korea, Roh's "Nordpolitik" policy, initiated in 1988, included a thaw in relations with North Korea and promotion of inter-Korean economic relations. Reflecting a new mood of reconciliation and cooperation across the world, the Roh Tae-woo administration pushed for passage of the Inter-Korean Exchange and Cooperation Act on August 1, 1990, thereby opening a new era of exchange and cooperation between the two Koreas.

During this period, a historic high-level inter-Korean meeting was held in Seoul on September 4, 1990. This dialogue yielded a set of historic agreements, including the Agreement on Reconciliation, Non-aggression, Exchanges, and Cooperation (so called "the Basic Agreement") in 1991, the Joint Declaration on the Denuclearization of the Korean Peninsula in 1992, and the Agreement on Creation and Operation of Joint Commissions, which came into effect during the sixth round of high-level talks held in Pyongyang on February 19, 1992(Ministry of Unification, 2001). The two sides agreed to respect each other's political systems and to never use force or threaten military action. Also they agreed to promote inter-Korean cooperation, exchange, and travel.

At the threshold confronted by catastrophe or improvement, the two Koreas made a breakthrough toward repairing relations by signing the Basic Agreement in 1991. At that time, the two Koreas had laid the basis for improving relations, but the Basic Agreement was not enforceable in domestic law. The improved relations between the two Koreas were the result of overwhelming outside pressure. From 1995 to 1999, dialogue and meetings between the two Koreas were not held on the Korean Peninsular but in countries outside Korea.

Acts of provocation, such as the infiltration of a North Korean submarine into South Korea's East Sea on June 22, 1999, signified an escalation of the confrontation between the two Koreas. North Korea's problems, such as its worsening economic situation and food crisis, were driving the regime into a confrontational posture toward the South. If the two Koreas could not conduct exchanges with each other, the Koreas had to conduct exchanges with foreign countries for their survival.

The Kim Dae-jung administration, which came to power in 1998, endeavored to promote a policy of reconciliation and cooperation toward North Korea. This "sunshine policy" was based on three principles: (1) no tolerance for armed provocation that would destroy peace on the Korean Peninsula, (2) elimination of the goal of achieving unification through a unilateral takeover or absorption, and (3) reconciliation and cooperation between the two Koreas aimed at ending the Cold War on the peninsula and converting inter-Korean relations from mutual distrust and confrontation to mutual reconciliation and cooperation. The Kim Dae-jung administration believed that South Korea should secure peace and stability on the Korean Peninsula and take a leading role in achieving coexistence and co-prosperity between the two Koreas(Sim, 2010).

The Relations between Two Koreas

Actively promoting the policy of reconciliation and cooperation toward North Korea, the heads of South and North Korea met for the first time in June 2000 and announced the June 15th South-North Joint Declaration to improve relations between the two Koreas. At that time, the South Korean government believed that economic cooperation would expedite the recovery of mutual trust as well as national homogeneity between South and North Korea.

The two Koreas' relations substantially expanded following the Joint Declaration, and the sunshine policy of peace and prosperity continued under the Roh Moo-hyun administration. But the North Korean regime would not abandon nuclear weapon development, which put the brakes on further improvement in relations between the two Koreas. Even though South Korea successfully hosted the 2002 World Cup, the North Korean nuclear issue became a serious security issue in October 2002. Despite the North's actions, the Roh Moo-hyun administration continued to push ahead with the policy of peace and prosperity for the stability of the Korean Peninsula; the administration's goal was to manage both the peaceful resolution of the North Korean nuclear issue and improvement in relations between the two Koreas.

In January 2003, a South Korean presidential special envoy visited North Korea, and in April 2003, three-way talks convened involving the United States, China, and North Korea, which began the multilateral process regarding North Korea's nuclear weapons development. Based on this meeting, the first round of the Six-Party Talks—including North and South Korea, the United States, China, Russia, and Japan—was held in August 2003 in Beijing. Under the talks, North Korea was to abandon possession of nuclear weapons and its long-range missiles while the United States was to treat North Korea in a non-hostile and friendly manner. North Korean nuclear development raised tension on the Korean Peninsula. Even if North Korea emphasized the importance of denuclearization of the Korean Peninsula, and peaceful resolution achieved through dialogue, North Korea many times had expressed that if the United States treated it in a hostile manner, the North had reason to possess nuclear weapons. If the United States were to establish diplomatic relations and become friendly towards North Korea, the North would be willing to abandon its long-range missiles.

On the one hand, North Korea had engaged in efforts to improve relations with the South Korean government for outer matter-energy inflow needed to sustain its closed system; on the other hand, the North had secretly developed weapons of mass destruction, including nuclear weapons and long-range missiles that could reach the United States, Japan, and South Korea because of its insecurity toward these countries and its concerns about national security, due to its inner distrust of openness and its systematic incompetence.

South Korea had released the fact that a North Korean torpedo was discovered by the South in the West Sea near Mokpo City in 2003. A South Korean military officer said that the South Korean Navy stumbled across a North Korean torpedo floating down by the shore. The South Korean government did not stretch the meaning of discovering a North Korean torpedo with no evidence, even though it seemed that a North Korean submarine had violated the territorial waters of South Korea. For reconciliation and confidence building, South Korea would improve relations lest South Korea excite North Korea.

In 2004, the system dynamics of the relations between the two Koreas were influenced by the practical benefit from economic cooperation and the security dilemma. Inter-Korean exchanges and cooperation in various fields¹ continued during this period. In 2004, 25 rounds of talks (over 61 days) were held, and 19 agreements were signed. In particular, as a result of inter-Korean General-level Military Talks and Inter-Korean Ministerial Talks, the two Koreas signed the Agreement on the Prevention of Accidental Naval Clashes in the West Sea and the Prohibition of Propaganda Activities in the Military Demarcation Line Areas. These agreements were intended

¹ The various fields were inter-Korean ministerial talks, inter-Korean general-level military talks, Inter-Korean economic cooperation talks, reunion visits of separated families (Red Cross talks), talks about fertilizer and food, rehabilitation efforts, government and private organizations' aid, etc.

The Relations between Two Koreas

to reduce military tension and build confidence, while maximizing each country's national interest. There were also dialogue and exchanges on economic cooperation² and humanitarian assistance³ in that year, excluding the enlargement and exchange of media, personnel exchange availed the maintenance of the North Korean regime nothing.⁴

However, the cooperation between the two countries was threatened by a number of incidents, including the cancellation of a condolence visit by a South Korean delegation to the North on the 10th anniversary of the death of Kim Il-sung, the U.S. House of Representatives passing the North Korean Human Rights Act, and a large group of North Korean defectors (468 people) escaping to South Korea. Even if occasions talks were cut short by political problems between the 2000 Joint Declaration and 2004, there was a momentum to maintain the relations between the two Koreas and the two Koreas pushed forward with economic cooperation as well as exchanges in the social and cultural area.⁵

In a May 2005 press conference, a spokesperson for the North Korean Ministry of Foreign Affairs announced that the country had successfully finished the uploading of 8,000 spent fuel rods from its five-megawatt pilot nuclear plant in Yeong-byeon (Joseon Central News Agency, May 11, 2005). In addition, North Korea criticized South Korean authorities on the move to strengthen and modernize their military forces in response to the reduction of U.S. forces in South Korea. The North asserted that the maneuvers to strengthen military forces would only increase the risk of war (Pyeongyang Broadcasting Service, December 9, 2005). North Korea declared itself a nuclear weapon "have" state, but the relationship between the two Koreas continued.

South Korea played a role in restarting the Six-Party Talks. In May 2005, South Korea suggested restarting the talks to North Korea through inter-Korean vice ministerial level talks (Ministry of Unification, 2010). The South Korean proposal offered economic and security support to North Korea, if it abandoned nuclear weapon development. Through confidence-building measures and the South Korean minister of unification's positive interview with Kim Jong-il on June 17, 2005, South Korea hoped that it could gain North Korea's commitment to abandon all nuclear weapons and existing nuclear programs at the conclusion of the fourth round of Six-Party Talks.

These new system dynamics of matter-energy and information flow between the two Koreas diffused into subsystems. The two Koreas tried to expand from unilateral aid to reciprocal aid in their relations through the principle of comparative advantage. The two Koreas promoted the first-stage development of the one million 'pyeong' (3.3 million m²) of the Gaeseong⁶ Industrial Complex (GIC) and actively cooperated in developing 10,000 'pyeong' (33,000 m²) of the complex as a pilot project. The two Koreas communicated with each other by telephone and produced goods for mutual profit through the GIC as evidence of the reciprocity in their relations and a symbol of peace and prosperity.

² At that time there were 13 rounds of talks on economic cooperation.

³ Talks on the Yongcheon train explosion disaster relief, the 4th Inter-Korean Red Cross working-level contacts, etc.

⁴ There were talks on reunion visits of separated families on a regular basis, the need to expand confirmation of whereabouts and exchanges of letters by separated families as well as of those lost in war, settlement of North Korean refugees, etc.

⁵ Working-level talks on South-North joint march in the opening and closing processions at the 28th Olympic Games in Athens, etc.

⁶ The city is situated in North Korea.

The Relations between Two Koreas

III. THE RELATIONS AFTER NORTH KOREAN LAUNCHED A MISSILE AND THE FIRST NUCLEAR TEST

The two sides established the Inter-Korean Economic Cooperation Office to discuss inter-Korean economic cooperation on the GIC to provide greater convenience for joint ventures, including consulting services for private businesses. The two sides' civil servants started to work together to reduce tensions between the Koreas and promote joint economic cooperation. They exerted joint efforts to prevent accidental naval clashes in the West Sea and cease propaganda activities and remove propaganda equipment in the area around the Military Demarcation Line toward the reduction of military tensions and the solidification of the peace on the Korean Peninsula. A North Korean delegation attended the Grand National Festival in Seoul from August 14 to 17 in 2005, paid the first visit to the monument at the National Memorial and the National Assembly since the division of two Koreas, paid a visit to former President Kim Dae-jung who had been hospitalized, and also paid a courtesy call on President Roh Mu-hyun.

Through the 19 occasions talks during the first half of 2006, the two sides kept up the momentum of their relations created by South Korean minister of unification's positive interview with Kim Jong-il on June 17, 2005, and expanded the fields of talks in the military, political, economic, and humanitarian areas.

Soon after North Korea launched a missile on July 5, 2006, the conditions of dialogue between the Koreas worsened. South Korea responded that North Korea should not try to resolve the issue by taking provocative actions such as missile launches and must realize that a resolution through dialogue was the most reasonable and the best alternative. Because the Mt. Geumgang tourism project and GIC project were mid- and long-term projects carried out by private, profit-making enterprises, those projects continued unaffected. Also South Korea maintained its position on aid to North Korea that the minister of unification had previously revealed: North Korea's missile launches would affect future South Korean humanitarian aid to North Korea.

After the Republic of Korea (ROK)-U.S. summit meeting on September 15 reached an agreement reaffirming peaceful and diplomatic resolution of the North Korean nuclear issue through the Six-Party Talks, North Korea carried out a nuclear test in October 9, 2006. But although the relations had been in a difficult situation since the North's missile launch and nuclear test, South Korea maintained relations continuously through the inter-Korean exchanges in several fields, such as economy, social-culture, and private sector.

Inter-Korean talks have been held on 55 occasions (13 occasions on political talks, 11 occasions on military talks, 22 occasions on economic talks, 3 occasions on humanitarian talks, 6 occasions on socio-cultural talks) including a summit between the Koreas in 2007. Talks in 2007, which were held at nearly twice the annual average rate of talks since the summit in 2000, expanded to the whole scope of pending issues between the two Koreas. Inter-Korean talks were held on 5 occasions (1 occasion on military talks, 3 occasions on economic talks, and 1 occasions on socio-cultural talks) until February 2008 of the Roh Mu-hyun administration's last month.

Also the Koreas agreed to hold a meeting of their working-level officials to discuss holding the 20th Inter-Korean Ministerial Meeting in Gaeseong on February 15, 2007, to normalize the inter-Korean relations by resuming the inter-Korean meetings, which had been suspended since the 19th Inter-Korean Ministerial Meeting from July 11 to 13, 2006. And South Korean President Roh Mu-hyun visited North Korea, passing through Panmunjeom on October 4, 2007, and had a summit with North Korean Chairman Kim Jong-il. The Declaration on the Advancement of South-North Korean Relations, Peace and Prosperity announced as a result of the summit opened a new era of peace and prosperity in the inter-Korean relations. Through signing the declaration, President Roh and Chairman Kim reconfirmed their firm will for the establishment of peace on the Korean Peninsula and denuclearization of the peninsula. The Koreas agreed to accelerate the setting up of a common economic bloc to seek co-prosperity through economic cooperation in various fields.

The Relations between Two Koreas

The declaration paved the way for institutionalizing inter-Korean relations. The two Koreas agreed to adhere to the basic spirit of the June 15, 2000, Joint Declaration and positively translate it into action. The Koreas had agreed to commit themselves to developing inter-Korean relations on the basis of mutual respect and trust, transcending differences in ideology and systems. They had also agreed not to intervene in each other's internal affairs. They agreed to work closely together to end their hostility of mutual relations, reduce tension and secure peace on the Korean Peninsula, resolve disputes through dialogue and negotiations, oppose war on the peninsula, and adhere strictly to their commitment to nonaggression. They recognized the need to end the current armistice regime and build a permanent peace regime, and to work together with other countries directly involved in this matter to declare an end to the Korean War and implement the February 13 Agreement and the September 19 Joint Declaration, both regarding the denuclearization of the Korean Peninsula.

The two Koreas agreed to expand and advance Inter-Korean economic cooperation, including creation of a special peace and cooperation zone in the West Sea, and to promote mutual growth through inter-Korean economic cooperation. And they agreed to boost exchanges and cooperation in history, language, education, science and technology, culture and arts, and sports. In the area of tourism, the two Koreas agreed to open tours to Mt. Baekdu and open nonstop flight services between Seoul and Mt. Baekdu for this purpose. Lastly, they agreed to promote humanitarian cooperation projects (to expand reunions of separated family members and their relatives and promote exchanges of video messages; to station resident representatives from each side at the reunion center to be established in Mt. Geumgang) and to increase cooperation to promote the interests of all Koreans and the rights and interests of overseas Koreans on the international stage (Ministry of Unification, 2007).

This summit contributed to building a new talk system, which upgraded the level of talks dealing with key issues from the inter-Korean ministerial level to the prime minister level. And the summit promoted various high-level talks for the fulfillment of follow-up measures. In comparison to the first inter-Korean summit on June 15, 2000, South Korean President Kim Dae-jung with North Korean Chairman Kim Jong-il, this summit contributed to clarifying and getting more deeply involved in the contents and directions of the relations between the Koreas.

IV. THE MATTER-ENERGY AND INFORMATION FLOW BETWEEN TWO KOREAS

The North Korean society has very little connection with the outer environment as the most closed system in the world (Sim, 2009). The North Korean system dissipated its energy and discharged its entropy, which originated from the closing of the North Korean society. In general, a system marked by openness and flexibility draws energy from its environment, often discharging entropy. But because the North Korean society is not an open system but a closed system, if the North Korean society does not produce necessary energy, it needs to absorb matter-energy and information from the outer environment for its survival. The North Korean society absorbed some matter-energy and information from South Korea through the relations improvement. The relations improvement of the two Koreas could be understood in the framework of co-evolution with their surrounding environment and the consistency and maintenance of their own regimes.

As was stated above, it could be said that trade between the two Koreas is the exchange flow of the matter-energy they each needed, and that inter-Korean interchange of people is the main exchange flow of the information they each needed. Thus, the flow of the matter-energy and information between the two Koreas can be compared and analyzed.

Inter-Korean talks were held on 176 occasions under the Roh administration, including 36 occasions in 2003, 23 occasions in 2004, 34 occasions in 2005, 23 occasions in 2006, 55 occasions in 2007, 5 occasions in 2008 (until February). The scope of inter-Korean dialogue has become diverse, and the content of the talks has become more detailed and specialized to make

The Relations between Two Koreas

the dialogue more substantial in nature.

Table 1: Number of Inter-Korean Meetings by Year/Subject

Year subject	Politics	Military	Economy	Humanitarian Cooperation	Social and Cultural Exchanges	Total
1971				18		18
1972	4			32		36
1973	7			4		11
1974	6			12		18
1975	2			8		10
1976				6		6
1977				5		5
1979	3				4	7
1980	10					10
1984			1	2	3	6
1985	2		4	6	1	13
1986					2	2
1987					1	1
1988	8					8
1989	7			8	9	24
1990	15			2	7	24
1991	12				7	19
1992	80			8		88
1993	4					4
1994	10					10
1995				3		3
1997	7			4		11
1998	4			1		5
1999	8					8
2000	18	4	3	2		27
2001	2	2	3	1		8
2002	4	9	14	3	2	32
2003	5	6	17	7	1	36
2004	2	5	13	2	1	23
2005	10	3	11	4	6	34
2006	5	4	8	3	3	23
2007	13	11	22	3	6	55
2008		1	3		1	5

The Relations between Two Koreas

Table 2: Number of Inter-Korean Agreements by Year/Subject

Year / subject	Politics	Military	Economy	Humanity	Socio-Culture	Others	Total
1971				1			1
1972	1			1		4	6
1985				1			1
1990	1						1
1991	1				4		5
1992	10						10
1994	2						2
1995	1						1
1997				2			2
1998				1			1
1999	1						1
2000	7			2			9
2001			2				2
2002		1	11	1	1		14
2003		3	14	2	1		20
2004	1	2	8		1		12
2005	2		6	2	2		12
2006	1		3	1			5
2007	5	4	16	2		1	28
2008			1		1	1	3
Total	33	10	61	16	10	6	136

The total number of inter-Korean agreements from 1971 to 2008 is 136. A full 58.9% of the total agreements between the two Koreas were reached under the Roh Moo-hyun administration.

The recent situation on the Korean Peninsula, as Table 3 suggests, shows the consistent growth in the flow of matter-energy (based on the annual inter-Korean trade data) and information (based on the annual exchange of people), as Table 4 suggests. This strong growth could lower the level of entropy in North Korea, which gradually increases order and ultimately improves inter-Korean relations by promoting peace, reconciliation, and cooperation more than pushing for urgent political change.

In the early years, inter-Korean trade mainly took the form of indirect trade through third countries. Beginning in the mid-1990s, the share of direct trade rose in areas of oriental medicine, agricultural products, and processed goods, as a result of direct agreements between the North and South Korean parties. Under the Roh Moo-hyun administration, the sum of inter-Korean trade exceeded \$1 billion for the first time.

The Relations between Two Koreas

Table 3: Overview of Inter-Korean Trade (In \$1,000)

	Import	Export	Total	Growth rate (%)
1989	18,655	69	18,724	
1990	12,278	1,188	13,466	-28.1
1991	105,719	5,547	111,266	726.3
1992	162,863	10,563	173,426	55.7
1993	178,167	8,425	186,592	7.6
1994	176,298	18,249	194,547	4.3
1995	222,855	64,436	287,291	47.7
1996	182,400	69,639	252,039	-12.3
1997	193,069	115,270	308,339	22.3
1998	92,264	129,679	221,943	-28.1
1999	121,604	211,832	333,437	50.2
2000	152,373	272,775	425,148	27.5
2001	176,170	226,787	402,957	-5.3
2002	271,575	370,155	641,730	59.2
2003	289,252	434,965	724,217	12.9
2004	258,039	439,001	697,040	-3.8
2005	340,281	715,472	1,055,753	51.5
2006	520,000	830,000	1,350,000	27.9
2007	765,000	1,032,000	1,798,000	33.2
2008	932,000	888,000	1,820,000	1.2

The emphasis of inter-Korean relations was on exchanges and cooperation in the economic and military spheres to build confidence and reduce tensions. In 2005, the number of visitors to North Korea, excluding tourists to Mt. Geumgang, was 87,028, the largest number in a single year since visits to North Korea were first approved in 1989. This is a 232% increase compared to the total of 26,213 visitors the previous year. The increase is mainly due to a sharp rise in visits for economic purposes, including the construction of the GIC. In 2005, the number of North Korean residents visiting South Korea was 1,313, a 309% increase compared to 321 visitors the previous year. The total number of inter-Korean visitors increased steadily.

The Relations between Two Koreas

Table 4: Overview of Inter-Korean Interchange of People (number of visitors)

Year	Visit Type	Applications	Approvals	Actual visits	Total visits	Growth rate (%)
1989	To North To South	1 -	1 -	1 -	1	
1990	To North To South	199 306	187 306	183 291	474	47300
1991	To North To South	244 175	243 175	237 175	412	-13.1
1992	To North To South	303 113	257 103	257 103	362	-12.2
1993	To North To South	21 6	19 6	18 6	24	-93.4
1994	To North To South	78 -	54 -	12 -	12	-50
1995	To North To South	563 7	543 7	536 -	536	4,367
1996	To North To South	249 -	170 -	146 -	146	-72.8
1997	To North To South	1,194 -	1,172 -	1,015 -	1,015	595
1998	To North To South	3,980 -	3,716 -	3,317 -	3,317	227
1999	To North To South	6,199 62	5,997 62	5,599 62	5,661	71
2000	To North To South	8,070 706	7,737 706	7,280 706	7,986	41
2001	To North To South	9,148 191	8,805 191	8,551 191	8,742	10
2002	To North To South	13,502 1,120	12,979 1,120	12,825 1,052	13,877	58.7
2003	To North To South	16,161 1,023	15,697 1023	15,280 1,023	16,303	17.5
2004	To North To South	30,455 363	29,410 363	26,213 321	26,534	62.8
2005	To North To South	98,945 1,313	97,464 1,313	87,028 1,313	88,341	233
2006	To North To South	-	-	100,838 870	101,708	15.1
2007	To North To South	-	-	158,170 1,044	159,214	56.5
2 0 0 8	To North To South	-	-	186,443 332	186,775	17.3

□ This figure excludes Mt. Kumgang tourists.

In the long-term view, the growth rate of matter-energy flow between South and North Korea seems to be consistent in the framework of consistent growth in quality. The relations between South and North Korea appear somewhat stable in matter-energy flow.

The Relations between Two Koreas

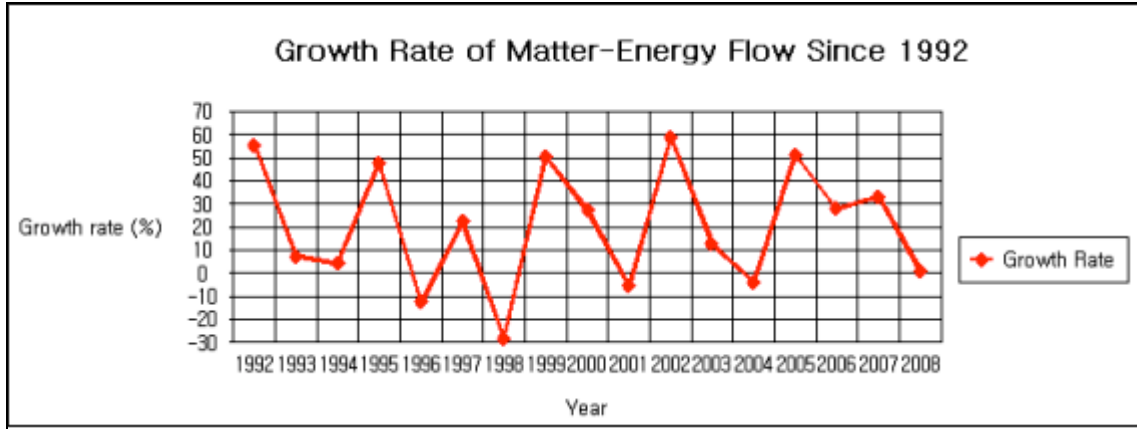


Figure 1

But in the short-term view, the growth rate of matter-energy flow between South and North Korea seems to be recycling every three years. In the long-term view, the growth rate of information flow between South and North Korea seems to be consistent in the framework of consistent growth in quality. But in the short-term view, since 1989 the growth rate of information flow between South and North Korea seems to be recycling irregularly. In the long-term view, the growth rate of information flow between South and North Korea seems to be consistent until 1996 in the framework of consistent growth in quality. Since 1997 the growth rate of information flow between South and North Korea seems to be on an upsurge.

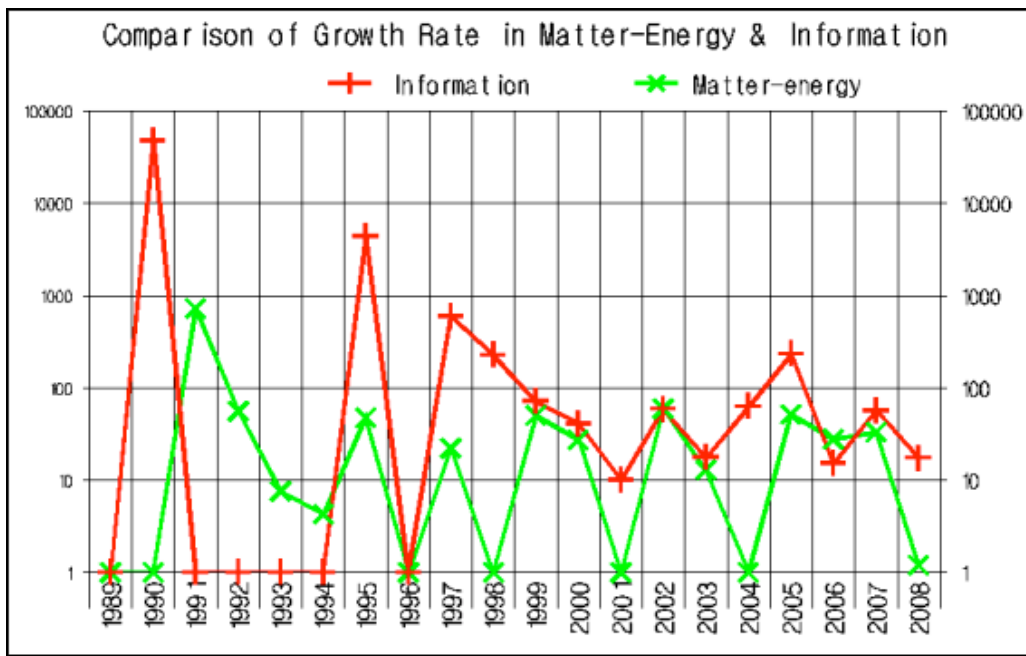


Figure 2

Firstly, we can see the structural fluctuations in relations between South and North Korea in these figures. Especially, if we compare the growth rates for information and matter-energy, we find that the growth rate for information runs faster than that for matter-energy until 1991; then from

The Relations between Two Koreas

1991 to 1994 the growth rate for matter-energy runs faster than that for information. Also we can see that the growth rate for information is higher than that for matter-energy from 1995 to 2005.

In their relations improvement, the two Koreas have recognized the relative advantage of information in relation to matter-energy. In spite of the crisis over North Korea's nuclear program, exchanges of people and merchandise between the two Koreas have been taking place routinely, almost on a daily basis. Inter-Korean travel routes are open on land and sea and in the air.

Secondly, we can see in the figures that the structural change in relations between South and North Korea is somewhat linear. Thus, the political environment around the Korean Peninsula seems to be more stable than in the 1980s. The relations between South and North Korea would co-evolve with the environment. If we compare the growth rate in information and matter-energy, we find that the growth rate for information runs faster than that for matter-energy from 1989 to 1994; then since 1995 both run almost at the same rate. This fact shows that two Koreas recognized the relative advantage of information in relation to matter-energy but have focused on the flow of matter-energy.

V. CONCLUSION

Kim Dae-jung administration's "sunshine policy" in South Korea promoted inter-Korean economic cooperation based on the "Principle of Separating Business from Politics" and improving inter-Korean relations. Also Roh Moo-hyun proclaimed that he would continue the policy of reconciliation and cooperation with North Korea in the interests of peace and prosperity. The two Koreas need to try to expand and facilitate the trust and cooperation through the interchange of information and matter-energy.

But even with the growth of the exchange and cooperation between the two Koreas under the Roh Moo-hyun administration, there have been consistent obstacles to the development of the relations between the two Koreas, such as the North Korean nuclear issue and the insecurity of the North Korean political regime, as well as the surrounding situations on the Korean Peninsula. Traditionally, issues of interest to the big powers have a decisive effect on the relations between the two Koreas. Also, under the Roh Moo-hyun administration, North Korean nuclear proliferation, as a major issue, had a decisive effect on the two Koreas' relations. Therefore, the order imposed by the big powers continues to work in the relations between the two Koreas.

The Roh Moo-hyun administration pushed ahead to try and settle the North Korean nuclear proliferation issue and make progress in the relationship between North and South Korea at the same time. But even with the South Korean government's strong efforts since the Kim Dae-jung administration, it is not easy to check the spread of nuclear weapons that North Korea has tried very hard to develop for national security. The two Koreas sought to improve the relations between the two Koreas within the existing political regimes. The South Korean political regime is entirely different from the North Korean one. The North Korean government has not changed under the Kim Jong-il regime, which is different from the periodical change of the South Korean government. Thus, the North Korea regime has dialogued with a changing partner because the South Korean government has changed periodically through elections.

The dynamic of a system is the force that causes it to change. The unchangeable parts of the system cannot make the relations between the parts change dynamically. Rather, the system dynamic in the relations between the two Koreas is due not to the two Koreas but to the surrounding powers. The relations between the two Koreas have advanced in quality in that they seem to be reconciled with each other in the political and military sectors. The Koreas have exchanges in many spheres. We can see that in the vivid flow of matter-energy and information between the Koreas. But because North Korea did not renounce the development of nuclear weapons, we cannot say that there has been a fundamental change in the relations between the two Koreas.

The Relations between Two Koreas

South Korea wanted to continue the dialogue with North Korea to build confidence, reconciliation, and common prosperity under the Roh Moo-hyun administration. South Korea gave a great deal of matter-energy and information to North Korea. So, South Korea lessened the tension on the Korean Peninsular. North Korea received the immediate need of matter-energy and information for the system's survival from the South Korea; at the same time, it prepared for the long-term engagement with South Korea. North Korea has carried out unified tactics against South Korea.

We can see North Korea's long-range missile launching, its torpedo discovered by the South in the West Sea, and its nuclear testing as proof that North Korea still has not given up the ambition of a forceful unification, even when the two sides have agreed to respect each other's political systems and to never use force or threaten military action.

On the one hand, North Korea has engaged in efforts to improve relations with South Korea for outer matter-energy inflow need (such as its worsening economic situation and food crisis) to sustain its closed system; on the other hand, the North has secretly developed weapons of mass destruction, including nuclear weapons and long-range missiles that could reach the United States, Japan, and South Korea, because of insecurity it feels toward these countries, due to the regime's inner distrust to openness and systematic incompetence.

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