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Rethinking the Characteristics of North Korea's Architecture and Construction Culture during its 1950s Post-War Recovery

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Abstract

This study examines North Korea's architecture and construction culture in the post-war recovery period of the 1950s. At that time, North Korea had the opportunity to transition into a modern socialist country by replacing its premodern traditions. To understand the country's construction culture, this study examines various phenomena related to values, norms, and goals through representative texts written by Kim Il-sung and other published North Korean sources from the 1950s. These documents clarify how North Korean buildings and infrastructure were constructed for decades. First, North Korea built modernized socialist cities using concrete and practical policies utilizing standardized designs and prefabricated construction methods that were made possible by new mechanization and mass industrialization of building materials. Second, as the value of workers grew, various amenities were created for them, including new buildings, nurseries, dry cleaners, and cultural facilities. Third, during post-war reconstruction, the urban development that began in Pyongyang was completed simultaneously in regional cities. Finally, educational institutions with construction-related technical departments were established, including Kim Il-sung University and Kim Chaek University of Technology. However, the modernization efforts did not occur simply because North Korea became a modern nation; rather, it was the embodiment of North Korean society and party policies centered upon Kim Il-sung.

Keywords: post-war recovery, architecture, construction culture, 1950s, standardization, industrialization, mechanization

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Introduction[1]

In the 1950s, the post-war recovery period was a challenge and turning point in the history of North Korean architecture and construction. As cities were devastated by bombing during the Korean War, and most buildings in Pyongyang were destroyed, North Korea's first priority was to restore the city's obliterated construction-related facilities. The North Korean government implemented the Pyongyang Recovery and Construction Project in 1952 in an effort to restore Pyongyang. Faced with post-war conditions, North Korea was presented the opportunity to transition from a pre-modern traditional society to a modernized socialist nation through innovative post-war restoration and construction projects.

This study aims to explore the characteristics of North Korea's architecture and construction culture during the post-war recovery period of the 1950s. With societal changes, it was especially important to transform the architecture, infrastructure, and allocation of physical spaces to accommodate changes in the country's social culture. Examining new developments in North Korea's architecture and construction culture during this volatile period of major reform can provide a deeper understanding of the evolving characteristics of North Korea's modernization, which began to crystalize after the 1960s.

To understand the characteristics of North Korea's post-war recovery architecture and construction culture, this study examines publications reporting details of the 1950s transformation, with particular emphasis on Kim Il-sung's speeches and articles. Specific phenomena that arose in terms of values, norms, and new construction methods were also analyzed through a reading of published sources related to North Korea in the 1950s. This approach allowed for a realistic study of North Korea's architectural culture to directly identify physical entities, such as inaccessible or non-extant buildings. In this sense, examining North Korea's architectural culture

1. This research was explored through texts by North Korean authors and interpreted hermeneutically. Under no circumstances should it be construed as a political statement by the author.

through various texts enables researchers an objective perception and interpretation of the current situation.

Post-war Reconstruction of North Korea in the 1950s

Korea of the late Joseon dynasty, from the late 19th to early 20th centuries, experienced both conflict and continuity between tradition and modernity. In the early 20th century, Koreans began to adapt the modern concepts of science, efficiency, and hygiene. Industrialization-based urbanization during the Japanese colonial period (1910–1945) continued to impact Korea. The true nature of *modernity* is apparent in the Joseon Planning Ordinance for Urban Areas—the foundation of early-20th-century urbanization and colonial-period industrialization. Regardless of its intended outcome, urban planning in early-20th-century Korea displayed positive aspects, like scientific rationality, response to industrialization and urbanization, the pursuit of idealism, and emphasis on publicness. However, it also manifested negative facets, such as unvarying and oppressive totalitarianism of Japanese colonial rule and an emphasis on mechanical efficacy. While urbanization was a result of Japan's oppressive colonial rule of Korea, it can also be understood as a result of modernity's unique nature. Although early-20th-century Korea was undergoing modernization and urbanization slower than the West, a half-willing and half-forced transition from the pre-modern to the modern was evident (Seo 2016, 63–108).

However, the Korean War (1950–1953) left the entire country in ruins, with North Korean cities turned to rubble by the ceaseless bombings of UN forces. By the time both Koreas entered a ceasefire agreement in July 1953, Pyongyang had ceased to function as a city (T. Kim 2013). However, the war's destruction also presented the opportunity to develop Pyongyang into a modern capital city.

The post-war reconstruction of North Korea in the 1950s achieved some success. By 1956, North Korea had restored its agricultural output to its pre-war levels, while industrial production had doubled from pre-war levels. By 1957, the annual industrial growth rate had reached 44

percent (Yoon 2015, 271). North Korea's growth was primarily funded by the Soviet Union and other countries of the Communist Bloc—East Germany, Poland, Czechoslovakia, Hungary, Bulgaria, Romania, Mongolia, and North Vietnam. Kim Il-sung projected that between 1954–1956, 80 percent of North Korean industry would be created through aid from communist countries (Kim 1954). Specifically, in the field of architecture and construction, communist countries supplied the necessary technology and architectural materials to North Korea, which used this support to lay the foundations for the development of new architecture and construction. The Soviet Union and China played major roles in North Korea's post-war reconstruction (Kim 1980c, 38). However, support from both countries was applied differently. Aid from the Soviet Union was largely used in "building new large factories for the restoration and industrialization of the people's economy," while aid from China was generally used to "improve people's lives" (M. Kim 2018, 76).

Figure 1. Kim Il-sung on his visit to Beijing in October 1953

Source: Yoon (2015, 272); original source from National Archives and Records Administration.

Technical assistance from architects from Eastern Europe, who either worked with their North Korean counterparts or participated as technical advisors, was crucial to North Korea's post-war urban planning. The reconstruction of Hamhung was led by East German architects, the urban planning of Chongjin was directed by Polish architects, and the planning of Kim Il-sung Square in Pyongyang was a collaboration between North Koreans and a team of Hungarian architects (J. Kim 1955, 8–9). As one North Korean architect directly involved in the reconstruction stated,

> The people of the USSR provided us with construction machinery, data, and excellent blueprints, while Soviet engineers had already been working with our architects and builders since the war. There are no important designs that do not include input from Soviet professionals. In particular, they offered direct consultation [konsul'tatsiya] regarding the drafting of the total plan for Pyongyang city, and their inputs were included in the design of all important objects as well as construction administration. (J. Kim 1955, 11; emphasis added)

North Korea conducted five economic development projects between September 1948, when the Democratic People's Republic of Korea (North Korea) was founded, and the final major project in 1960.[2] This research focuses on two major economic development plans of the 1950s. In the Three-year Post-War Recovery Plan (1954–1956), the main objective was to return the country to pre-Korean War (June 25, 1950) levels of living. The goal of the subsequent Five-year Post-War Recovery Plan (1957–1960), to reestablish the framework for industrialization, was achieved a year earlier than planned (KDI 2002, 9). On September 8, 1958, Kim Il-sung spoke about the implications and importance of the Five-year Post-War Recovery Plan during celebrations marking the tenth anniversary of the founding of the Democratic People's Republic of Korea.

2. The First One-year Plan (1947), Second One-year Plan (1948), Second Two-year Plan (1949–1950), Three-year Post-war Recovery Plan (1954–1956), and Five-year Post-war Recovery Plan (1957–1960).

> As of 1957, we entered the first Five-year Post-War Recovery Plan for the first time in our history. Advancing to the Five-year Post-War Recovery Plan in our country means that we have taken a new step toward the development of a new socialist society in the northern half of Korea. The Five-year Post-War Recovery Plan aims to completely eliminate the outdatedness of the economy, make our country an independent industrial and agricultural country, and raise the levels of economic and cultural life for our people. (Kim 1968, 199; emphasis added)

North Korea laid the groundwork for a modern socialist nation through two post-war recovery plans implemented over an eight-year span. Joan Robinson, a member of the school of New Keynesian economics in the United Kingdom, visited Pyongyang in 1964 and praised the extent of North Korea's recovery and economic growth, comparing Kim Il-sung to a messiah rather than a just politician (Kwon and Chung 2013, 220).

Status of North Korean Architecture and Construction in the Post-war Period

In the 1950s, Kim Il-sung continuously emphasized the development of architecture and industrial construction. At the 6th National Assembly of the Party Central Committee in 1953, he mentioned the standardization of architectural design and mechanization of construction (Lee 1989, 100; Kim 1980b, 356). Subsequently, in speeches at the National Architects and Construction Engineers Conference on March 26, 1954 and at the National Architects and Builders Conference on January 30, 1956, Kim Il-sung proposed three important criteria—standardization of architectural design, industrialization of construction materials, and the mechanization of construction—for the development of North Korea (Kim 1980c, 37–38).

> The best way to increase the speed and quality of construction is to standardize the architectural design, to industrialize construction materials, and to mechanize construction. Also, construction workers will have to learn these advanced methods of construction. (Kim 1980b, 355; emphasis added)

During the post-war recovery period in North Korea's construction industry, the most important factor was the standardization of architectural design, which was necessary in order to guarantee the convenience and productivity of construction projects. Construction through standard architectural design could be improved by the mass industrialization of construction materials. Moreover, the mechanization of construction also led to improved efficiency.

Figure 2. Kim Il-sung speaks about improving the quality of construction at the Conference of Pyongyang Constructors (December 25, 1958)

Source: Kim (1981b, 617).

Architects and architectural engineers asserted that such a mechanization of construction was difficult given the technical circumstances in North Korea. There were opposing views regarding the difficulty of securing the standardization of architectural designs and the formativeness of construction. Some architects proposed a fusion of Korean and Western architectural cultures through the acceptance of foreign architectural designs and methodologies, however, they were labeled anti-party and counter-

revolutionary and banished from the architectural community during a council meeting of the Central Committee of the Workers' Party on October 9, 1957. Governmental interference and strategies on the direction of architectural activities were a reality, and a characteristic of states following a planned socialist economy (Li 2013, 521).

Creating a Standard Architectural Design

In the 1950s, North Korea began to establish construction industry regulations in a more disciplined manner. While former construction and development was conducted without architectural design plans, the new construction projects were based on guidelines that overcame previous traditions. This is reflected in Kim Il-sung's speech related to the task of architects and construction engineers during the post-war recovery at the National Architects and Construction Engineers Conference on March 26, 1954. Kim argued that North Korea must establish the discipline to construct buildings based on detailed and precise design because (Kim 1980b, 359).

The housing models that appeared in North Korea in the 1950s were heavily influenced by Soviet and East German designs (Shin and Jung 2016, 160). Owing to support from the Soviet Union, the prevalent urban housing with staircase model was transferred to Pyongyang. The floor plan that was initially adopted in North Korea was the *sektsiia* (секция) type, where two to three housing units were grouped together surrounding a shared staircase. This type debuted at Rodongja Apartment (literally, Worker's Apartment) in Pyongyang in 1954, with a combination of houses (two L-shaped and one I-shaped) that shared a single staircase. With the exterior corridor style floor plan, the two designs were most popularly used for standard housing construction (M. Kim 2018, 182–183). However, the *sektsiia*-type—widespread in the Soviet Union—was incompatible with North Korean residences and lifestyle. The Rodongja Apartment—regarded as closest to the *sektsiia*-type model—used radiators to heat the apartments. North Koreans were accustomed to the traditional heating method of *ondol* (underfloor heating system) and found the concept of radiators foreign.

Another problem that North Korean architects faced was adapting the residential designs of the Soviet Union to houses to North Korea.

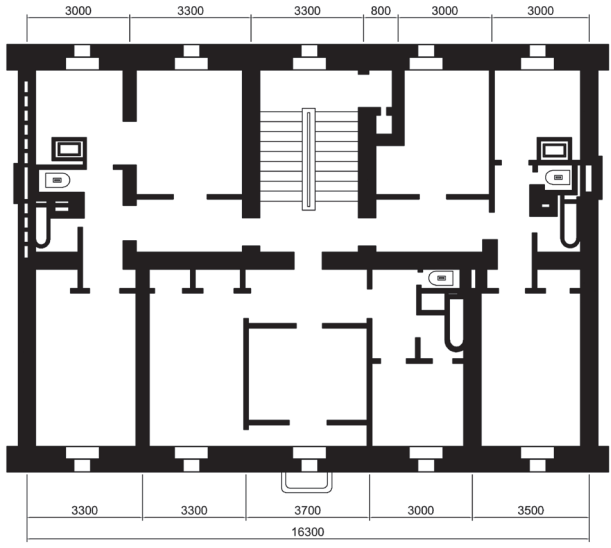


Figure 3. *Sektsiia*-type floor plan for the Rodongja Apartment built in 1954
Source: Lee (1989, 129); redrawn by author based on the original.

The greatest change in North Korean architectural design in the early 1950s was the government's transition to a system of design competitions for architectural projects. In May 1952, the Committee for Architectural Design Competition (Geonchuk seolgye hyeonsang mojip simsa wiwonhoe) was formed, and the North Korean government agreed to proceed with design competitions (*Rodong sinmun*, May 25, 1952). The Committee published *Guidelines of Competition for Standard Housing Design*, which provided detailed specifications for multi-storied housing, standardization policies, factory production, mechanization, etc. (*Rodong sinmun*, May 25, 1952). After May 1952, design competitions for urban and rural residential developments became widespread.

In 1956, a three-floor standardized residential building was constructed in the Pyeongcheon area north of the Taedong River in Pyongyang. Its floor plan featured two rooms, separate toilets, closets, storage space, and kitchens on the first floor measuring 66 m^2. Many standard residential buildings were subsequently built, with household units ranging from 65–70 m^2 and featuring separate toilets.

The most unusual element was the incorporation of an *ondol* (underfloor heating system) in each unit. The *ondol* proved to be a major challenge for North Korean architects. Architect Kim Jeong-hui, who was involved in the planning of Pyongyang's urban reconstruction, criticized the *ondol* as a non-hygienic, non-economical, and old-fashioned custom (Shin and Jung 2016, 170). He condemned it as an inappropriate and outdated method of heating the multi-story buildings then being erected during the post-war recovery. However, after the mid-1950s, when Kim Il-sung emphasized the importance of the *ondol*, views on its use in residences changed. In particular, the application of the *ondol* in two-story residences was observed in 1956. In October 1954 and November 1955, Kim Il-sung, who frequently discussed the use of the *ondol* in residences, emphasized his preference for it while reviewing laborer housing in Pyongyang (Lee 1989, 126). Despite modern construction and heating technique and his desire for a modern lifestyle, Kim Il-sung claimed to use one himself and reiterated its importance in traditional Korean life, which led to their continued installation in new apartments.

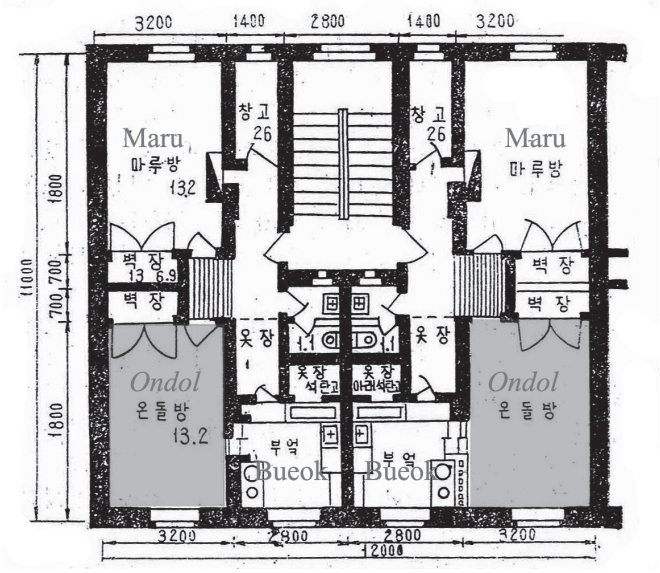


Figure 4. A three-story residential building in the Pyeongcheon area, north of the Taedong River, Pyongyang, 1956 (*ondol* spaces highlighted by author)
Source: Lee (1989, 125).

Despite Kim Il-sung's insistence and the ruling class' tenacity for the *ondol*, its application in North Korean houses declined by end of the 1950s. It was difficult to lay out the *ondol* in two-story residences that were mass produced using a prefabricated system (Shin and Jung 2016, 171). Therefore, the application of the *ondol* as a heating method gradually decreased and was succeeded by radiator heating—popular in the USSR at the time.

In this period, architectural design standardization was touted for the first time as an approach to overcome the shortage of designers in the construction industry in North Korea. On October 19, 1957, Kim Il-sung delivered a speech titled, "Conducting Party Policy in the Construction Sector," at the General Meeting of the Central Committee of the Workers' Party of North Korea. If standardizing architectural design was a challenge, Kim proposed the standardization of other facets of construction:

> I [Kim Il-sung] have stated that it would be better to standardize architectural design under these circumstances as there are now fewer designers in North Korea. If architects can design a very good school [as the standard model], then there is no need to design several other schools separately. If this is not possible for an entire school, it would still be better to standardize and intensively produce even the school gate. I have already stated this several times. (Kim 1981a, 346; emphasis added)

On July 17, 1958, the National Construction Committee (Gukga geonseol wiwonhoe) designated a standard unit of 100 mm. To increase the utilization of construction materials, North Korea mandated a standard brick size of 90 × 90 × 190 mm, enabling the standard design business to develop. As of 1958, most urban residential buildings in North Korea, and even many rural houses, were being built according to these standards. That year, seven standard home designs were applied to rural housing based on regional characteristics. Over time, the most effective features of these designs gradually converged into two or three models (Lee 1989, 133). Additionally, the standardization of architectural design that started with single-family dwellings progressed to the design of public buildings. Standard architectural designs were also applied to kindergartens and technical schools from 1957.

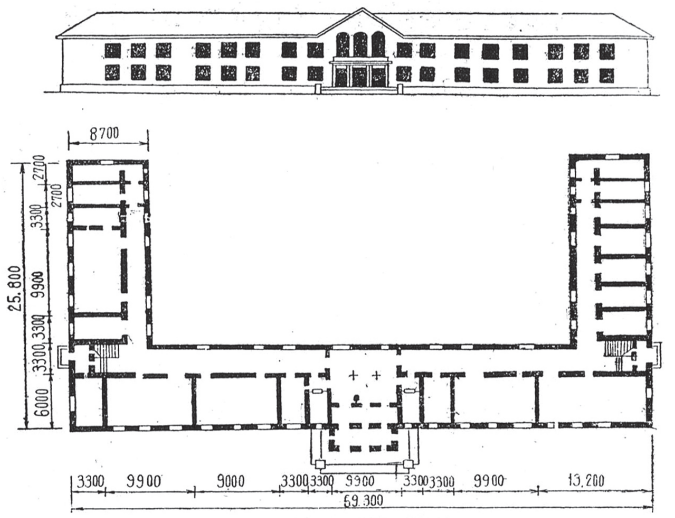


Figure 5. The first standard design applied to a North Korean school in the post-war period
Source: Lee (1989, 141).

Building materials were also designed and produced according to standard specifications, allowing for their mass production. The steady supply and consistency of materials increased construction speed. Mass production was an important concept for mid-century modern society and was identified as the launching pad for other modern concepts that enabled North Korea to replace less-effective traditional construction methods of the pre-modern era.

> If we [in North Korea] build buildings with standard materials from the factory based on a standard industrial design, we will not only be able to improve the quality of their construction but also increase the drying speed and save on construction material. (Kim 1980b, 356; emphasis added)

In the 1950s, North Korea implemented disciplined construction guidelines through rules and regulations in the construction industry based on three doctrines: the creation of standard architectural designs,

the industrialization of construction materials, and the mechanization of construction. Standard units were mandated. Yet despite the application of modern ideas, Kim insisted on the continued installation of the traditional *ondol* in laborer apartments.

Popularization of Prefabricated Construction

Through the 1950s reconstruction, Kim Il-sung remained vocal about the popularization of prefabricated construction (Kim 1981a, 345). Standardized design was the basis for prefabrication. To modernize and provide solutions for the post-war architectural environment in North Korea, Kim constitutionalized the aforementioned three doctrines as important prerequisites for prefabricated construction.

Convinced that it could reduce construction times, lower construction costs, and improve the quality of construction, Kim Il-sung praised prefabricated construction in his speech, "Conducting Party Policy in the Construction Sector" at the General Meeting of the Central Committee of the Workers' Party of North Korea in October 1957 (Kim 1981a, 345).

Survey data in the *North Korea Annual* indicate that the ratio of prefabricated houses in housing constructions increased from 32.4 percent in 1957 to 72.6 percent in 1962 (KCNA 1963, 343). In 1956, the first prefabricated residence was built in the Seongyo area of east Pyongyang. The three-floor complex included 172 household units. Three buildings had 36 households each, and one larger building had 64 (Lee 1989, 122). Moreover, 127 different materials mass-produced in North Korean factories were utilized in the construction, and in two years, it was possible to construct single-corridor housings using 30 to 35 materials (Lee 1989, 125). Compared to traditional building methods, this first prefabricated residential building offered notable savings. According to Lee Wa-seon (1989, 122), "the construction period was reduced by 30 percent, the labor force by 34 percent, and construction costs by 20 percent."

Following the Three-year Post-War Recovery Plan (1954–1956), the overall demand for construction increased, as did expectations for better quality construction. Prefabricated houses as opposed to handcrafted

construction satisfied the increased demand while offering the quality of construction sought by residents (Kim 1981a, 337). On December 25, 1958, Kim Il-sung stressed the advantages of prefabricated construction in his speech, "To Improve the Quality of Construction," at the Conference of Pyongyang Constructors. He specifically advocated faster construction cycles, which led to the prominence of prefabricated construction in North Korea.

> This year, I [Kim Il-sung] realized how good prefabricated construction was, and how the party's policy is right. What do we like about it? When we construct using prefabrication methods, we can complete work quicker and often finish more work [construct more buildings] over the same time. We can build at least four or five times faster than by constructing houses the old way. (Kim 1981b, 614; emphasis added)

Prefabricated construction continued widely after 1956. There were numerous advantages of prefabricated and standardized houses—the use of standardized blocks enabled quicker and cheaper construction of prefabricated houses, and factory-based production and assembly of single unit modules that simplified construction.

Prefabricated houses constructed in Pyongyang in the mid-1950s were heavily influenced by the USSR. By Khrushchev's directive, the Central Research and Design Institute of the USSR developed microdistricts, or modern residential districts, using prefabricated houses, and constructed new cities with optimum populations in areas where it was easy to supply raw materials (M. Kim 2018, 73–74). Through microdistricts, the Soviet Union achieved the modernization of residential space with an aim of building urban living spaces where residents could reach a certain standard of living (Underhill 1990, 278). North Korea adopted Soviet prefabricated houses and the concept of microdistricts by importing relevant machineries. This had a significant impact on North Korea's mass production of prefabricated houses. Construction speeds were doubled by developing a panel assembly construction method, that is, assembling large panels made from reinforced concrete rather than the previous block jointing method, which used cranes to lift solidified blocks of stacked bricks (M. Kim 2018, 78).

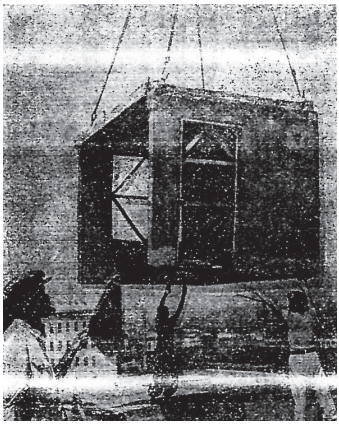


Figure 6. Constructing a prefabricated middle corridor culture house

Source: National Construction Publishing Press (1958, 71).

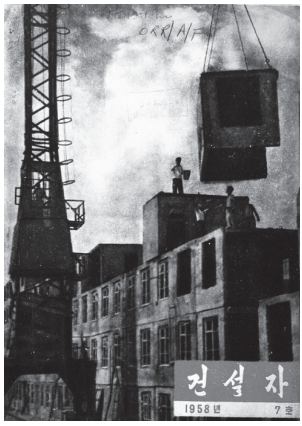


Figure 7. Construction workers during the assembly of houses

Source: Shin and Jung (2016, 174); original source from the cover art of *Geonseolja* (The Constructor), July 1958.

Numerous prefabricated houses were constructed in cities like Hamhung, Kaesong, and Pyongyang. North Korean builders began widespread use of standardized blocks in prefabricated construction. Kim Il-sung stated that mass production through the use of standardized blocks could expedite construction, lower construction costs, and improve the quality of construction (Kim 1981a, 339).

While Pyongyang was greatly influenced by the Soviet Union in its post-war reconstruction, the restoration of Hamhung (North Korea's second largest city) was strongly influenced by East Germany, which began sending aid to Hamhung in 1955 (Armstrong 2013, 74). The German Working Team (GWT, or *Deutsche Arbeitsgruppe Hamhung* in German) was dispatched in 1955 to assist North Korea's post-war recovery.[3] Under East German influence, a

3. The plan at the time was for the GWT to undertake the urban restoration of Hamhung for a period of ten years (1955–1964). In the case of housing construction, due to conflicts between the GWT and Kim Il-sung and North Korean architects regarding the cost of construction, the Germans' direct involvement in building houses came to a halt in December 1958. Despite the abrupt disengagement, the GWT built a total of 5,193 houses between 1955 and 1958 (M. Kim 2018, 134).

single-corridor-access flat design was popularized in Hamhung (Shin and Jung 2016, 161). North Korea utilized the GWT's type B plan (single-corridor-access flat) of 1956 to reduce and conserve construction materials and manpower (see Fig. 8). This particular plan, which allowed for the easy and economical construction of numerous houses, satisfied North Korea's need for mass production through repetitive work. Fully adopting the repetitive bay in houses was a prerequisite in mass production in modern construction (Seo 2017). This exemplifies the influx of modern concepts of construction from Europe and the West through East Germany to Hamhung.

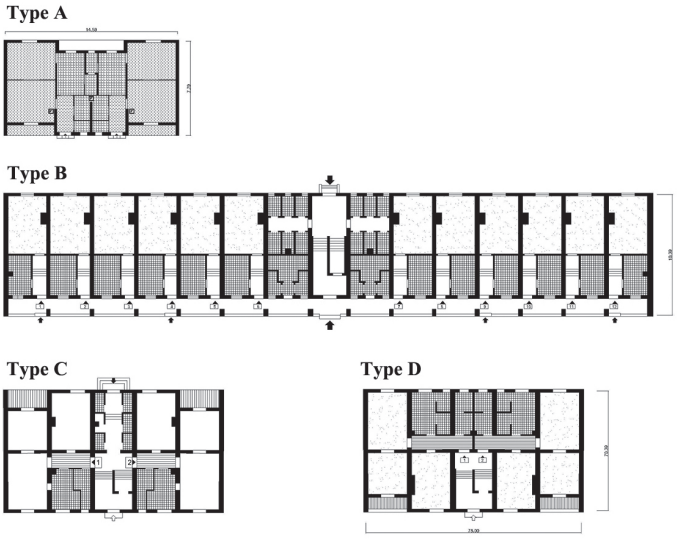


Figure 8. Housing models of the GWT

Source: Shin and Jung (2016, 162); original source from Archiv der Stiftung Bauhaus Dessau, Püschel, I_010013_D; redrawn by author based on the original.

The growing popularity of prefabricated houses proved that the concept of modernity was already emerging in North Korean architecture and construction culture. In Western nations, prefabricated houses were emerging through advanced mechanization, industrialization, and mass production and the standardization of architectural design. In the United

States, construction of prefabricated houses was revived after World War II. According to government construction records, by 1947, over 400 companies related to prefabricated construction were flourishing in the United States due to high demand, and many common houses were constructed with either partial or complete prefabrication methods (Graff 1947, 114–121). In general, blocks or walls were assembled in factories and transferred to construction sites for quicker assembly. In some cases, a building was constructed entirely at a factory or even the construction site. Notably, the Tournalayer was a machine to make a prefabricated house which was completed on the construction site (Henderson 2015, 35–46).

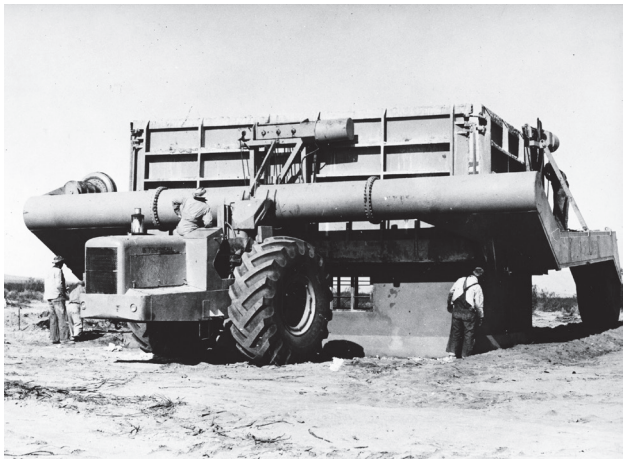


Figure 9. A Tournalayer machine for the on-site construction of residential homes

Source: University of North Texas Libraries, The Portal to Texas History, Photograph of LeTourneau Industries on January 1977, accessed March 9, 2019, https://texashistory.unt.edu/ark:/67531/metapth191327/m1/1/.

Based on the standardization and industrialization of construction materials, North Korea was able to construct prefabricated housing in the 1950s similar to that prevalent in modern capitalist societies. Through these

efforts, North Korea was redefining the characteristics of its own modern architectural culture.

Emergence of a New Type of Architecture for Workers

North Korea succeeded in rapid post-war reconstruction because of financial aid and support from communist countries like the Soviet Union and China. Another important factor in its fast recovery was North Korea's devoted efforts at rebuilding the entire industrial infrastructure by employing a large volume of workers (Armstrong 2005, 164–171).

During the post-war reconstruction process, North Korea experienced a severe workforce shortage. To counter this, North Korea popularized its Chollima Movement that recruited the general public to production sites to autonomously achieve its set goals of housing constructions (M. Kim 2018, 79). The Chollima Movement[4] appeared in North Korea in 1958 and played an important role in the rapid construction of housing during the post-war reconstruction process. The Chollima Movement is comparable to the Soviet Union's Stakhanovite movement or China's Great Leap Forward, and was effective in promoting mass production (building a large number of houses) in a short period of time (Armstrong 2013, 103–111). Of those laborers and their efforts, North Korean leaders proclaimed that: "Today, the North Korean people are rushing forward with the Chollima Movement to build socialism for the peaceful reunification of their country" (National Construction Publishing Press 1958, 137). As such, North Korea actively encouraged its labor force to participate in social activities related to the government through propaganda initiatives such as the Chollima

4. Chollima 千里馬 literally means a horse that can travel a thousand *li* (about 4,000 km) in a single day, thus signifying high speed. The Chollima Movement was first implemented in 1958 with the aim of increasing labor productivity by awarding the title of hero to laborers. After formalizing the movement, Kim Jong-il even declared speed battles in the 1970s. These *speed battles* refer to "the basic battle format for the construction of socialism that pushes forward all operations at full force. By mobilizing all capacities, it carries out an operation at the fastest speed possible while ensuring the highest quality" (Chang, et al. 2013, 258). These speed battles have since become the basic framework of public movements in North Korea.

Movement. In particular, the Chollima Movement played a major role in achieving the goals of the Five-year Post-War Recovery Plan (1957–1960) a year ahead of schedule.

The North Korea government respected the labor of the people and achieved a level of cooperation that became a driving force in its post-war recovery. Providing living spaces for workers and their families was prioritized. This social atmosphere was evident in Kim Il-sung's speeches and publications.

> In our society, labor is the most sacred and most rewarding undertaking. Only a capitalist view takes the working person for naught. In our socialism, the working person is the most sacred and precious person. We have to build better houses because these are the homes where the precious children of precious people will grow and live. (Kim 1981b, 620; emphasis added)

Kim Il-sung, who criticized capitalism, stated that labor was sanctified and viewed it as one of the most important elements in socialist countries. These efforts were a means to criticize capitalism. His public admiration for workers led to plans to create better quality communities to house them. Kim Il-sung's positive impressions of North Koreans and their roles as potential laborers were emphasized in his speech, "Conducting Party Policy in the Construction Sector," presented at the General Meeting of the Central Committee of the Workers' Party of North Korea on October 19, 1957 (Kim 1981a, 334).

Kim Il-sung emphasized that in addition to architects, construction engineers should also participate in the design and construction of buildings for North Korean construction workers (Kim 1980b, 352). While there are clear limits to the acceptance of his claims, they served as a critique of capitalism by linking labor with the people's well-being through the sanctity of labor. These proclamations were echoed in other North Korean publications of the period. For example, *Ten Years of Joseon Architecture and Construction, 1948–1958* (National Construction Publishing Press 1958). summarized the activities related to construction and architecture in North

Korea over the previous decade. Through this text, it is possible to infer the value of normal workers within North Korea's construction culture of the period.

In tandem with housing and industrial construction, North Korea also encouraged the construction of cultural houses using prefabrication methods to provide workers with better residential areas over a short time. Social and cultural facilities emerged to improve the convenience and quality of workers' lives. Neighborhood building projects began to include new service and support buildings, like nursery schools, dry cleaners, kindergartens, workers' clubs, cultural centers for residents, and extracurricular institutions for students.

Moreover, Kim Il-sung demanded that factories provide living spaces and services for workers. On March 23, 1959, at a meeting of the North Hamgyeong Provincial Committee, Kim argued that factories should install infrastructure, such as dry cleaners, barber shops, and other facilities, where workers could attend to personal needs:

> Factories must install laundry services and barber shops, and guarantee bathrooms, kindergarten, childcare and schools, restaurants, shops, a campus, etc. The North Korea government should work diligently to clean these facilities, and the hospitals and clinics should serve the workers well. (Kim 1968, 421; emphasis added)

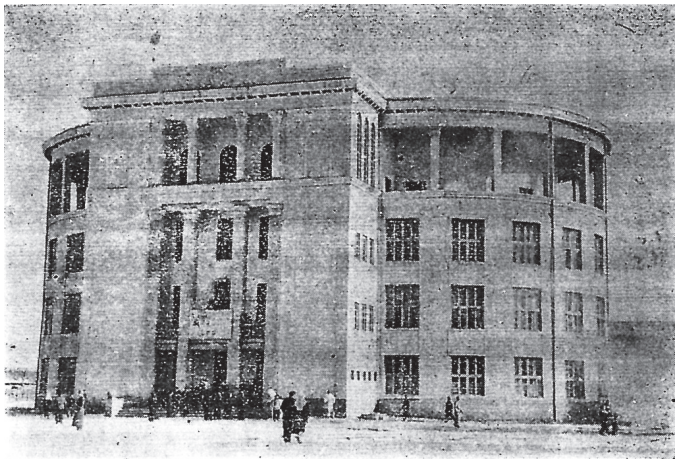


Figure 10. A factory workers' club for cultural relaxation, Pyongyang
Source: National Construction Publishing Press (1958, 46).

Further, North Korea actively encouraged women to work. In the early and mid-20th century, the perception of working women was more progressive in socialist countries than in capitalist ones. Women's liberation had been important in the construction of Soviet society. During the Russian Revolution, women were one of the three targets of liberation, along with the proletariat and soldiers (E. Kim 2008, 1). The liberation of women in terms of human rights was also an important issue in socialist countries. Aleksandra Kollontai (1872–1952) produced several works about the liberation of women as one of the most important issues in the construction of socialism (E. Kim 2008, 2). Women, as warriors of the revolution, insisted that they should actively participate in the construction of socialism through changes in social consciousness. This awareness of the role of women influenced society as a whole, as confirmed in Kim Il-sung's speeches.

Claims about women's liberation and socialist rights were not new in post-war North Korea. The country had promulgated its Labor Act for North Korean Workers and Employees in June 1946 and Gender Equality Law in July 1946. These laws became the cornerstone of women's gradual social advancement. Kim Il-sung promoted women socially and urged the

employment of female workers as economic assets in his speech "Some Tasks of the Municipal People's Committee" at the Lecture Class of the Chairman for the People's Committee:

> We [North Korea] should promote the construction of bathhouses, nurseries, and dry cleaners together with the construction of cultural houses. We need to relieve house chores so that the women can accept work outside. In order to do this, it is important to construct nurseries and laundries. (Kim 1968, 185; emphasis added)

Based on Marxist ideology, the principle of *osvobozhdenie zhenshchina*, or women's liberation, was established, and with it, nursery teachers and facilities like daycares that provided childcare and education became necessary (E. Kim 2018, 37). The principle of women's liberation recognized equal legal rights between men and women, which did not exist in imperial Russia under the rule of the Tsar, and included women's right to work. Therefore, it was commonly accepted by leaders that various educational and support facilities for children were necessary for women if they were to work for their livelihoods.

In the case of North Korea, during the years following its foundation, several policies were implemented to reform its feudal family system and ensure women's basic rights. Subsequently, when the government set its final goal as industrialization led by heavy industry during the post-war reconstruction process, North Korea's policy on women shifted to increasing the number of female laborers from its previous focus on basic rights. At the Sixth Plenary Meeting of the Central Committee from August 5–8, 1953, the Workers' Party of North Korea raised the issue of securing the country's workforce as the most urgent, and consequentially, decided to increase and use women's labor (Kim 1956, 83). Women were included as a necessary part of the labor force during the post-war reconstruction process, and from 1958, diverse and detailed strategies were prepared to increase their participation in society. Agreeing with such policies, facilities that could decrease women's household chores, like daycares, kindergartens, family restaurants and common laundry centers, were established (Kim 1958, 9–10).

The ground plans of Pyongyang's sub-district feature communal childcare centers, kindergartens, bathhouses, stores, and convenience facilities on the ground floors of the residential buildings on Cheongnyeon-gori (literally, Youth Street).

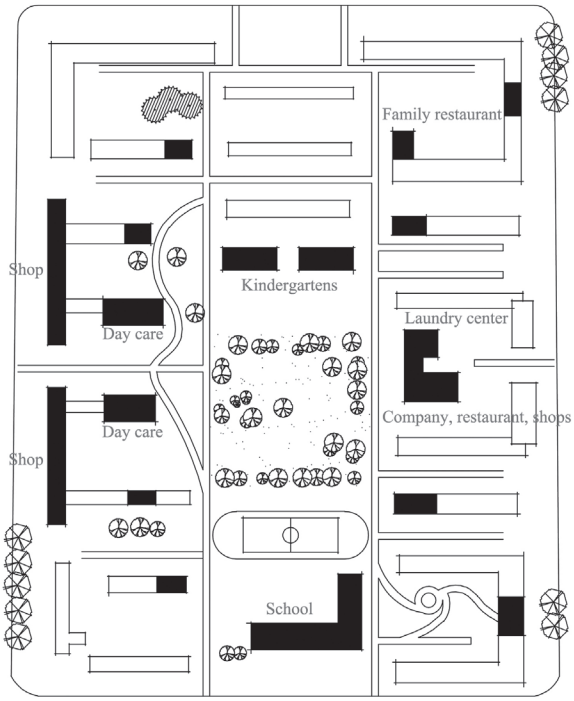


Figure 11. Organization of convenience facilities at the 87th model house microdistrict

Source: Compilation Committee for the Complete History of Pyongyang Construction (1997, 241); redrawn by author based on the original.

North Korea made concerted efforts to establish such facilities in residential areas. The aim was to entice women to join the labor pool rather than have them stay home attending to house chores. This phenomenon was rooted in the potential benefits of a women's labor force and the recognition of their

major role in the modernization of post-war North Korea.

Establish Infrastructure for Construction

In the 1950s post-war recovery period, the architecture and construction culture of North Korea developed more than its individual characteristics. Concerted efforts to build a broad infrastructure to support the overall expansion of construction and industry were also seen.

First, reconstruction for post-war recovery was spreading throughout North Korea beyond Pyongyang, especially in terms of the urbanization and development of other cities. Specifically, in May 1951, North Korea created the Pyongyang Recovery and Construction Plan, a restoration project through which it would simultaneously restore all the country's cities. In a speech, Kim Il-sung revealed his lofty intentions: "We are preparing for the reconstruction of Pyongyang, but we also have to prepare well in advance for the reconstruction of all towns and cities throughout the country" (Kim 1980a, 282). The Pyongyang restoration project meant more than overcoming pre-modern limitations and the devastation of war. In the above speech, Kim Il-sung addressed Pyongyang's post-war recovery project that was intended to replace any vestiges of the Japanese colonial period (1910–1945) parallel to the development of a modern city.

> We should not only reconstruct Pyongyang to its original state; we must also replace the underdevelopment and deformation created by Japanese colonial rule while rebuilding it [Pyongyang] as a modern city with adequate cultural and convenience facilities for the working people. (Kim 1980a, 280; emphasis added)

In August 1953, North Korea proposed another plan, the Recovery Direction of the Post-War City, at the Sixth Plenary Meeting of the Central Committee of the Workers' Party of North Korea. First, they proposed the Pyongyang Recovery and Construction Plan because Pyongyang was the political, economic, and cultural center of North Korea. They also announced the extension of recovery plans to fifteen regional cities nationwide. The North

Korea Annual (1954) described this as follows:

> The Cabinet Ministers approved the total basic development plan for the reconstruction of Chongjin, Hamhung, Wonsan, Sariwon, Kanggye, and Nampo by Cabinet Decision No. 42 on March 11, 1954, and approved the Total Basic Plan for Urban Reconstruction for Sinuiju, Songrim, and Gimcheon cities by Cabinet Decision No. 85 on June 15, 1954. (KCNA 1954, 416)

In the 1950s, North Korea published works to display their achievements in various fields. *Ten years of Joseon Architecture and Construction, 1948–1958* was a key work among the handful of books that appeared on architecture and profiled not only Pyongyang, but also provincial cities like Hamhung, Wonsan, Chongjin, Kanggye, Sinuiju, Sariwon, Haeju, Nampo, Hyesan, and Kaesong. It described detailed characteristics of each city and focused on their reformation achievements. Furthermore, residential sub-districts functioned as basic planning units when forming housing areas in North Korean cities, and were applied in 14 major cities: Pyongyang, Hamhung, Chongjin, Wonsan, Sariwon, Sinuiju, Kaesong, Kanggye, Haeju, Hyesan, Songrim, Nampo, Kimchaek, and Sinpo (M. Kim 2018, 11–12). North Korea had been planning the reconstruction of Pyongyang through the Five-year Recovery and Construction Plan since the mid-1950s, as well as the balanced development beyond the capital that included all major cities.

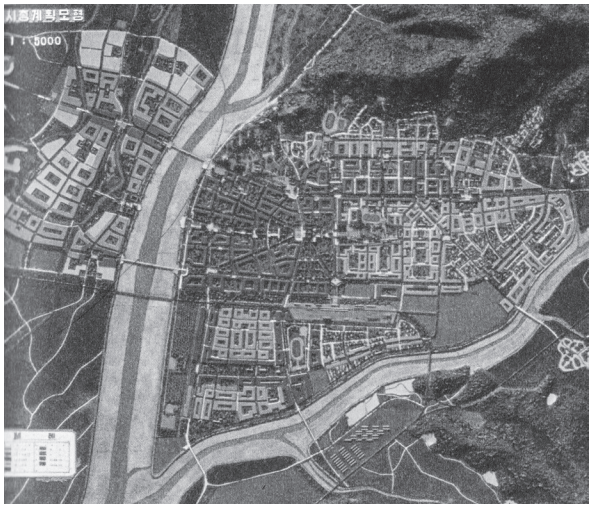
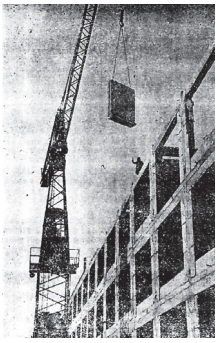


Figure 12. Hamhung city plan (1955–1957)
Source: Shin (2013, 29).

Unlike other cities that largely followed the Soviet model in urban construction, Hamhung adopted the East German model of housing. East Germany provided DM 118,000,000 in aid to the second largest city in North Korea (Armstrong 2013, 74). Construction methods for residential complexes supported by German business groups maintained the traditions of Bauhaus even under the strong influence of the Soviet Union, the origin of socialism. Konrad Püschel, the lead architect of urban planning for the Hamhung project between 1955 and 1958, was taught by Wassily Kandinsky at Bauhaus (Armstrong 2013, 74). When designing residential complexes for Hamhung, he strived to reflect specific regional circumstances of Korea. Püschel actively localized designs, such as incorporating gabled roofs from traditional Korean *hanok* houses to the exteriors of residential buildings (M. Kim 2018, 134–136).

By the mid-1950s, Pyongyang, Hamhung, and other major cities had started reconstructing their sewage treatment plants as a precedent for restoration work. The new construction technology and methods developed in Pyongyang expanded from the capital to provincial centers, and

prefabricated houses were hastily constructed in Pyongyang, Hamhung, and Kaesong.



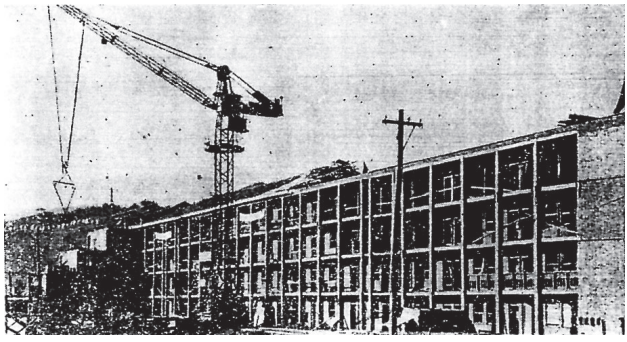


Figure 13. (Left) Prefabricated houses in Kaesong
Source: National Construction Publishing Press (1958, 118).

Figure 14. (Right) Prefabricated houses in Kangduk
Source: National Construction Publishing Press (1958, 103).

Second, North Korea created architectural departments at universities and assigned them the responsibility of redeveloping infrastructure for construction. The North Korean leaders agreed that education played an important role in improving the quality of construction. Kim Il-sung discussed the need to cultivate talented experts and technicians to ensure the qualitative growth of the country's construction industry.

> To improve the quality of construction, we must raise the level of skills for all workers. It is not possible to increase the quality of construction without increasing the level of expertise [workers' ability]. We need to raise the level of technical standards in design, the quality of building materials, and construction. (Kim 1981b, 620–621; emphasis added)

Kim Il-sung emphasized the importance of expanding technical schools to train more engineers and construction experts (Kim 1968, 217). Specifically,

he argued that technical talent should be cultivated in a diverse network of technical schools, including those for agriculture, industry, animal husbandry, and fisheries. Through these efforts, the number of general schools in North Korea had increased almost threefold (2.8x) by 1949 compared to 1944. Over the same period, the number of elementary and advanced middle schools increased by a factor of 22 and vocational schools by a factor of 12. There were no universities in North Korea in 1944, but 15 were erected by 1949 (Lee 1989, 53–54).

Various professional engineers began working in the field of architecture and construction. In July 1946, the Establishment of Professional Schools policy was adopted by a decision of the Provisional People's Committee of North Korea (Lee 1989, 22).[5] In June of the following year, The Promotion of Technical Education policy was adopted by decision no. 44 of the People's Committee of North Korea. Based on these policies, education was provided to train construction-related personnel at various schools in major cities across North Korea (Lee 1989, 22).

Specifically, in the case of higher education institutions related to architecture, the Department of Architectural Engineering was established in July 1946 at Kim Il-sung University. In September 1948, several architectural education facilities opened, such as the Kim Chaek University of Technology.[6] This was a national effort to train large numbers of specialized construction workers. On October 1, 1953, the College of Construction Engineering of Kim Chaek University of Technology was separated from the university. Along with the Faculty of Architecture, the Faculty of Architectural Engineering, and the Faculty of Civil Engineering, the College of Construction Engineering was reestablished at the Pyongyang Construction Engineering University. This university played an important

5. Originally from the newspaper *Jeongno* (The Right Way), July 17, 1946.
6. Its previous name was the Pyongyang Institute of Technology, opened in September 1948, with its Department of Architecture opening in 1951.

role in post-war reconstruction and the restoration of the city.[7] Since then, North Korean educational institutions have prepared the large number of construction engineers required (Lee 1989, 97).

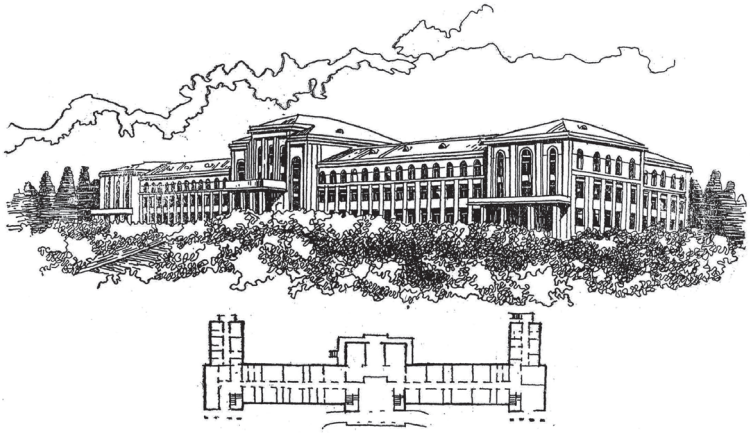


Figure 15. (Above) Main building of Kim Il-sung University; (Below) Floor plan of Kim Il-sung University's main building
Source: Lee (1989, 60).

Third, on March 26, 1954, the Joseon Architects Alliance (Joseon geonchukga dongmaeng) was established to unite all North Korean construction workers (Lee 1989, 97). Through the alliance, architects could embody their common interests and benefit from collective actions. However, the alliance became more of a social organization to implement North Korea's political ideology centered on Kim Il-sung rather than a group to serve the common needs and purposes of architects. In other words, the alliance was a result of efforts to entrench party policy to implement Juche

7. From October 1953 to 2011, it was called the Pyongyang Construction College, but it is now called Pyongyang Architecture University. This university has played a key role in the development of post-war North Korean architecture and construction and is now most active in the field of land management, construction, and environmental reporting in North Korea.

architecture centered on Kim Il-sung.[8] In addition, rather than create an alliance of architects for the betterment of the construction industry, its main purpose was to develop ideas that realized Kim Il-sung's intentions and party policies. Efforts to implement Juche architecture became the core doctrine in the latter half of the 20th century in North Korea (Seo 2018, 39).

Conclusion

Post-war reconstruction following the Korean War was a major turning point in North Korea's architecture and construction culture. During this period, the groundwork was laid to transition from the pre-modern traditional society to a modern, socialist nation. In this sense, characteristics of North Korea's architecture and construction culture may be summarized as follows.

First, in the 1950s, North Korea created modern, socialist cities through detailed and practical policies. During this period, prefabricated construction techniques were developed through the standardization of architectural design, industrialization of construction materials, and mechanization of construction. North Korean leaders insisted on the mechanization and industrialization of construction at a time that was relatively early compared to South Korea. These developments led by Kim Il-sung were not conducted independently by the North Korean state, but rather, relied heavily on foreign aid from countries like the Soviet Union and East Germany. Furthermore, while the aggressive industrialization in construction culture may be interpreted as North Korean state propaganda, they can also be viewed as the country's effort to autonomously step forward as a modernized nation.

Second, since imported housing types from other socialist states conflicted with the traditional lifestyles of North Koreans, they underwent

8. The concept driving Juche architecture was the self-reliant ideology of Juche applied to architecture. It is a key concept for understanding North Korean architecture and urbanism from the mid to late 20th century.

an adaptive process to better fit North Korean society. For instance, when reconstructing cities destroyed by war, North Korea adopted the concept of the microdistrict from the Soviet Union and constructed housing complexes in mass by localizing the aforementioned concept according to circumstances. North Korean houses were built adhering closely to the standards of the Soviet Union and other Eastern European states, but the interior designs were modified to suit the country's living situation. Moreover, while most cities, notably Pyongyang, followed the Soviet model in reconstruction, Hamhung adopted the East German's urban planning model, especially the urban planning program of Konrad Püschel, the lead German architect behind the reconstruction of Hamhung between 1955 and 1958.

Third, as interest in workers grew, living facilities and services were created for them. To complete the post-war reconstruction, it was necessary to maximize the workforce's productivity. Therefore, a concerted effort was made to construct residential facilities and auxiliary facilities to improve conditions for workers and their families. This period also saw women employed extensively to augment the workforce at a critical period. Moreover, in this context, various positions were specifically provided for women. This is not to say that the perception of women at the time in socialist countries was more progressive than in capitalist nations, but rather, through industrialization led by heavy industry during the post-war period, North Korea's policy on women shifted to preparing and enforcing specific measures in order to incorporate women into the country's labor force.

Fourth, numerous efforts were made to build a solid construction infrastructure in North Korea. In the process of replacing buildings damaged or lost during the Korean War, urban redevelopment of cities at the national level began with Pyongyang. In addition, qualitative and quantitative needs for the cultivation of construction manpower were met through newly established universities. Further, North Korea built physical and socio-environmental infrastructures through unity and social movements, such as the Joseon Architects Alliance.

During the 1950s post-war recovery period, North Korea attempted to transition towards a modern, socialist nation through various contemporary

projects. However, the North Korean effort relied on aid from Eastern European countries, most prominently the Soviet Union. In addition, the construction culture of North Korea can be seen as a fusion of Juche (self-reliance) ideology—which dominated North Korean politics, culture, and social thought—into the framework of Juche architecture. Therefore, efforts to modernize and reform North Korea were not a result of North Korea becoming a modernized nation, but rather, the embodiment of North Korean society and party policy centered on Kim Il-sung.

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