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The North Korean Microdistrict;
Historical Developments, Case Studies, and Prospects

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Abstract:

Microdistrict, a socialist urban housing model theory that was widely spread throughout the socialist countries, was one of the dominant factors that influenced the built environment as well as social structure of North Korea. North Korea adopted the theory since the reconstruction period from the Korean War in the early 1950s and developed its own guideline in 1963. When numbers of microdistricts were being applied throughout the nation, from the Kim Il Sung regime to Kim Jong Il and the current Kim Jong Un regime, they have been developed beyond the guidelines that were suggested in the 1960s. Not only the leader's architectural ego but also construction technology made microdistrict evolve from its early model to current high-rise compact model. Six cases from Pyongyang are studied based on the followings; location, scales in site and buildings, layouts of the block and unit plans, construction methods, and building systems. As it has always been the model city for other cities in the nation, cases in Pyongyang were considered as representative cases of North Korea. Two cases from each regime were selected to understand how the microdistricts have been evolved throughout the period from the reconstruction era till recently. The case study will focus on what were the original intentions of the microdistrict theory and how they were negotiated throughout the period. Based on the study, the research suggests what new models could be proposed that reflect both original social aspects of microdistrict and new economic demands in the transformation of the country from socialist economy to market-oriented economy.

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Glossary Table:

Terminology	Meaning
Geo-li	Streets, boulevards
Sallimjip	All types of houses or housing units from apartment to detached single family
Jangmadang	Originally meant unofficial and illegal street vendors, but now it means a large-scale official market
Guyeok	Interim administrative urban district that forms a city
Dong	Smallest administrative urban district that forms a guyeok
Donju	A new middle class people with money
Juche Ideology	North Korean version of Marxism-Leninism
Ondol	Floor heating system in the Korean peninsula
sektzia	Housing type that a couple of units share one staircase as the core
ga-nae-jag-eob-ban	Work units, a small factory within microdistrict
ju-taek-so-gu-yeok	North Korean term for microdistrict

Introduction

The research aims to understand the physical and socioeconomic value of the North Korean microdistrict, a socialist urban planning strategy for residential development, and determine how it has been developed as an urban housing model in the country during its socialist period since 1948. Pyongyang, the capital of North Korea, is a socialist city where the microdistrict has been well-applied since the 1960s; however, the value of its microdistricts, such as providing large open space and community programs, recently dropped as it started to adopt a market-oriented economy. Although there is no clear definition, a socialist city is considered a distinct entity that is different from the capitalist city.[1] However, while some scholars of urban history emphasize the unique characteristics of socialist cities based on their different political and economic systems from capitalist cities,[2] others argue that there are similarities in the urbanization of socialist and capitalist cities due to common effects of industrialization and modernization.[3] Though its similarities with capitalist cities, a socialist city is commonly considered as cities in the Communist Bloc where design and building of cities in the Soviet Union were influenced by the historical and social circumstanced of in the early 20th century through mid-century.[4]

Although the key aspects of the microdistrict are disappearing in North Korean residential developments, due to adoption of real-estate driven housing development models, the microdistrict was an urban structure that allowed the city to survive repeated famines and sanctions.[5] It facilitated socioeconomic networks among neighbors so they could construct their own co-operative economies that were self-sustainable and less dependent on the national economy. Therefore, based on precedents in other postsocialist cities, the research focuses on the historical background of the North Korean microdistrict, its physical conditions and social values, and its transformation under new development efforts in recent

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[1]French, Richard Anthony, and Hamilton F E Ian. The Socialist City: Spatial Structure in Soviet and East European Cities. Chichester: Wiley, 1979.
[2] Szelényi Iván. Urban Inequalities under State Socialism. New York: Oxford University Press, 1983.
[3] Andrusz, Gregory, Michael Harloe, Ivan Szelenyi, and Georgy Enyedi. "Urbanization Under Socialism." Essay. In Cities after Socialism: Urban and Regional Change and Conflict in Post-Socialist Societies. Hoboken: J. Wiley & Sons, 2011.
[4] Engel, Barbara. "The Concept of the Socialist City; Plans and Patterns of Soviet Urbanism." International Planning History Society Proceedings 19, no. 1 (n.d.): 663–78
[5] Yim, Dongwoo, Prokopljević Jelena, and Rafael Luna. Unprecedented Pyongyang. New York: Actar Publishers, 2016.

years in North Korea, especially in Pyongyang.

Context of Microdistrict

The microdistrict describes a model for residential complexes that aim to create a community by providing all the necessary supporting programs, such as daycare, kindergartens, schools, stores, restaurants, civic offices, and open spaces, along with residential buildings. The concept was developed to provide decent quality living environments for working-class people in the Soviet Union. At the beginning of the 20th century, rapid urbanization and densification of cities marginalized the living conditions of working-class people. They lacked electrical appliances, plumbing, sanitation infrastructure, and central heating.[6] Workers' housing, mostly temporary barracks settlements, quickly grew around factories, accommodating a massive population. Resolving housing problems became as important as solving social problems.[7] Stone quarter buildings were suggested and built with monetary funding from the working-class people.[8] Tsarev and Krushlinsky argued that working-class involvement in quarter development influenced the evolution of the idea of meeting the social and cultural demands of the working class. This included aspects such as an individual's everyday life, labor, and leisure becoming common considerations in housing development.[9] The society had to satisfy the demands of the working class, and therefore, it was necessary to provide for personal everyday necessities and promote the harmonious physical and intellectual development of society members.[10] As a result, additional functions such as education, public catering, trade institutions, sports areas, and kindergartens were introduced alongside quarter housings.

However, organizing a variety of everyday service amenities within a quarter housing layout was not easy. Fedchenko argues that the microdistrict concept was developed as an alternative to stone quarter housing of an industrial city in the Soviet Union.[11] Architects experimented with simple schemes of a microdistrict pattern and progressed to designing a full residential territory based on the society's scientific, technological, and economic

[6] Hubka, Thomas. "Two worlds apart:" How the Working-Class Home Became Modern, 1900–1940, 8 Dec. 2020, pp. 41–84, https://doi.org/10.5749/j.ctv19fvzwj.6
[7] Fedchenko, Irina G. "Humanistic Idea of a Micro-District in the XX Century." Journal of Siberian Federal University. Humanities & Social Sciences, vol. 5, 2012.
[8] Ibid.
[9] Tsarev, V I, and V I Krushlinskiy. Krasnoyarsk. Urban Design History and Development . 2001.
[10] Fedchenko, Irina G. "Humanistic Idea of a Micro-District in the XX Century." Journal of Siberian Federal University. Humanities & Social Sciences, vol. 5, 2012.
[11] Ibid.

development.[12] The scale of the microdistrict became much bigger than quarter housing development to accommodate all the everyday service amenities within a district.

Microdistrict was mainly developed outside the city center and was predominantly used for residential areas, and its appropriate functional arrangement complied with the guidelines provided.[13] Microdistrict was to be designed in a uniform manner to achieve harmonious effect, and it may consist of blocks of buildings, which made it bigger than other superblocks.[14] It covered 10 to 80 hectares in area, while the maximum distance to community facilities was not allowed to exceed 500 meters.[15] Inside of the district was designed as a car-free zone, and main vehicle roads defined the boundaries of the microdistrict. Within the microdistrict, the planning unit was divided into residential groups whose walking distance should be less than 200 meters.[16] Along with these physical perimeters, population density was also set between ten thousand and twenty thousand inhabitants.[17]

Case of the Soviet Union

After the Socialist Revolution in 1917, the Russian economy was directed by 5-year plans, and urban developments also corresponded to them. The Soviet Union was founded in 1922, and ever since until its end in 1991, the national planning had three essential features; all lands belonged to the state, cities had to be developed based on master plans, and housings were built in complexes with public services, called microdistrict.[18] The Constitution of Russian Federation indicates that the citizens of the USSR have the right to housing, and the article 40 in the law states that housing is given to all citizens from the state along with rights to access to public services within walking distance.[19] Therefore, all social infrastructures

[12] Kukina, I V. Buffer Zones of Large Cities. 2006.
[13] Glatte, G, and H Grieß,. Technical Catalog of VEB – the Principal Client for Complex Housing Construction in Cottbus]. 1978.
[14] Mosgorispolkom (Moscow City Executive Committee). Interim Guidelines for the Design of Residential Areas and Complexes in Moscow. 1981.
[15] Ibid.
[16] Glatte, G, and H Grieß,. Technical Catalog of VEB – the Principal Client for Complex Housing Construction in Cottbus]. 1978.
[17] Mosgorispolkom (Moscow City Executive Committee). Interim Guidelines for the Design of Residential Areas and Complexes in Moscow. 1981.
[18] Krasheninnokov, A. (n.d.). (rep.). The case of Moscow, Russia.
[19] O'Leary, Sheila. "T he Constitutional Right to Housing in the Russian Federation: Rethinking the Guarantee in Light of Economic and Political Reform." American University International Law Review, vol. 9, no. 3, 1994.

such as schools, shops, other cultural and service facilities were provided along with housing, which became the main idea of the microdistrict.

Architect Kuba Snopek noted that the first microdistrict concept emerged in the 1910s but was only widely applied in the 1950s when Nikita Khrushchev took office in the USSR.[6] Khrushchev insisted that the nation had an obligation to significantly accelerate, improve the quality of, and reduce the cost of construction in his speech at the National Conference of Builders, Architects, Workers in Construction Materials and Manufacture of Construction and Road Machinery Industries, and Employees of Design and Research and Development Organizations, which was held between November 31st and December 7th in 1954.[20]

The standardization of microdistrict construction, often called Khrushchevka, was enabled by the manufacture of prefabricated reinforced concrete, and Khrushchev insisted on the standardization of other facilities in microdistricts and residential buildings, such as kindergartens, schools, nurseries, and stores.[21] This standardization of microdistrict buildings made mass production of housing possible, and as a result, the microdistrict became a dominant housing model in the Soviet Union. Historian Christine Varga-Harris noted an increase in the microdistrict trend from Stalin's era to that of Khrushchev. In the case of Leningrad, the architectural focus shifted from the peripheral facades of microdistricts to their interiors, where open spaces were structured to serve as "the foundation of the life of the population."[22]

In the post-WWII period, the population of Moscow exploded from 4 million people before the war to 6 million people in 1960. During this period, urban planners transformed massive amounts of urban areas into microdistrict neighborhoods in response to the population growth. The objective of this massive effort was to provide new Muscovites with individual flats and public facilities. Before the microdistrict, most Muscovite families lived in shared housing, dormitories, or communal flats with one family per room.[23] Planners and politicians turned to industrialized, mass housing production to overcome these housing problems. Over 500 factories producing prefabricated concrete were built throughout the nation and the building of five-story, prefabricated concrete flats - often reaching lengths over

[20] Davies, R., & Ilič , M. From Khrushchev(1935-6) to Khrushchev (1956-64) : Construction Policy Compared. The PERSA Working Papers, 61. 2010.
[21] Ibid.
[22] Varga-Harris, Christine. Stories of House and Home: Soviet Apartment Life during the Khrushchev Years. Ithaca: Cornell University Press, 2015.
[23] Krasheninnokov, A. (n.d.). (rep.). The case of Moscow, Russia.

100 meters - became common across the country.[24]

However, the reality of this massive microdistrict application was not always successful. Fast prefabricated construction created issues in insulation and provided substandard space. Two other generations of mass housing types in the Soviet Union succeeded these, but they were still far from meeting the original concept of the microdistrict. While more than 75% of the nation's population lived in microdistricts, fundamental service amenities had not fully been provided. Only 20-30% of schools and day cares and 40-50% of food shops were built relative to the microdistrict guidelines.[25]

Case of East Germany

East Germany is the country who sent the greatest number of architects and engineers to North Korea during the reconstruction era in the 1950s. After the nation was founded in 1949, the East German Building Ministry sent architects to the Soviet Union to learn methods for reconstructing the destroyed country. They visited Magnitogorsk, which was founded in 1928, considered the first planned socialist city, and composed of 16 Principals of Urban Planning that were ratified in 1950.[26] One of the principals, the *Wohnkomplex*, or housing complex, comprised the fundamental building blocks of East Germany. The *wohnkomplex* is comparable to the microdistrict: they were both intended to be self-contained neighborhoods providing five functions of being: work, leisure, education, food, and housing.[27] The *wohnkomplex* and the 16 Principals were first tested in Eisenhüttenstadt, a model city designed in 1950.[28]

However, it was not until the introduction of *plattenbau*, a prefabricated construction method, that the *wohnkomplex* truly dominated the mass housing supply in East Germany. the first *plattenbau* was applied in Hoyerswerda in 1957 and it dominated the housing construction until the 1970s.[29] The plattenbau increased living standards of working class housing in East Germany by providing central heating, full bathrooms, and fitted kitchens

[24] Ibid.
[25] Krasheninnikov , A. V. Reconstruction and Modernization of Buildings and Complexes. Vysshaya Shkola. 1988.
[26] Hirt, Sonia. "Whatever happened to the (post)socialist city?" Cities, vol. 32, July 2013, https://doi.org/10.1016/j.cities.2013.04.010.
[27] Collier, S. J. Post-Soviet Social: Neoliberalism, social modernity, Biopolitics. Princeton University Press. 2011.
[28] Initially named Stalinstadt after Joseph Stalin until 1961 when de-Stalinization emerged.
[29] Meibauer, Jörg. "Images of the socialist city." Barnelitterært Forskningstidsskrift, vol. 12, no. 1, 23 Dec. 2021, pp. 1–13, https://doi.org/10.18261/issn.2000-7493-2021-01-09.

along with neighborhood amenities.[30]

Although it promoted socialist aspects such as equal living conditions and modern amenities for everyone, state authorities caring for basic human needs, and public education as the basis of the socialist collective, the microdistrict was criticized as being monotonous, uniform, and carelessly designed as early as the 1960s.[31] However, under the 'industrialization of the construction industry' slogan, East Germany made little change in microdistrict design and continued to build them until 1989 when the regime collapsed.[32]

Case of Romania

As one of the main countries involved in the reconstruction of North Korea in the 1950s, Romania constructed 340,000 microdistrict units, mostly in the capital, Bucharest, over a period of five years between 1955 and 1960.[33] At a moment of rapid increase in the urban population after World War II, the idea of microdistrict appeared in the nation. Before the application of microdistricts, *cvartal*, a block typology that tried to provide orthogonal and geometrically aligned dwellings in a no-orthogonal urban layout, was applied as the initial effort in post-war reconstruction.[34] However, because of its monotonous form and lack of personality, *cvartal* was criticized. As a response to the criticism on *cvartal*, which created repetitive street patterns, microdistricts were well received in the late 1950s, as they created a fully constituted, unbreakable, and finite entity of housing blocks inside of large streets marked by the perimeter of microdistricts themselves.

Case of China

In the context of China, as Lu argues, danwei system is effectively an adaptation of a company town type that was widespread in the late 19th century and early 20th century, while

[30] O'Sullivan, Feargus. "Can an East German Relic Help Fix Berlin's Housing Crunch?" Bloomberg.Com, Bloomberg, 6 Sept. 2018, www.bloomberg.com/news/articles/2018-09-06/can-an-east-german-relic-help-fix-berlin-s-housing-crunch.
[31] Henselmann. Der Einfluss der sozialistischen Lebensweise auf den Städtebau und die Architektur in der DDR. (The influence of socialist lifestyle on urban planning and architecture in the GDR). Deutsche Architektur 5:264–265, 1966.
[32] Urban, Florian. "Large Housing Estates of Berlin, Germany." Housing Estates in Europe Poverty, Ethnic Segregation and Policy Challenges, Springer, 2018.
[33] Maxim, J. (201AD). Mass Housing East and West. In The microrayon: the organization of mass housing ensembles, Bucharest, 1956-1967.
[34] Marin, V., & Chelcea, L. The many (still) functional housing estates of Bucharest, Romania: A viable housing provider in Europe's densest capital city. Housing Estates in Europe, 167–190. 2018. https://doi.org/10.1007/978-3-319-92813-5_8

xiaoqu is the Chinese version of socialist microdistrict.[35] Although it was first introduced to the country as early as the mid-1950s, the microdistrict was widely spread by the 1980s in the People's Republic of China, later than other socialist countries. Since the establishment of the country in 1949, Mao Zedong emphasized production in the city, the danwei system, work-unit system, was more actively applied than the xiaoqu.[36] Although both compounds share similar programs, such as residential flats, shops, schools, and parks, danwei system is based foremost on factories while xiaoqu is based foremost on residential flats. The danwei system was the dominant logic of composing residential compounds until Mao's death in 1976. For instance, in 1959, Shanghai began to build a massive amount of new industrial districts and satellite towns outside of the city by providing danwei compounds,[37] and in 1978, nearly 95% of urban workers lived in danwei.[38]

However, although application of the microdistrict was limited, the concept was actively explored by Chinese urban planners and architects in the 1950s and the 1960s. In 1958, the *Architectural Journal,* a Chinese journal started in 1954 and sponsored by the Architectural Society of China, featured articles about microdistricts, including an article by Luben Taneff, a Bulgarian architect, briefly describing microdistricts.[39] After a couple of years of discursive usage during the people's commune movement in China, the microdistrict idea was more systematically defined by Wang Shuoke in 1962 when he clarified a system based on three scales: the living unit, the neighborhood, and the microdistrict.[40] Nonetheless, the scheme was not widely accepted under Mao, as the Mao period focused on applying danwei system and piecemeal development of the city.[41] It was not until the post-Mao period when economic reform in China created a new opportunity for xiaoqu, the microdistrict. As the reform emphasized consumption in the Chinese economy, the xiaoqu, which accommodated the role of commercial stores, were more widely applied than the danwei system, which put heavy emphasis on factories.[42] This is one of the reasons why there was less influence on North Korean microdistrict model from China. While microdistrict concept

[35] Lu, D. Remaking Chinese urban form: Modernity, scarcity and space, 1949-2005. Routledge. 2011.
[36] Abramson, D. B. Review: The Work Unit from Workplace to Social Institution. Built Environment, 34(2), 232–234. 2008.
[37] Leonardo, C. Chinese Housing, residential typology analysis in Shanghai city (thesis). 2014.
[38] Lu, D. Remaking Chinese urban form: Modernity, scarcity and space, 1949-2005. Routledge. 2011.
[39] Ibid.
[40] Lu, D. Third World Modernism: Utopia, Modernity, and the People's Commune in China. *Journal of Architectural Education* , *60*(3), 40–48. 2007
[41] Lu, D. Remaking Chinese urban form: Modernity, scarcity and space, 1949-2005. Routledge. 2011.
[42] Lu, D. Third World Modernism: Utopia, Modernity, and the People's Commune in China. *Journal of Architectural Education* , *60*(3), 40–48. 2007.

was introduced to North Korea during the post-reconstruction era in the 1950s, Chinese microdistrict was mostly developed in late 1970s and 1980s.

Case of Vietnam

Like North Korean case, architects and urban planners of East Germany took an important role in constructing microdistrict in Vietnam. Although microdistrict was introduced to Vietnam later than other socialist countries, the practice of adopting it as a strategy for post-war reconstruction was similar to others. After the Paris Peace Accords was signed in the beginning of 1973, military action on Vietnamese territory by the US Army was brought to an end, and the reconstruction of Vietnamese cities that had been destroyed by airstrikes had started. It was the East Germany that carried out the reconstruction projects in Vinh City, one of the cities most disrupted during the war.[43] The East Germany sent more than two hundred engineers, urban planners, architects, and other professionals to the city between 1974 and 1980.[44]

East German planners brought the *Wohnkomplex*, to Vinh City and proposed 36 complexes that would accommodate fifteen thousand people. The proposal replaced one or two story houses with five story residential buildings while providing service amenities and public spaces of social activity to showcase the spectacular potential of socialism.[45] However, due to the lack of resources and technologies, only 22 blocks of microdistrict housing were completed by the end of 1980.[46]

In many countries, the microdistrict was introduced to resolve housing shortages. Especially in the Socialist Bloc countries, including the Soviet Union, East Germany, and Romania, major cities faced housing shortages after WWII. During the war, not only majority of built environments were destroyed but also rapid urbanizations occurred in the postwar reconstruction period. In the case of North Korea, it was the Korean War between 1950 and 1953, while in the case of Vietnam, it was the Vietnam War, which lasted until 1975, when they faced extreme housing shortages and the microdistrict concept was introduced and

[43] Schwenkel , Christina. “Ruination and Reconstruction.” American Academy, 14 Nov. 2019, www.americanacademy.de/ruination-and-reconstruction/
[44] The Cuong, L., & Van Thanh, L. Assistance of the Germany Democratic Republic in the reconstruction of Vinh City, Nghe An province from 1973 to 1980. 2022. Vinh University Journal of Science, 41(4B). https://doi.org/10.56824/vujs.2022sh13
[45] Schwenkel , Christina. “Ruination and Reconstruction.” American Academy, 14 Nov. 2019, www.americanacademy.de/ruination-and-reconstruction/
[46] Ibid.

applied. Meuser argues that industrial production methods had a significant impact on socialist urban planning and the expansion of the microdistrict.[47] Prefabrication technologies were intensely explored in the postwar era to make construction cheaper and quicker[48]and they made it possible to develop microdistricts much more quickly. Therefore, the microdistrict concept became a strategic choice to address the aforementioned issues.

The microdistrict concept was disseminated through collaboration among architects, planners, and engineers. East German professionals were dispatched to the Soviet Union during its reconstruction period, where they learned about the development of the microdistrict concept (Hirt, 2013). Subsequently, East German experts were sent to North Korea in the 1950s after the Korean War and to Vietnam in the 1970s following the Vietnam War. In both countries, they played significant roles in introducing the microdistrict concept, which they had originally learned from the Soviet Union. In North Korea, they collaborated with local professionals in reconstructing cities and implementing microdistricts. Similarly, in Vietnam, around two hundred East German architects and planners were deployed to Vinh City in the 1970s to oversee a reconstruction project.

Like the case of East Germany, microdistricts, which were meant to be more industrial and uniform, were developed in a similar manner throughout most socialist countries' histories until the fall of socialist regimes in the early 1990s.[49] Meanwhile, North Korea, which still maintains strong government-controlled housing development under its socialist regime, provides unique cases that have evolved since the late 1980s, while other socialist countries were undergoing socio-economic transitions. Unlike China or Vietnam, where the microdistrict concept was widely spread or introduced in the 1970s, microdistricts were adopted in North Korea as early as the 1950s during its post-war reconstruction. Therefore, North Korea, especially Pyongyang, the capital of the nation and where most microdistrict developments are concentrated, covers microdistricts from the 1950s to the 2010s. In this regard, North Korea, as the subject of this research, offers a unique opportunity to understand how original microdistrict concepts were applied in the early stages of the postwar era, how

[47] Meuser, Philipp. “Introduction to the System of Soviet Mass Housing. Type Design, Typification and Typology.” Large Housing Estates under Socialism, Transcript, 2024, pp. 49–74.
[48] Navarro, David, and Martyna Sobecka. “Prefab Panel Blocks: Mass Housing in the Soviet Bloc.” Zupagrafika, www.zupagrafika.com/post/prefab-panel-blocks-mass-housing-in-the-soviet-bloc. Accessed 19 Mar. 2024.
[49] Urban, Florian. “Large Housing Estates of Berlin, Germany.” Housing Estates in Europe Poverty, Ethnic Segregation and Policy Challenges, Springer, 2018.

they have been challenged or transformed throughout the period, and how they have adapted to respond to new market demands recently.

Microdistrict in North Korea

North Korean cities started to construct microdistrict after the Korean War (1950–1953), which was the first hot war between the communist bloc and democratic countries during the Cold War. During the war, more than 80% of the infrastructure of major North Korean cities was destroyed, and more than 600,000 homes and 8,700 factories were bombed.[50] Due to this massive destruction and because North Korea was the first case of rebuilding a socialist country during the Cold War, a wide range of aid from the socialist bloc was dedicated to the reconstruction North Korea; as historian Charles Armstrong argues, this was the first and only instance of such aid. Armstrong focuses on the period between 1950 and 1960 and analyzes reconstruction after the Korean War, arguing that it was a fraternal socialist project. It was the first opportunity for the socialist bloc to act thusly, and almost every socialist country contributed to the reconstruction. It was also the first time, and perhaps the last, that the Soviet Union and China achieved a consensus and pursued the same goal.[51]

Since the postwar reconstruction, the microdistrict has remained the dominant concept for residential developments in North Korea. During the regimes of both Kim Il Sung (1948–1994) and Kim Jong Il (1994–2012), government-controlled housing supply has spread nationwide for over 4 decades. More than 3 million units were built during the Kim Il Sung regime, and 300,000 units were built under the Kim Jong Il regime.[52] In response to extreme shortages in housing stock, prefabrication was introduced to facilitate massive and homogeneous construction of housing.[53] However, this trend in housing supply changed when the government started to accept a market-oriented economy in the early 2000s. Housing development was increasingly the domain of the private sector, as well as real-estate sales in the market. Consequently, many signs of early microdistrict transformation trends in

[50] 김태우. 폭격: 미군의 공중 폭격 기록으로 읽는 한국 전쟁. 경기도 파주시: 창비, 2013 Gim-tae-u. Pog-gyeog: mi-gun-ui gong-jung pog-gyeog gi-log-eu-lo ilg-neun han-gug jeon-jaeng. gyeong-gi-do pa-ju-si: : Changbi, 2013. (Understanding the Korean War through records of American airstrike)

[51] Armstrong, Charles. "The Destruction and Reconstruction of North Korea, 1950-1960." The Asia-Pacific Journal 7 (March 16, 2009).

[52] 토지주택연구원. "북한주택 현황조사·분석 연구." 토지주택연구원, 2015, 12. To-ji-ju-taeg-yeon-gu-won. te-bug-han-ju-taeg hyeon-hwang-jo-sa-tbs-bun-seog yeon-gu.te to-ji-ju-taeg-yeon-gu-won, 2015, 12. (Analysis and Research of North Korean Housing)

[53] Kim, Mina, and Inha Jung. "The Planning of Microdistricts in Post-War North Korea: Space, Power, and Everyday Life." Planning Perspectives 32, no. 2 (2016): 199–223.

North Korean cities are identifiable, especially in Pyongyang, which has experienced the most rapid socioeconomic changes. In particular, Kim Jong Un, the supreme leader of the nation since 2011, has been driving many housing projects since his regime. Architect Jelena Prokopljević highlights three categories of Kim Jong Un's paradigms of construction and housing development: defining the waterfront, revalorizing historic sites, and defining the city gates.[54] She argues that, during his first decade of leadership, Kim Jong Un restructured the image of Pyongyang by introducing a series of urban development projects that deemphasized historical ideology and focused more on adopting new architectural styles.The new market trend in North Korean housing supply can be compared to transitions in many other postsocialist cities.

Nevertheless, the following research aims to evaluate the original North Korean microdistrict guidelines, which was published in 1963 by Li-sun-geon and Baeg-wan-gi to provide planning and design rules of North Korean microdistrict, analyze how they were applied in national housing development, and determine whether the microdistrict concept remains valid.

Scope of Research and Questions

In this research, I investigate the evolution of North Korean microdistricts throughout their history, from when the microdistrict concept was applied distinctly to when it the concept was widely challenged in housing development due to the adoption of market economy. Moreover, rather than focusing just on the meaning of microdistrict, I propose how microdistrict guidelines can be adapted in the current context, while retaining the social features of microdistrict concept and reflect current needs of residents.

Although rigorous studies on North Korean microdistrict have been conducted,[55] most focused only on historical cases in various North Korean cities reflecting socialist microdistrict concepts and analysis of their unit plans. Min-A Kim studied the planning of microdistricts in postwar North Korea, focusing on the period from 1955 to 1967, and argues that developments from this period followed the theory of the microdistrict; at that time, the nation was eager to build an ideologically socialist city, while the emergence of Kim Jong Il

[54] Prokopljević, Jelena. "International Conference on Urban Studies 2021: Urban Kaleidoscope of North Korea." In Contradictory Architecture of the Kim Jong Un Decade. Reflections on the Recent Projects in Pyongyang, 2021.

[55] Such as Inha Jung's *Constructing the Socialist Way of Life; Mass Housing and Urbanism in North Korea*, Myengsoo Seo's *Rethinking the Characteristics of North Korea's Architecture and Construction Culture during its 1950s Post-War Recovery*, and Min-A Kim's *A Study on the Planning of Microdistricts in Post-War North Korea*.

in the 1970s influenced architecture and urban planning through symbolism and formalism.[56] Inha Chung also analyzes North Korean housing construction trends and methods of 1950s and 1960s, emphasizing them as a strategy to build mass housing, especially during the reconstruction period after the war.[57] Myengsoo Seo's research focuses on postwar reconstruction period in the 1950s and microdistrict developments in this period using written texts of Kim Il Sung.[58]

In terms of the spatial scope of the research, instead of covering the overall area of North Korean cities, it focuses on cases in Pyongyang, where the microdistrict has been continuously developed since the postwar era until now. Especially since the late 1980s, Pyongyang is the only city to have constructed major scale microdistricts in North Korea. By confining the spatial scope to Pyongyang, it is possible to examine a case from each decade from the 1950s to the 2010s and compare their locational characteristics.

The scope of time period covers from the postwar reconstruction period to 2010s, including Kim Jong Un's regime in order to elaborate how application of microdistrict concept and construction methods have changed throughout periods. French and Hamilton argued that the study of a socialist city should be limited to a moment in time because planners otherwise continue modifying their strategies and cities are constantly changing.[59] The research, therefore, excerpts two cases of microdistrict development per regime as comparative case studies. David M. Smith discusses how early socialists devoted much effort to building equitable cities, and how housing structures such as the socialist microdistrict were one such effort to develop equal access to urban goods and services.[60] Philipp Meuser analyzed the Soviet microdistrict and its relationship with the broader context of urban planning.[61] He argues that the Soviet mass housing model in the post-Stalinist era shaped the culture and everyday life of nearly all Soviet citizens.[62] Therefore, the research does not only analyze cases of microdistrict developments in North Korea but also accounts for background

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[56] Kim, Min-A. "A Study on the Planning of Microdistricts in Post-War North Korea ," 2018.
[57] Shin, Gunsoo, and Inha Jung. "Appropriating the Socialist Way of Life: The Emergence of Mass Housing in Post-War North Korea." The Journal of Architecture 21, no. 2 (2016): 159–80.
[58] Seo, Myengsoo. "Rethinking the Characteristics of North Korea's Architecture and Construction Culture during its 1950s Post-War Recovery." Korea Journal, vol. 61, no. 2, 2021, pp. 266–300.
[59] French, Richard Anthony, and Hamilton F E Ian. The Socialist City: Spatial Structure in Soviet and East European Cities. Chichester: Wiley, 1979.
[60] Andrusz, Gregory, Michael Harloe, Ivan Szelenyi, and Hartmut Haussermann. "From the Socialist to the Capitalist City - Experiences from Germany." Essay. In Cities after Socialism: Urban and Regional Change and Conflict in Post-Socialist Societies. Hoboken: J. Wiley & Sons, 2011.
[61] Meuser, Philipp, and Dimitrij Zadorin. Towards a Typology of Soviet Mass Housing. Prefabrication in the USSR 1955 – 1991. Berlin: DOM Publishers, 2015.
[62] Ibid.

urban planning history of other nations, especially after the Korean War. As mentioned earlier, Snopek insists the microdistrict was widely adopted in the 1950s in the Soviet Union when the country was suffering from housing shortage.[63] This trend also appears in North Korea when it was facing housing shortages in the 1950s after the Korean War, and therefore the research examines how the microdistrict concept was introduced from other socialist bloc to North Korea during the post-war reconstruction era.

In the research, I investigate the transformations of North Korean microdistricts in Pyongyang and adapt microdistrict guidelines based on the lessons learned from the enduring values of the microdistrict concept that remain relevant in current times. In postsocialist cities, microdistrict transformations are inevitable. Haussermann argues that private property ownership differentiates many physical structures in cities and that the transformation from socialist to postsocialist or capitalist cities creates a new form of development due to new structures of property ownership and new actors in the real-estate market.[64] Sonia Hirt notes that the rapid, large-scale privatization of housing in socialist cities, in terms of production and ownership, resulted in rapid increases of housing stock.[65] Carmen Popescu also argues that, although the goal was for microdistricts to meet all daily needs, small stores and spaces were transformed into other amenities to address residents' evolving demands in the postsocialist era.[66] Yuri Medvedkov and Olga Medvedkov state that most residents of the city wished to escape the obsolete environment of Soviet mass produced housing estates and instead move to new or renovated upscale dwellings.[67]

These transformations are also witnessed in North Korea. Jelena Prokopljević argues that, during Kim Jong Un's first decade of leadership, he restructured the image of Pyongyang by introducing a series of urban development projects that deemphasized historical ideology and focused more on adopting new architectural styles in contrast to the emphasis on socialist

[63] Varga-Harris, Christine. Stories of House and Home: Soviet Apartment Life during the Khrushchev Years. Ithaca: Cornell University Press, 2015.
[64] Andrusz, Gregory, Michael Harloe, Ivan Szelenyi, and Hartmut Haussermann. "From the Socialist to the Capitalist City - Experiences from Germany." Essay. In Cities after Socialism: Urban and Regional Change and Conflict in Post-Socialist Societies. Hoboken: J. Wiley & Sons, 2011.
[65] Stanilov, Stanislav T., Sonia Hirt, and Kiril Stanilov. "The Perils of Post-Socialist Transformation: Residential Development in Sofia." Essay. In The Post-Socialist City: Urban Form and Space Transformations in Central and Eastern Europe after Socialism. Dordrecht: Springer, 2007.
[66] Kliems, Alfrun, Marina Dmitrieva, Louise Bromby, Christian Dietz, and Carmen Popescu. "Projected Happiness, Old Myths and New Ambitions in a Bucharest Neighborhood." Essay. In The Post-Socialist City: Continuity and Change in Urban Space and Imagery. Berlin: Jovis, 2010.
[67] Stanilov, Stanislav T., Yuri Medvedkov, and Olga Medvedkov. "Upscale Housing in Post-Soviet Moscow and Its Environs." Essay. In The Post-Socialist City: Urban Form and Space Transformations in Central and Eastern Europe after Socialism. Dordrecht: Springer, 2007.

ideology in earlier periods.[68] Private ownership and real estate trades are allowed; thus, housing developments tend to respond to recent market demands. For instance, developments are often located at waterfronts or near subway stations where they possess higher locational values. Additionally, a variety of designs are introduced in housing developments, instead of homogeneous and repeated types, to attract potential unit owners.

One of the main forces driving these transformations is the privatization of real estate, which has made microdistricts unpopular among private owners. Microdistrict housing was often criticized due to its paternalistic approach and homogeneous appearance, and therefore, in the market-oriented real-estate market, microdistricts have become unpopular. For instance, in order to respond new market demands, North Korea started to introduce a variety of housing designs in new residential developments, as opposed to repeating a couple of same building design types. Moscow also announced its plan to demolish more than its unpopular and obsolete 8,000 microdistrict housing blocks, displacing more than 1.5 million people, in 2017.[69] Gurgenidze also argues that privatization and the loss of caretakers in microdistricts accelerated their deterioration, providing another justification for their demolition.[70] The emphasis on communal space in microdistricts necessitates public maintenance; privatization of microdistricts incentivized residents to care only for their private units and not common spaces.

However, understanding the shift to postsocialist cities as abandonment of the microdistrict would be to oversimplify urban changes. Snopek argues that some microdistricts have tangible features that should be preserved and that while the totalitarian appearance of microdistrict buildings is often criticized, architects' efforts to create a spatial relationship between buildings is worth evaluating. Valerri Kozlov also insists that, due to changes in social, economic, functional, and technical conditions, rather than removing microdistricts, they should be upgraded to develop a sustainable urban environment for whichthe entire community is responsible.[71]

Aside from these effects of privatization on microdistricts, microdistrict concepts such

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[68] Prokopljević, Jelena. "International Conference on Urban Studies 2021: Urban Kaleidoscope of North Korea." In Contradictory Architecture of the Kim Jong Un Decade. Reflections on the Recent Projects in Pyongyang, 2021.

[69] Byrnes, Mark. "The Disappearing Mass Housing of the Soviet Union." Bloomberg.com. Bloomberg, March 8, 2017. https://www.bloomberg.com/news/articles/2017-03-08/the-disappearing-mass-housing-of-the-soviet-union.

[70] Short, Elizabeth. "Microrayons as Heritage - Project Research Ways of Preserving the Periphery." TUDA, August 8, 2020. https://www.tuda.xyz/microrayons-as-heritage.

[71] V Kozlov 2021 IOP Conf. Ser.: Earth Environ. Sci. 751 012026.

as developing community, providing sufficient open spaces and pedestrian friendly spaces, and solidifying local production remain valid. Especially, such values are more relevant to recent urban development models, such as 15-minutes city model, car-free superblock model, or circular economic model, that are widely discussed nowadays and intend to build more sustainable and resilient city. For instance, the 15-minute city model[72] suggests allocating daily necessities such as schools, parks for leisure, workplaces, and shops within a fifteen-minute distance accessible by walking, biking, or public transportation from your residence. In fact, the microdistrict concept also emphasizes the importance of locating these facilities within walking distance of the microdistrict.

The microdistrict guidelines also suggest placing work units within the residential compound to provide spaces for production, facilitating the development of a circular economy. For example, North Korean work units in microdistricts utilize recycled materials to produce household goods, which are then sold in a designated store within the district. While this may not fully demonstrate the scale of a circular economy within the microdistrict, it highlights how post-industrial cities can restore productivity within urban areas, promoting a circular economy and enhancing social and economic sustainability.

Therefore, instead of focusing solely on the unpopularity of microdistricts among private owners, the research emphasizes the values of the microdistrict concept and what can be learned from them. These lessons are used to adapt and revise the original North Korean microdistrict guidelines, highlighting currently valid values while reflecting new socio-economic changes.

Research Methods

With this background and objective, there is a fundamental and critical question involved in the research. Have microdistricts of North Korea played a role in the past decades of socioeconomic change in the nation? And if they have, what aspects that could sustain the microdistrict model? We do understand that microdistrict developments in North Korea were not only for addressing housing demand but also for propagandizing the government's achievements.[73] In additionally however, there are aspects of the microdistrict that imply how it has functioned to build economic communities, especially considering the international sanctions against North Korea that started in the early 2000s. As Mitsuhiro Mimura, an

[72] Recently proposed by Carlos Moreno's article "Introducing the '15-Minute City': Sustainability, Resilience and Place Identity in Future Post-Pandemic Cities" in 2021

[73] Holland, O. North Korea breaks ground on 10,000-home residential project in Major Housing Drive. CNN. February 16, 2022. https://edition.cnn.com/style/article/north-korea-housing-hwasong/index.html

economic specialist in the North Korean economy, argued, there are economic partnerships within neighborhoods and these local economic chains are one of the methods by which the country is surviving the severe, ongoing sanctions.[74]

In this regard, the research methods are chosen to address following questions. The first question is how the North Korean microdistrict has evolved throughout history since the postwar reconstruction. It aims to understand whether the microdistrict concept has been the dominant theory of housing developments in North Korea and determine what aspects of the original guideline have been adjusted or have remained over time. The second question is how the microdistrict is conceived by North Koreans. If the first question aims to analyze the physical conditions of the microdistrict, the second aims to understand the social culture of microdistrict living. Finally, what can we learn from the microdistrict guideline and how can they be adapted to reflect new socioeconomic changes in the nation?

Due to the restricted access to the country, three main research methodologies are used to address the above research questions: document analysis, case studies, and interviews. For the document analysis, 주택소구역계획(ju-taeg-so gu-yeog-gye-hoeg, Microdistrict Planning),[75] the North Korean microdistrict guidelines published in 1963, and 조선건축(jo-seon geon-chug, North Korea Architecture), the North Korean architectural magazine, are mainly used to analyze the physical conditions of microdistricts and housing developments. In his book *"Constructing the Socialist Way of Life; Mass Housing and Urbanism in North Korea,"* Inha Jung intensely analyzes North Korean documents, such as 건축과 건설 (geon-chuk-gwa ceon-seol, Architecture and Construction), a North Korean magazine that focuses on large scale projects. In this research, I use *North Korea Architecture* to analyze architectural plans of service amenities, such as schools, kindergartens, and stores, which are not covered by *Architecture and Construction*, and *Microdistrict Planning* to understand original guideline of microdistrict and any discrepancies from its real-world applications.

Microdistrict Planning is the only officially published set of microdistrict guidelines

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[74] Carlin, Robert, and Rachel Minyoung Lee. "What If Sanctions Brought North Korea to the Brink? 'Well, in 1941..." - 38 North: Informed Analysis of North Korea." 38 North, September 13, 2017. https://www.38north.org/2017/09/jbaron090717/.

[75] Korean terms and titles, including references, are transcribed in English with Revised Romanization system and they are noted together with English translation when meanings are needed. Exceptions are names of North Korean cities and three leaders as there is already English orthography used by North Korean media, for example the Pyongyang Times, which is an English newspaper published by the Foreign Language Publishing House in the nation.

in North Korea; it provides general rules of the microdistrict layout, size, number of inhabitants, open space strategies, traffic circulation, and distribution of programs. Particularly, as it was published in 1963, it reflects the microdistrict developments during the 1950s, which were based on socialist microdistrict concept, developed in the Soviet Union, and strongly influenced microdistrict developments in the 1960s before new types of housing developments started to emerge in the 1970s, such as high-rise residential towers with the introduction of elevators and linear developments along boulevards to respond to the dramatic expansion of the city. *North Korea Architecture* is a North Korean architectural magazine first published in the late 1980s. The magazine features recent architectural projects as well as past projects that are considered noteworthyn. Therefore, the magazine is an effective primary source for analyzing major housing development projects in North Korea. Additionally, *Architecture and Construction*, published in Pyongyang, is another primary source, especially for historic information from the 1950s and 1960s.

Secondly, case studies were conducted to analyze the evolution of North Korean microdistricts throughout history. In total, six cases built between 1950 and 2015 are studied and analyzed based on the North Korean microdistrict guidelines, such as layout, size, and open space strategies, as well as on specific construction elements, such as unit layouts and heating systems. In her research, Min-A Kim also utilizes case studies of North Korean microdistricts focusing on the period between 1955 and 1967.[76] This period corresponds to the reign of Kim Il Sung's regime, and the cases are distributed across various North Korean cities. Meanwhile, in this research, I extend the case study period to include recent years, covering all three regimes of North Korea, to analyze trends in microdistrict transformations throughout the period. Additionally, cases are selected in Pyongyang to analyze their relationships with other urban factors such as the city center, riverfront, or historical traces through mapping.

Finally, interviews with North Korean defectors are used to understand daily life in microdistricts. As surveys are strictly limited in North Korea, interviews are often used to understand the context cannot be found in documents. The Korea Institute of Civil Engineering and Building Technology conducted intensive interviews with North Korean defectors to understand conditions and realities of North Korean architecture.[77] Although this is one of the few intensive research projects conducted, with seventy-nine interviewees who

[76] Kim, Min-A. “A Study on the Planning of Microdistricts in Post-War North Korea ,” 2018.
[77] Baek, Jeonghoon. A Survey on the Actual Condition of Architecture in North Korea through Information Acquisition System Construction. 2019.

defected from North Korea within the past 15 years, it focuses only on quantitative aspects of the built environment of North Korea in general. I specifically concentrate on the qualitative aspects of life within microdistricts, and the interviews are cross-referenced with document research and case studies. Interviews are conducted with former North Koreans who previously lived in microdistrict apartments and recently moved to South Korea. Through the interviews, cultures of microdistrict living and also discrepancies between the theory and actual lives in microdistricts are analyzed.

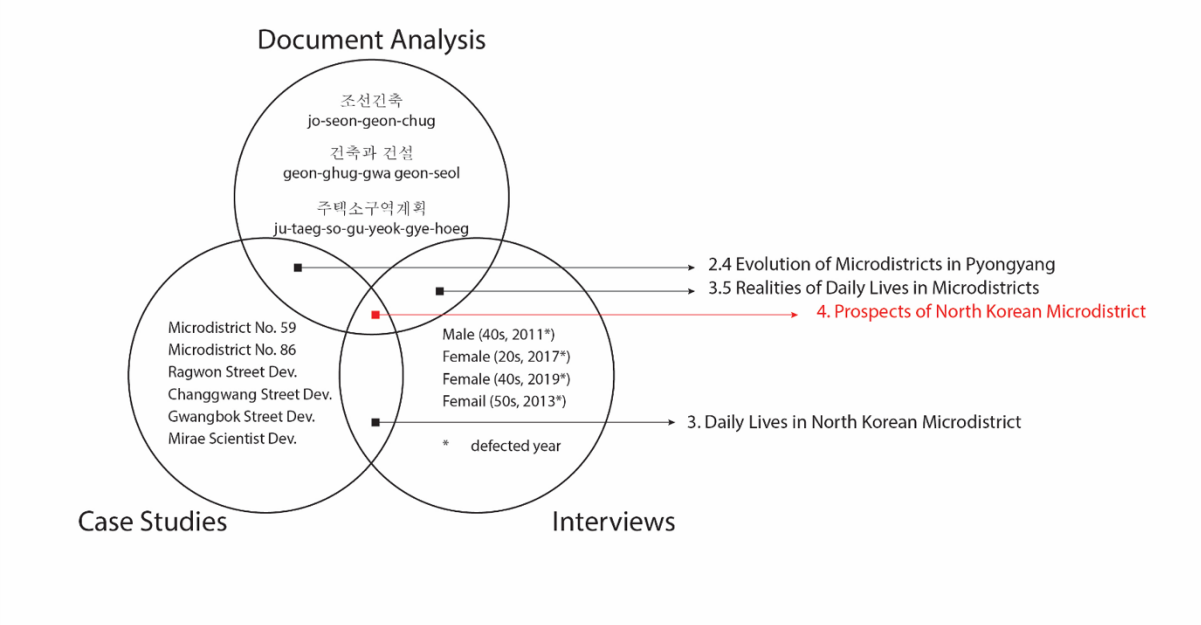

Figure 1 Diagram of Research Methods in the Research

Structure of Research

Chapter One is structured to understand the historical and theoretical background of North Korean microdistricts. This chapter briefly describes how socialist microdistrict theory originally emerged, explains how North Korea adopted socialist microdistricts in its history, especially during the reconstruction period after the Korean War (1950–1953), and analyzes the North Korean microdistrict guidelines, *Ju-taeg-so-gu-yeog-gye-hoeg*, published in 1963. In the chapter, I use document research method to analyze and understand North Korea's original microdistrict guidelines in order to juxtapose them with other case studies and daily lives of residents. Currently, there is very little literature directly analyzing the guidelines, and thus, document research is an important choice of research method.

Chapter Two studies six cases of microdistrict developments in Pyongyang from the 1950s to the 2010s. Pyongyang is chosen as the spatial scope for the case studies as it is the

capital and representative city of the nation wherethe government has continuously implemented major housing developments throughout its history. These case studies are based on major categories that the North Korean microdistrict guidelines emphasized, such as layout, size, school location, open spaces, and housing typology. In addition, unit layouts, heating systems, and construction methods are also studied to understand each era and case. The chapter also discusses the history of Pyongyang with a focus on its morphological evolution to understand the meaning of each microdistrict case study in relation to the city's major historical landmarks, thoroughfares, and boundaries.

While Chapter Two focuses on the physical conditions of North Korean microdistricts, such as their layouts, circulation systems, and open space compositions, Chapter Three discusses daily life in microdistricts. This discussion is centered around interviews with North Korean defectors who have lived in microdistricts in Pyongyang to understand how residents of microdistricts live, including how they attend school, shop for groceries, commute to work, and socialize with their neighbors. With the help of the Korea Institute for National Unification, four defectors were chosen as interviewees based on the criteria of their living experiences in Pyongyang and having defected within ten years prior to the interview date. The interviews were conducted through casual conversations based on prepared questionnaires which were not shared with the interviewees in advance, recorded, and transcribed.

Chapter Four suggests revising microdistrict guidelines, based on lesson learned from the microdistricts, as an urban housing model reflecting key features of socialist microdistrict concept while responding to current market needs that emerged when the nation started to adopt a market-oriented economy in the early 2000s. Socioeconomic changes and physical urban transformations are discussed along with the resulting changes in North Korean microdistricts to understand why the original microdistrict features are being lost in recent housing developments in the country. Rather than considering this gap between the market needs and microdistrict theory as an unresolvable discrepancy, the chapter suggests that these two factors can both be reflected in a new microdistrict model. Design, here, is the primary research strategy. As Hauberg argues, research might be conducted in ways otherthan words, especially in architecture where scientific and artistic cognition co-exist.[78] In architecture, design proposals can be considered a research strategy when they expand our knowledge and understanding by conducting an original investigation in and through creative processes.[79]

[78] Hauberg, H. Research by design : a research strategy . Architecture & Education Journal; n.5 / 2011.
[79] Ibid.

The proposal for new guidelines will expand our understanding of microdistricts beyond what can be explained in words.

Finally, the conclusion discusses how relevant microdistrict is to the current urban development model and the contribution of this research to urban studies and approaches to housing. s mentioned above, some microdistrict concepts remain valid and are similar to many urban development models aimed at creating more sustainable cities, such as the 15-minute city. Not only do the guidelines outline these concepts, but interviews with residents of microdistricts also highlight the advantages of the microdistrict concept in the current context. Also, prior research on North Korean microdistricts is limited to historical analysis, the narration of recent changes, or real-estate economic analysis. This research fills the gap between these by analyzing discrepancies between design theory and microdistrict daily life and proposes a new microdistrict model that addresses the limitations of the original model and current economic conditions.

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Chapter 1: Microdistricts in North Korea

1.1 Socialist Microdistricts

Microdistricts, residential complexes that constitute the primary unit of a city, were first developed in the Soviet Union. After the success of the Russian Revolution in 1917, the Soviet Union was founded in 1922, and the nation's major cities grew quickly in the 1920s. As the socialist revolution originated in the late 19th century, when the living conditions of the working class were dire due to rapid urbanization, socialists had to address the fundamental question of the quality of life of working-class people.

Rapid industrialization in the 19th century made the overall living conditions in cities extremely poor. Unprecedented numbers of people moved to cities from rural areas to find new jobs in factories, which caused a housing shortage. Working-class people in particular mostly lived in obsolete neighborhoods that lacked modern infrastructure. Therefore, addressing these side effects of urbanization was a crucial issue not only for socialists, but also for architects and urban planners in general in the late 19th century and early 20th centuries. Well-known proposals, such as the garden city movement of Ebenezer Howard or the Cité Industrielle of Tony Garnier, addressed the same issue caused by the rapid urbanization.

In fact, the above theories influenced socialist urban planning. During industrialization, as the city was considered a place that attracted the rural workforce—thought to be the main supporting class of socialist ideology—socialists insisted that a city must not grow without limits. With the context, Howard's garden city movement matched socialist urban planners' ideas;[80] therefore, they used various sizes of green spaces as buffers to restrict the growth of the city and provide a hygienic environment for people.

Socialist urban planners also adopted ideas such as the Cité Industrielle that suggested intimate relationships between factories and residents.[81] As industrialization was new in human history, 19th-century cities did not have models that incorporated factories into the urban system. Therefore, a number of factories were built in cities without any systematic plan, which strongly affected the living conditions of the working class. With this in mind, socialist urban planners suggested that factories should be in direct proximity to residential

[80] Tizot, Jean-Yves. "Ebenezer Howard's Garden City Idea and the Ideology of Industrialism." Cahiers victoriens et édouardiens, no. 87 Printemps (2018). https://doi.org/10.4000/cve.3605.
[81] Wiebenson, Dora. "Utopian Aspects of Tony Garnier's Cité Industrielle." Journal of the Society of Architectural Historians 19, no. 1 (1960): 16–24. https://doi.org/10.2307/987962.

areas so workers could perceive the intimacy between living and working, which would eventually increase their quality of life.[82]

Figure 2 Transforming Moscow into a Model Socialist City of the State Proletariat by Aleksandr Dejneka, 1931[83]

Along with these efforts to secure the quality of life of working class-people, socialist urban planners and architects also suggested a new model of housing complex, partly because of the ideology of creating a community, but mainly to provide a decent living environment for working-class people. As socialists emphasized the community rather than the single-family house unit, this residential complex was considered the primary unit of a city; this is why it was called a "microdistrict." Thus, communities were thought to need a variety of amenities, such as daycares, schools, parks, or stores, along with residential units.

In fact, there was "quarter" before microdistrict concept evolved. Fedchenko argues that evolution of the quarter resulted in microdistrict concept later.[84] In the 1920s, stone

[82] Bertaud, Alain. "Cities without Land Markets: Location and Land Use in the Socialist City." Policy Research Working Papers, 1999. https://doi.org/10.1596/1813-9450-1477.
[83] This propaganda poster shows adjacency between living and factory as the model of a socialist city
[84] Fedchenko, Irina G. "Humanistic Idea of a Micro-District in the XX Century." Journal of Siberian Federal University. Humanities & Social Sciences, vol. 5, 2012.

quarter houses for working class people began to replace former wooden houses which had obsolete spaces and sanitary system. The change came along with discussion about new idea of culture and everyday life. Working class people began to think outside of the box, which was confined by the obsolete structure, and discuss what is new mode of life and everyday life.[85] Soon after, quarter extension, which reflected new lives of working class, began to emerge. It was discussed that socialization of everyday life could be achieved through communal upbringing of children, communal dining, and the integration of individual living spaces with common areas. This new discussion brought in new programs, such as schools, communal kitchen, public space, kindergartens, and trading facilities, into the quarter extension (Fedchenko, 2015). Although new programs and spaces were adopted to quarter extensions, there was a strong need to develop a concept and guidelines to efficiently organize a well-developed system of public everyday services, which led to develop a microdistrict concept.

Kukina argues that professional community experimented from simple schemes of a microdistrict pattern to design of housing. He also insists that these experiments were improved along with the society's scientific and technical developments.[86] These experiments of microdistrict had chances to be widely applied during the Khrushchev's period in the 1950s through standardization of housing and its environments. At that moment, the most important socialist aspect, in regard to housing, was an equal waiting time for getting a new house from the government.[87] As Khan-Magometov insisted, the decline of environmental quality of residential areas stopped and started to grow during this period.[88]

If the 1940s was the experimental period of microdistrict concept and the 1950s was when the concept was applied widely, the 1960s was when design optimization of microdistrict housing started to occur. In this period, constructing cost effective housing was the main concern, and thus, there were a couple of physical changes in microdistrict housing in this period, such as, low ceiling height, merging toilet with bathroom, and smaller common facilities.[89] As many of these changes were made by the government decision without actual

[85] Fedchenko, Irina G. "Humanistic Idea of a Micro-District in the XX Century." Journal of Siberian Federal University. Humanities & Social Sciences, vol. 5, 2012.
[86] Kukina, I.V. Buffer Zones of Large Cities (Krasnoyarsk: Krasnoyarsk State Academy of Architecture and Design, 2006).
[87] Fedchenko, Irina G. "Humanistic Idea of a Micro-District in the XX Century." Journal of Siberian Federal University. Humanities & Social Sciences, vol. 5, 2012.
[88] Ibid.
[89] Ibid.

residents' voices, the residents of microdistrict became passive consumer and stopped being active creators of their environments.[90]

In the beginning of twentieth century, building a commune, as a model of government that prioritized collective form over individual, was important for socialist cities, and as part of the governing effort, providing elementary sanitary and hygienic devices through microdistrict was conducted.[91] In the period of urbanization, housing conditions, especially for working class people, got worse, and continuous demand to meet sanitary and hygienic comfort requirements increased.[92] Thus, not only replacing cheap and obsolete working class houses to new houses but also resolving sanitary and hygienic problems was one of the main challenges for microdistrict. Indeed, in the beginning, microdistrict was nothing more than providing a "survivable" environment.[93]

Afterwards, when the basic sanitary and hygienic problems were resolved, providing a humane environment meant that individuals equality and have equal access to their demanding places.[94] It did not only mean that daily amenities needed to be provided within a microdistrict so that individuals could have equal access to them but also meant that an individual unit should not be distinguished from others to achieve equality. In fact, this equal look went well with the concept of providing mass housing through pre-fab construction method especially in the post-war reconstruction period in the Soviet Union.

Thus, in microdistrict under the concept of commune, creating a community did not only mean people were living collectively. A collective living was already achieved in "quarters" before the microdistrict model. Creating a community in a microdistrict also meant communal education, communal childcare, and public catering.[95] It also emphasized commune's, the government's, role to resolve sanitary and hygienic issues through the physical aspects of microdistrict and argued socialism. And later, it reflected the concept of "equality" in socialism on the physical form of microdistrict.

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[90] Ibid.
[91] Fedchenko, Irina G. "Humanistic Idea of a Micro-District in the XX Century." Journal of Siberian Federal University. Humanities & Social Sciences, vol. 5, 2012.
[92] N.P. Krainyaya, "Residential Environment Crisis of the Largest Cities and New Tendencies in its Development", Academia, 2 (2009).
[93] Fedchenko, Irina G. "Humanistic Idea of a Micro-District in the XX Century." Journal of Siberian Federal University. Humanities & Social Sciences, vol. 5, 2012.
[94] N.P. Krainyaya, "Residential Environment Crisis of the Largest Cities and New Tendencies in its Development", Academia, 2 (2009).
[95] Ibid.

The microdistrict idea was highly comparable to the neighborhood unit concept of Clarence A. Perry, which was first proposed in 1929. In this concept, a church, an elementary school, and a civic facility comprised the community center, and these amenities were within walking distance in neighborhoods. The neighborhood compound was bounded by main highways, and inner streets in the compound were not wider than the width required for the service amenities to keep the pedestrian environment safe. A certain portion of the area was designated for parks and recreation areas, while commercial stores were located close to the main highways that bordered the compound.

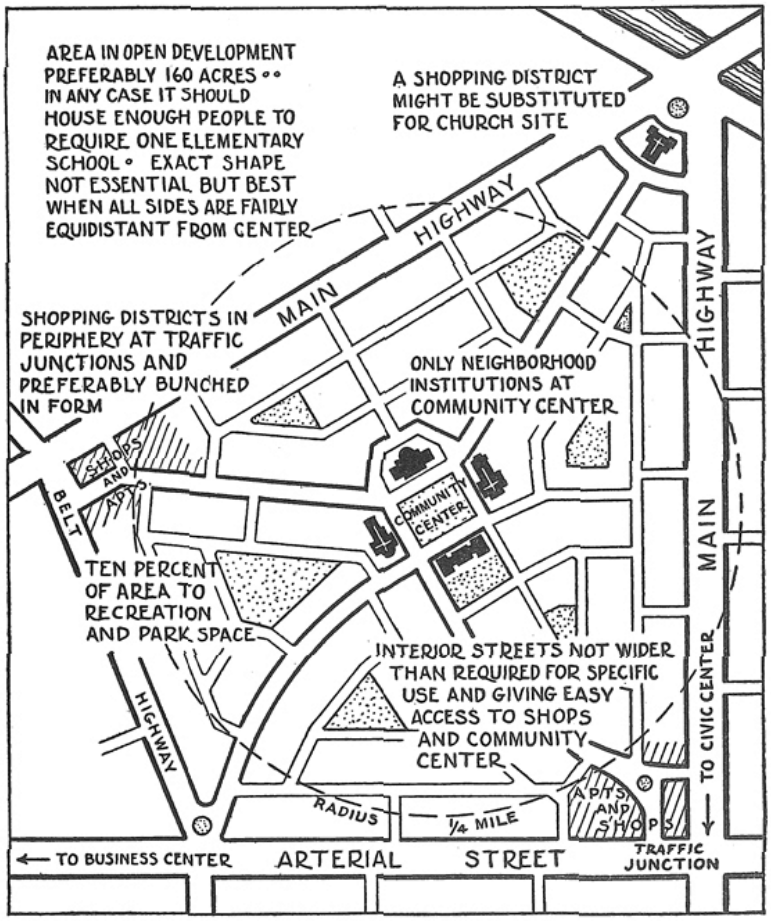

Figure 3. Diagram of Clarence Perry's Neighbourhood Unit [96]

Although the neighborhood unit concept was proposed as a suburban housing model in the United States, it had much in common with the socialist microdistrict theory; both addressed the question of how to provide better living conditions. As an urban housing model, a microdistrict also meant that basic amenities for living and enough open spaces would be

[96] New York Regional Survey, Volume 7, 1929.

provided with dwellings, and residents would have equal access to them. The size of a microdistrict was set at around 20 hectares, with 3,000–8,000 inhabitants supporting one elementary school within walking distance. Later, the size of the microdistrict increased to 80 hectares in some cases. Nonetheless, the main idea of providing supporting amenities and parks in the microdistrict was maintained throughout the period.

However, there was a fundamental difference between microdistrict and neighborhood unit concept, lack of property ownership. From the beginning of socialism, Marx and Engels argued that public ownership of land, especially in the rural areas, and communal farming could make the form of society much more progressive than the society where farmers work individually.[97] After the Russian Revolution (1917-1923), it was directly translated into public ownership or state ownership system that implied all surplus product, including land, is publicly owned in the form of a social dividend. Furthermore, as the government controlled all the developments, there is a lack of concept for property or plot in socialist cities. Instead of setting a land use zoning code, in the socialist cities, the government decided what to put and where to put them in the city. In a way, it worked efficiently during the post-revolution period when massive housing stocks must be provided. However, as it was provided by one entity, it could not help but having more homogeneous development in both architectural look and program.[98] For instance, unlike the Neighborhood Unit diagram that only suggests scales of neighborhood and allocations of programs, microdistrict guidelines suggest actual housing typologies within the block assuming that they can be controlled by a single entity.

Figure 4 Example of Lack of plot concept in Pyongyang, North Korea.[99]

[97] Engels, Frederick Engels "Russia and the Social Revolution," Volksstaat, 21 April, 1875
[98] Yim, D. (2019). Rise and fall of the Microdistrict in Pyongyang, North Korea. European Journal of Korean Studies, 73–85. https://doi.org/10.33526/ejks.20191901.73
[99] A new sallimpjip was constructed on existing road, disconnecting existing road connections.

A microdistrict is always understood as a compositional system. A single microdistrict consists of three or four “basic living,” which is the smallest system and consists of housing, a dining facility, green space, a nursery, and a kindergarten.[100] The “basic living” can hold up to 2,000 inhabitants, while the microdistrict can contain up to 8,000. In the microdistrict, an elementary school is included; this is also the case in the neighborhood unit theory, which proposed that a neighborhood’s boundary was formed based on an elementary school’s size and scale. At the next level of the scale, three or four microdistricts comprised a residential microdistrict, which contained middle and high schools, as well as larger parks for recreational activities.

The idea of the microdistrict was first widely applied in the 1920s and the 1930s and accompanied the rapid urbanization in cities in the Soviet Union after the revolution. However, it was not until the 1950s that the microdistrict was constructed on a massive scale and with unprecedented speed. During his regime after Joseph Stalin’s death in 1953, Nikita Khrushchev emphasized the speed of housing construction to address the severe lack of housing after World War II. The so-called Khrushchyovka, a prefabricated and low-cost construction, was developed during this period, leading to an increase in the supply of housing.

Similar trends occurred in other socialist countries in the post-war period. As most European cities suffered from insufficient housing after the war, they had to adopt a rapid supply model for housing developments; in socialist countries, this is when the Soviet microdistrict model was widely adopted. For instance, East German post-war reconstruction approach was inspired by Nikita Khrushchev's model in the Soviet Union and was formalized at the first Building Conference in East Berlin in 1955, which proposed the "industrialization of the construction industry."[101] Kombinate, state-owned companies that both designed and constructed housings then, focused on standardization of housing and introduced “die Platte (the slab)” for mass housing construction in their first development in Hoyerswerda, which begun in 1957 for 50,000 inhabitants.[102] This prefab and mass-construction method had become the only technique in construction industry in East Germany during the post-war

[100] Wallenwein , Fabienne. “The Housing Model Xiaoqu 小区: the Expression of an Increasing Polarization of the Urban Population in Chinese Cities,” 2013.
[101] Urban, Florian. “Large Housing Estates of Berlin, Germany.” Housing Estates in Europe, 2018, 99–120. https://doi.org/10.1007/978-3-319-92813-5_5.
[102] Ibid.

reconstruction. These flats provided more than 30% of the East German population with modern infrastructure, such as central heating and water supply.[103]

This wave of microdistricts in socialist countries did not remain solely in the European context. In China, the Soviet microdistrict theory was implemented in the urban context in the mid-1950s. "*Xiaqu*," a literal translation of "microdistrict," became the basic unit of modern Chinese cities. As Shui Yayou argued in his article in the *Architectural Journal* in 1962, the *xiaoqu* was a basic unit of urban housing construction and had relatively complete cultural and living welfare facilities.[104] Meanwhile, Sam Jacoby argues that "*Danwei*," which literally means work-unit, was the concept that was first developed in the 1950s and later was developed as "*Xiaqu*" after the economic reforms in 1978.[105] However, creating community by providing inhabitants' necessary facilities within residential compounds are clearly seen in both concepts.[106]

1.2 Microdistricts in North Korea

Microdistricts in North Korea emerged in the 1950s after the Korean War. Even though the nation was founded in 1947—after the Japanese colonial era, which ended in 1945—it was not until the end of the Korean War that the nation adopted the idea of the microdistrict. After gaining independence, North Korea began removing traces of the colonial period in all areas, including its built environment, and the three years of the Korean War provided a unique opportunity for the nation to reset its physical environment and build socialist cities from scratch. As part of its effort to construct such a city and to respond to the post-war housing shortage, North Korea adopted the Russian microdistrict theory during its reconstruction period in the 1950s. As in many other socialist cities after World War II, the microdistrict was well-suited to North Korea because it suggested the most economical solution in mass housing developments, then the most urgent issue in the nation. In this period in particular, many major socialist countries aided North Korea in its reconstruction, and the microdistrict theory was naturally embedded in the city planning of architects and engineers from other socialist countries. After the first wave of post-war reconstruction, North Korea

[103] Nipper, Josef. "The Transformation of Urban East Germany since the 'Wende' : From a Socialist City to a .... ?" Hommes et Terres du Nord 4, no. 1 (2002): 63–74. https://doi.org/10.3406/htn.2002.2826.
[104] Wallenwein , Fabienne. "The Housing Model Xiaoqu 小区: the Expression of an Increasing Polarization of the Urban Population in Chinese Cities," 2013.
[105] Jacoby, Sam, and Jingru (Cyan) Cheng. "Collective Forms in China: An Architectural Analysis of the People's Commune, Danwei, and Xiaoqu." The Socio-spatial Design of Community and Governance, 2020, 17–69. https://doi.org/10.1007/978-981-15-6811-4_2.
[106] Ibid.

started developing its own microdistrict guidelines in the 1960s, which then became the national standard for housing development. The guidelines accommodated North Korea's unique circumstances, such as topography and latitude, as well as the pedagogies of Kim Il Sung, the first leader of North Korea, regarding the city.

1.2.1 Constructing a Socialist City

North Korea, more specifically Pyongyang, was once known as one of the most well-built socialist cities in the socialist bloc. It is well known that, following his visit to Pyongyang in 1971, Nicolae Ceaușescu, the Romanian leader from 1965 to 1989, was impressed with the structure of the city and wanted to replicate it in Bucharest, which was damaged by the 1977 earthquake.[107] However, this story of course cannot prove that Pyongyang was an ideal socialist city, but it is reasonable to infer that it was one of few socialist capitals that had been built from the ground up. However, this applied not only to Pyongyang; most major cities in North Korea were heavily damaged during the Korean War and were reconstructed with a new socialist master plan.

During the Korean War, between 1950 and 1953, more than half of the urban infrastructure in major North Korean cities was destroyed, including in Pyongyang. The records show that 75% of the infrastructure in Pyongyang, 80% in Hamhung, 65% in Chungjin, 80% in Wonsan, and 95% in Sariwon was destroyed by air bombing.[108] These statistics are not surprising given that the United States used 630,000 tons of bombs, which is more than the 500,000 tons it used in the Pacific theater during the World War II period.[109] North Korea argues that the Korean War destroyed about 8,700 factories, 5,000 schools, 1,000 hospitals, and 600,000 homes.[110]

When the war ended, Kim Il Sung, the first leader of North Korea, took active steps to reconstruct the nation. In fact, his plan to rebuild based on socialist ideology started during the war. For instance, Kim asked Kim Jung Hui, an architect who was studying in Moscow, to draw a reconstruction plan in 1951. Kim was one of only 30 people in North Korea who had

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[107] Scarlatoiu, Greg. "Romanian Perspectives on Korean Unification: Regime Change and the Romanian Precedent." International Journal of Korean Studies, October 2016.

[108] 김태우. 폭격: 미군의 공중 폭격 기록으로 읽는 한국 전쟁. 경기도 파주시: 창비, 2013 Gim-tae-u. Pog-gyeog: mi-gun-ui gong-jung pog-gyeog gi-log-eu-lo ilg-neun han-gug jeon-jaeng. gyeong-gi-do pa-ju-si: : Changbi, 2013. (Understanding the Korean War through records of American airstrike)

[109] Foot, Rosemary. A Substitute for Victory: The Politics of Peacemaking at the Korean Armistice Talks. Ithaca, NY: Cornell University Press, 1990.

[110] N/A. The Three Year PlanKyŏngje kŏnsŏl [Economic Construction], September, 1956. 5-6.

architectural education during the colonial period,[111] and in 1947, he went to Moscow as a national scholarship student. As one of the elite architects of North Korea, Kim played a major role in drawing the *Pyeong-yang-teug-byeol-si gae-geon-jong-hab-gye-hoeg-lyag-do (평양특별시 개건종합계획략도)* the first reconstruction plan in 1951.[112] As the US Air Force caused major destruction in January 1951, Kim Il Sung quickly took steps to draft the master plan. During the war, many other socialist countries' leaders asked Kim Il Sung to relocate the capital from Pyongyang to another city because of the scale of destruction there. However, for Kim, this presented an opportunity for the nation to demonstrate a socialist victory by rebuilding a socialist city on the ashes of Japanese colonial traces and the feudalism of the Chosun Dynasty.[113] Therefore, Kim enacted his original plan to rebuild Pyongyang as a showcase of the socialist victory, and he pushed Kim Jung Hui to create a strategic reconstruction plan of Pyongyang to claim it as the capital even after the war. Even though Kim Jung Hui's initial master plan had become background of later master plan of the city, it was not until the war actually ended that Kim Il Sung began actively persuading other socialist leaders to support North Korea.

Figure 5. Reconstruction Plan of Pyongyang. Drawn in 1951 [114]

[111] 김일성대학발령건. 북조선인민위원회 교육국, 제 26 호, 국사편찬위원회 소장 자료. 1947. Gim-il-seong-dae-hag-bal-lyeong-geon. Bug-jo-seon-in-min-wi-won-hoe gyo-yug-gug, je-2-6-ho, gug-sa-pyeon-chan-wi-won-hoe so-jang ja-lyo. 1947.

[112] 리경심. 수령님께서 잊지 못해 하시는 건축가, 2, 8-11. 조선건축. Li-gyeong-sim. Su-lyeong-nim-kke-seo ij-ji mos-hae ha-si-neun geon-chug-ga, 2, 8-11. Jo-seon-geon-chug. (The architect who cannot be forgotten by the great leader) The plan was exhibited in North Korea Revolution Museum. 1992.

[113] 고유환. 사회주의 도시와 북한: 도시사 연구방법. 경기도 파주시: 한울 아카데미, 2013. Ko, Yu-hwan. Sa-hoe-ju-ui do-si-wa bug-han: Do-si-sa yeon-gu-bang-beob. Gyeong-gi-do Pa-ju-si: Han-ul A-ka-de-mi, 2013. (An Introduction to the Research of North Korean Cities)

[114] 정창현. "Vol.2 동향·정보 2." 한반도인프라포럼, April 29, 2021. Jeong-chang-hyeon. teVol.2 dong-hyang-tbs-jeong-bo 2.te han-ban-do-in-peu-la-po-leom, April 29, 2021 https://kpif.or.kr/webzine/2021_04_m03_2.

Figure 6. 1953 Master Plan[115]

As soon as the war ended in July 1953, Kim asked a Soviet ambassador in Pyongyang whether the Soviet Union could assist in rebuilding North Korean cities and their industries. Kim also led a delegation to Moscow in September to define the terms of the aid. Kim's boldness impressed officials in Moscow, and the Soviet Union agreed to give aid to reconstruct major factories and institutions in the amount of one billion rubles (USD 250 million).[116] Other socialist bloc countries followed the Soviets' "fraternal" decision to assist with North Korea's reconstruction, such as China, East Germany, Poland, Czechoslovakia, Romania, Hungary, Bulgaria, Albania, Mongolia, and North Vietnam.[117] Starting with the

[115] Yim, Dongwoo. P'yŏngyang kŭrigo P'yŏngyang Ihu: P'yŏngyang Tosi Konggan E Taehan Tto Tarŭn SIGAK, 1953-2011 = Pyongyang and Pyongyang after Urban Transformation Program, Scale, Structure. P'aju: Hyohyŏng Ch'ulp'an, 2011.
[116] Russian State Archive of Contemporary History (RGANI), f. 5, op. 28, d. 412, 170-72; Bernd Schafer, "Weathering the Sino- Soviet Conflict: The GDR and North Korea, 1949-1989," CWIHP Bulletin 14/15.
[117] (The relations between Poland and North Korea in 1948–1961 Sylwia Szyc.)

Soviet Union, Kim put actions in other socialist countries. In November 1953, Kim sent Minister of Commerce Ri Ju-yeon to Eastern Europe to seek economic aid, and as a result, they all agreed to participate in reconstructing North Korea both directly and indirectly.[118] The total monetary aid from Eastern European countries was nearly 1.147 billion rubles (USD 286.75 million) over 10 years,[119] which exceeded the Soviet Union's contribution.

Of course, China was another major party that played an important role in the reconstruction of North Korea. Unlike the Soviet Union and Eastern European countries that helped North Korea rebuild its industries, China helped North Korea with supplies, such as 130,000 tons of grain, 40 million meters of cotton cloth, 600,000 pairs of shoes, and 300,000 pieces of winter clothes.[120] In addition to material supplies, Chinese People's Volunteers (CPV) provided a labor force during the reconstruction. Nearly half a million CPV worked to reconstruct 881 public spaces, 45,412 rooms in private homes, 4,263 bridges, 429,220 meters of dams, and 1,218.71 kilometers of ditches and canals before leaving in 1958.[121]

According to Amstrong, the post-war reconstruction in North Korea was the first and only time when the Soviet Union, Eastern European countries, China, and even Mongolia cooperated on multilateral development projects.[122] Trade Ministry documents show that exactly one-third (33.3%) of reconstruction aid came from the USSR, 29.4% from China, 37.8% from Eastern European Communist countries, while 0.5% came from Mongolia and North Vietnam.[123]

This fraternal effort among socialist countries was not confined to economic aid; it also included knowledge exchange, or transcendent, in professional fields. Many engineers, including architects, from the Soviet Union, China, GDR, Hungary, and Poland went to North Korea after the war and lived there for years to work on the reconstruction. Many of them worked as consultants for North Korean engineers, but others were in charge of leading the planning process.

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[118] Russian State Archive of Contemporary History (RGANI), f. 5, op. 28, d. 412, 170-72; Bernd Schafer, "Weathering the Sino- Soviet Conflict: The GDR and North Korea, 1949-1989," CWIHP Bulletin 14/15.
[119] Ibid.
[120] RGANI f. 5, op. 28, d. 314, pp. 45-48. Other source indicates that fraternal aid consisted of 35 percent of North Korea's 1954 budget.
[121] Renmin Ribao, 31 March 1954, 1; 25 June, 3; 9 May, 1; 28 May, 1; 6 June, 1; 25 October 1957, 5; 31 October 1958, 3.
[122] Armstrong, Charles. "Fraternal Socialism: The International Reconstruction of North Korea, 1953–62." Cold War History 5, no. 2 (2005): 161–87.
[123] Ibid.

Table 1. Foreign assistance to the DPRK, 1953–60 (in million rubles) [124]

Total	879.3
USSR	292.5
Others	586.8
China	258.4
GDR	122.7
Poland	81.9
Czech.	61.0
Romania	22.0
Hungary	21.0
Bulgaria	18.7
Albania	0.6
Mongolia	0.4
North Vietnam	0.1

1.2.2 Adopting Socialist Microdistrict Theory in North Korea

As mentioned above, most cities in North Korea were heavily destroyed during the war. Therefore, Pyongyang and other major cities in North Korea had reconstruction plans in the 1950s. These plans were applied to each city through direct and indirect aid from other socialist countries. Major socialist countries gave large amounts of aid for North Korea's reconstruction, which included sending professional city planners and architects. Further, to efficiently distribute the aid, each country was asked to rebuild a designated city. For example, GDR took the leading role in reconstructing Hamghung, while Poland focused on Chungjin and China on Sinuiju. Of course, the Soviet Union led the effort in Pyongyang.[125]

Kim sought to match each North Korean city with a designated socialist country. For instance, he sent a letter to the Prime Minister Otto Grotewohl in 1954, mentioning their talks in Geneva, Switzerland, and asked him to take charge of reconstructing Hamhung.[126] GDR was also enthusiastic about this support, and the prime minister sent his son, Hans Grotewohl, to Hamhung as the director of Deutsche Arbeitsgruppe (DAG).[127] DAG was formed in 1955 and played a major role in reconstructing Hamhung for 10 years, until 1964, and Konrad

[124] Ibid.
[125] 고유환. 사회주의 도시와 북한: 도시사 연구방법. 경기도 파주시: 한울 아카데미, 2013. Ko, Yu-hwan. Sa-hoe-ju-ui do-si-wa bug-han: Do-si-sa yeon-gu-bang-beob. Gyeong-gi-do Pa-ju-si: Han-ul A-ka-de-mi, 2013. (An Introduction to the Research of North Korean Cities)
[126] Cited in Rüdiger Frank, *Die DDR und Nordkorea, 23*.
[127] Armstrong, Charles K. Tyranny of the Weak: North Korea and the World, 1950-1992. Ithaca, London: Cornell University Press, 2017.

Püschel, a former student at Bauhaus Dessau in the 1920s, served as urban planner of Hamhung and Hungnam until 1959.[128]

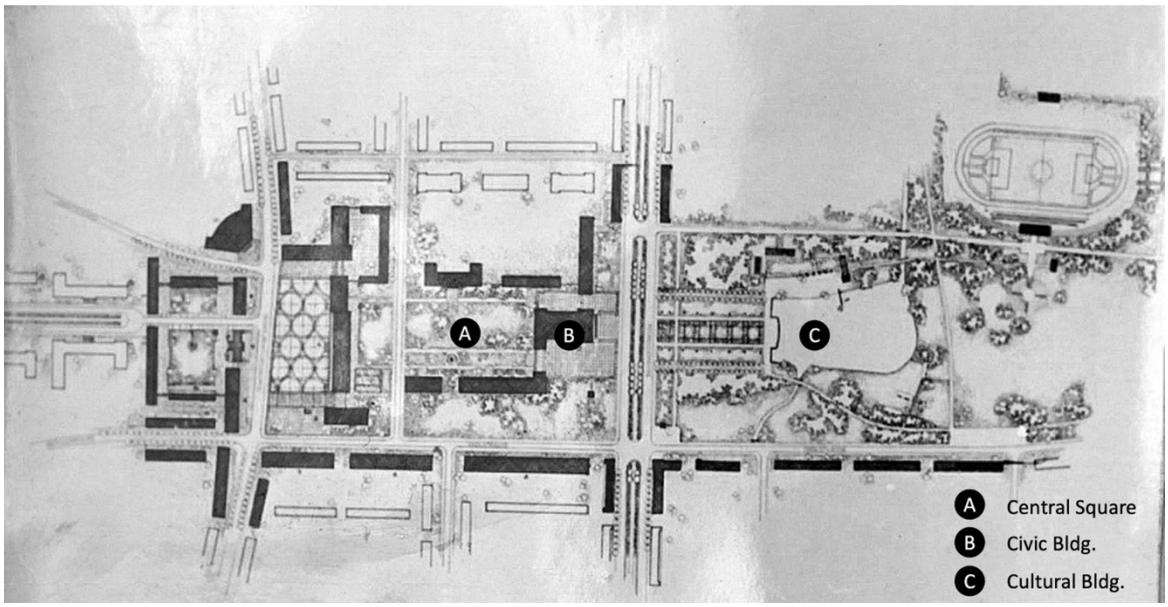

Figure 7. Central Square Design for Hamhung by Konrad Püschel [129]

Meanwhile, Soviet and Hungarian engineers helped in Pyongyang. In fact, as mentioned above, the original reconstruction master plan was drawn by Kim Jung Hui, an architect who was studying in Moscow when Kim Il Sung asked him to draw the plan in 1951. However, it is difficult to identify socialist urban planning ideas in this original master plan. It somewhat resembles the Japanese-drawn master plan of Pyongyang from the 1930s, during the colonial period.[130] The master plan had since been revised several times, and Soviet engineers were actively involved in the process. Eight Soviet engineers constituted a consulting group for Pyongyang; one stayed in Pyongyang for a year, and they took turns.[131] Hungarians also participated in the reconstruction of Pyongyang. The main square of the city, which was later named Kim Il Sung Square, was designed and developed by the Geon-seol-seong jung-ang do-si seol-gye yeon-gu-so (건설성 중앙 도시 설계 연구소, the Central Institution for Urban Design), the Geon-seol-dae-hag (건설대학, the University of), the Pyeong-yang-si in-min-wi-won-hoe (평양시 인민위원회, the People's Committee of

[128] Konrad Püschel *Paths of a Bauhäuslers: Memories and Views* Dessau: Anhaltische Verlagsgesellschaft mbH, 1997.
[129] Stiftung Bauhaus Dessau / © (Püschel, Konrad)
[130] Yim, Dongwoo. P'yŏngyang kŭrigo P'yŏngyang Ihu: P'yŏngyang Tosi Konggan E Taehan Tto Tarŭn SIGAK, 1953-2011 = Pyongyang and Pyongyang after Urban Transformation Program, Scale, Structure. P'aju: Hyohyŏng Ch'ulp'an, 2011.
[131] 김정희. 건축과 건설, 1, 1955. Gim-jeong-hui. Geon-chug-gwa geon-seol, 1, 1955 (Architecture and Construction)

Pyongyang), Jo-seon in-min-gun 583 gun-bu-dae (조선 인민군 583 군부대, the Chosun People's Army 583), and Hungarian architects.[132] Therefore, it was not strange to see Hungarian architectural styles on the streets of Pyongyang in the 1950s.

The Soviet Union also took part in drawing reconstruction plans for Kaesung.[133] Kaesung was part of South Korea before the War, and therefore, it avoided massive destruction from air bombing. For this reason, it still has the best-preserved traditional urban Hanok village from the early twentieth century. Just like in Pyongyang, Soviet architects and engineers were involved in a consulting group for the Central Urban Design Institute of Kaesung and played important roles in drafting the master plan of the city. Kim Jung Hui also noted that Soviet architects and engineers helped North Koreans by sharing architectural drawings, construction data, and technologies and mentioned that the recommendations their consultants proposed were crucial elements of the master plans.[134]

Apparently, these GDR, Soviet, and Hungarian professionals' involvement allowed North Korean cities to implement socialist urban planning strategies, including the microdistrict theory, for housing construction. In North Korea, housing development was applied more quickly than other socialist aspects because the socialist urban planning strategy was implemented as part of an effort to reconstruct cities after the war. As noted above, North Korea lost 600,000 homes during the war, and the most urgent goal of the reconstruction was to supply sufficient housing for people who lost their homes. Therefore, like many other Eastern European cities that focused on housing construction after World War II, North Korea also made the housing supply the highest priority in the nation's reconstruction. As a result, the goal of supplying 600,000 homes—the same number that it lost during the war—in the period between 1954 and 1960 was achieved earlier than planned. (Kim, 2018) The mass production of housing through the microdistrict plan was one of the keys to achieving the goal earlier than expected. In this period, the idea of the microdistrict was implemented through a series of housing projects, such as East Pyongyang Salimjip Plans No. 17 and No. 18, 1955), Hamhung Microdistrict No. 3 (1955), East Pyongyang Microdistrict No. 59 (1958), Hamhung Standard Microdistrict (1959), and Daetaryong Standard Microdistrict No. 87 (1959).[135]

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[132] 김정희. "평양시 김일성 광장의 건축적 구성에 대하여." 건축과 건설 2, 1956. Gim-jeong-hui. "Pyeong-yang-si gim-il-seong gwang-jang-ui geon-chug-jeog gu-seong-e dae-ha-yeo." Geon-chug-gwa Geon-seol 2, 1956. (About Architectural Composition of the Kim Il Sung Square)

[133] 천기철. "고도-개성시의 래일." 로동신문. April 17, 1955. Cheon-gi-cheol. "go-do-gae-seong-si-ui lae-il." Lo-dong-sin-mun. April 17, 1955. (Future of the ancient city Kaesung)

[134] 김정희. 건축과 건설, 1, 1955. Gim-jeong-hui. Geon-chug-gwa geon-seol, 1, 1955 (Architecture and Construction)

[135] Ibid.

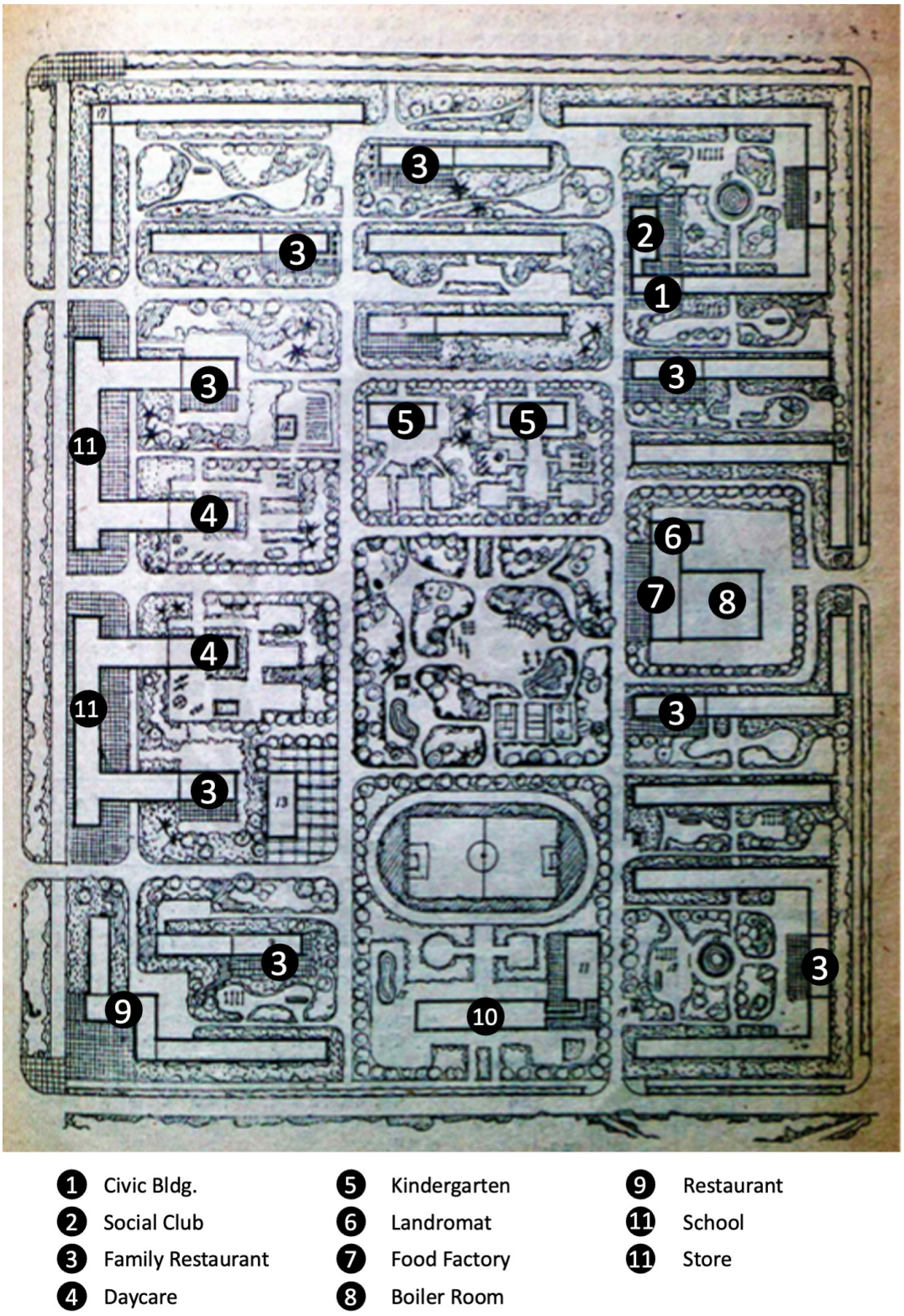

Figure 8. Daetaryong Standard Microdistrict No. 87[136]

[136] Kim, Min-A. "A Study on the Planning of Microdistricts in Post-War North Korea ," 2018.

1.3 Ju-taek-so-gu-yeok, the North Korean Microdistrict

After the initial phase of reconstruction in the 1950s, North Korea developed its own guidelines for microdistricts, called *ju-taek-so-gu-yeok*, in the 1960s. The term literally means residential (*ju-taek*) microdistrict (*so-gu-yeok).* One of the main reasons North Korea developed its own theory, although it is similar to the original microdistrict from Russia, is that the political geography had changed. After Stalin's death in 1953, Nikita Khrushchev took office. It is true that microdistricts were aggressively implemented throughout most socialist cities during Khrushchev's era; however, as the new leadership could not maintain the unity of the bloc as it had before, in this era, some socialist countries began developing their own theories, including North Korea.

The Sino-Soviet split, the political break between China and the Soviet Union, occurred in 1956 and Juche ideology, the self-reliance idea of North Korea that was advocated by Kim Il Sung. These changes of political geography among socialist bloc countries led to questions regarding the distribution of industrial roles among them. As part of this new atmosphere, China announced that it would use its own self-development model, one that did not depend on other socialist cities, and North Korea obviously followed suit. Advocating Juche Ideology, Kim Il Sung thought that those who returned from the Soviet Union advocated the Soviet method, while those who returned from China advocate the Chinese method. He insisted that North Korea needed its own Korean Revolution theory, Juche ideology, rather than following other nations.[137] For instance, as part of this conversation, North Korean students joined the Hungarian Revolution, an anti-Soviet revolution in 1956.[138]

Juche, which means self-reliance, was first used in 1955 during Kim Il Sung's speech at a propaganda event and officially announced as the state's ideology in 1972.[139] Kim Il Sung insisted that establishing Juche means the state should hold an independent position, rejecting dependence on others, displaying the revolutionary spirit of self-reliance, and thus solving one's problems for oneself on one's own responsibility under all circumstances.[140] The ideology not only emphasized an individual's independency but also insisted a society's own way of constructing its environment. There are three key aspects in Juche ideology, self-

[137] Kim, Il Sung. All for the Postwar Rehabilitation and Development of the National Economy. Pyongyang: Foreign Languages Publishing House, 1961.
[138] Hotham, Oliver. "When North Korean Students Joined the 1956 Hungarian Revolution: NK News." NK News - North Korea News, December 30, 2019. https://www.nknews.org/2017/01/when-north-korean-students-joined-the-1956-hungarian-revolution/
[139] Myers, Brian Reynolds. North Korea's Juche Myth. Busan: Sthele Press. 2015.
[140] Lee, Grace. The Political Philosophy of Juche. Stanford Journal of East Asian Affairs. Volume 3, Number 1, Spring 2003.

reliance, creativity, and self-consciousness, and in architecture and construction, these aspects are translated into reflecting socialism to nationalism. The Juche ideology became the background theory in North Korean architecture to develop nationalistic style in modern buildings. As Juche ideology is based on the idea of combining socialism and nationalism together, pursuing the nationalistic style was considered not as replicating the old but as achieving socialism in architecture. In this case, reflecting socialism in architecture means that the design is rational, effective, and scientific.

Figure 9 Pyongyang Grand Theater (built in 1960)[141]

Just as Juche ideology is based on Marx-Leninism along with emphasis on being independent from it, North Korean microdistrict is also based on the Soviet Union's model with reflection of unique domestic questions. In microdistrict, socialism is the overall guideline of microdistrict and nationalism is contextual elements needed to be considered in planning, such as climate, topography, and traditional culture. In short, Juche ideology not only provoked North Korea's desire to write its own microdistrict guidelines as part of self-reliance concept but also pushed the guidelines to reflect local conditions more carefully in microdistrict planning.

[141] In North Korea, nationalistic style in architecture emerged in late 1950s and early 1960s when Juche ideology was spreading.

As part of this change, Kim Il Sung insisted that North Korea had to expand its production of machines to realize its self-development model, and in the meantime, urgently needed machines or facilities were to be imported from overseas instead of importing products made by them.[142] This affected the development of housing construction in North Korea in the late 1950s and 1960s. As housing construction was conducted through mass construction, a prefab construction method was developed, and it required precast concrete factories. In the Soviet Union, mass housing construction was conducted during the Khrushchev era, as the capital city's population was twice what its housing stock could hold, and five-story Khrushchyovkas emerged to house tens of thousands of people who had suffered the housing crisis during the Stalin era.[143] As part of Juche ideology, in the late 1950s, North Korea began importing precast concrete factory machines from the Soviet Union, which dramatically increased the speed of housing construction. (Kim, 2018)

Based on a North Korean report, a unit was built every 14 minutes, which was often referred to as Pyongyang Speed.[144] This speed could be achieved not only with the adoption of prefab construction itself, but also with a systematic approach to modular construction. The first prefab housing in 1956 had 127 different parts involved in construction, but in 1958, this was reduced to 30 parts.[145] These systematic approaches in industries allowed North Korea to meet a five-year economic development plan between 1957 and 1960 in two years.[146] After the first three-year economic development plan between 1953 and 1956 to help the nation's economy recover to the pre-war level, North Korea created another five-year economic development plan to address living, clothing, and eating. The goal was met before the planned deadline, and North Korea was thus convinced to pursue its own ideology, including regarding a microdistrict theory.

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[142] Kim, Min-A. "A Study on the Planning of Microdistricts in Post-War North Korea ," 2018.
[143] Byrnes, Mark. "The Disappearing Mass Housing of the Soviet Union." Bloomberg.com. Bloomberg, March 8, 2017. https://www.bloomberg.com/news/articles/2017-03-08/the-disappearing-mass-housing-of-the-soviet-union.
[144] "건설의 공업화." Essay. In 경제사전. 평양: 사회과학출판사, 1970. "Geon-seol-ui gong-eob-hwa." Essay. In Gyeong-je-sa-jeon. Pyeong-yang: Sa-hoe-gwa-hag-chul-pan-sa, 1970. (Industrialization of Construction)
[145] 리화선. 조선건축사 2. 평양: 과학백과사전종합출판사, 1989. Li-hwa-seon. Jo-seon-geon-chug-sa-2. pyeong-yang: gwa-hag-baeg-gwa-sa-jeon-jong-hab-chul-pan-sa, 1989.
[146] Kim, Min-A. "A Study on the Planning of Microdistricts in Post-War North Korea ," 2018.

Figure 10. Ju-taek-so-gu-yeok-gye-hoek Cover [147]

In 1963, Yi Soon-gon and Baek Wan-ki published 주택소구역계획(*Ju-taek-so-gu-yeok-gye-hoek)*, the North Korean planning guidelines for microdistricts. In general, it follows the microdistrict theory developed by Russian socialists in the 1930s. However, it also recognizes the specificity of North Korean conditions and emphasizes its Juche ideology as being independent of the Soviet Union. For instance, it explains that urban planning was formed in the Korean Peninsula starting in the ancient period and insists that the Japanese colonial period ruined people's lives by applying urban planning based on a strategy of exploitation that did not reflect Korea's cultural and social values. The guidelines use these historical contexts as background to contextualize the need for its own planning strategy for housing development. When the guidelines were released, North Korea had a seven-year

[147] Scanned image by author

economic plan to construct 600,000 homes in cities and another 600,000 homes in rural areas. Along with this housing supply, 350,000 sqm of service amenities, including stores, restaurants, nurseries, and kindergartens, were to be constructed. Therefore, this North Korean version of microdistrict guidelines were almost a must thing to have then to develop the nation as its own way after the post-war reconstruction period. For instance, 주택소구역계획(*Ju-taek-so-gu-yeok-gye-hoek)* states that unique topography and climate conditions need to be considered in North Korean microdistrict and they need to be reflected to orientations of residential buildings.

In the introduction of the guidelines, it indicates that the objective of the guidelines is to provide the most convenient housings for people during the first 7-year-development-plan, started in 1961. It emphasizes several aspects in microdistrict development; reflect characteristics of each region, avoid homogeneous look, develop satellite cities close to big cities, prevent concentration of population, use microdistrict as basic unit of urban development, and provide convenient and cozy, but economic, living environment for people.

The fact that the guidelines were published in 1963 does not mean that microdistrict theory had not previously been applied in North Korean residential development. In fact, the guidelines note some important lessons from the previous several years of microdistrict development in North Korea that were mostly adopted by socialist bloc architects and engineers and suggest localized types of microdistricts for the North Korean context and environment. The guidelines consist of four chapters: 1. the history of residential development in Korea, 2. the basics of urban planning, 3. microdistrict planning theory, and 4. residential district center planning. In the chapter 1, it addresses three periods in North Korean history, before, during, and after the Japanese occupation period. It analyzes traditional houses and their types before the Japanese occupation period and finds cultural factors in living, while criticizing urban planning and its urbanization problems occurred during the colonial period. Lastly in the chapter 1, it argues that during the reconstruction period after the war, North Korea eliminated obsolete and unreasonable urban structures developed in the colonial era and began to apply more economic and reasonable urban structures. For instance, it suggests a large scale microdistrict that could reduce the length of streets, and therefore, more cost effective.

Chapter 2 states the basics of urban planning. As the guidelines suggest that it should reflect the characteristics of each region, the chapter 2 focuses on understanding how the North Korea is structured by different scales of cities. It shows how North Korea controls the

height of buildings and their ratios depending on size of the city. For instance, only up to 50% of 4-5 stories buildings are allowed in the cities under 100,000 population, whereas up to 80% are allowed in the cities between 200,000 and 500,000 population. The chapter also emphasizes defining land use and categorizing them are important to provide better living environment for people, which was not successful during the colonial period, as it argues. Lastly in the chapter two, locations of residential areas are discussed. It points out what facilities and infrastructures, such as factories as workplaces, main roads connected to other areas, or major squares in cities, have to be located closely to residential areas. And based on these arguments, it categorizes three types of urban form in North Korean cities, circular city, linear city, and scattered city.

Chapter 3 is the main chapter that explains about planning strategies of microdistrict. It defines microdistrict as the basic unit that forms residential area within a city and it includes not only sites for residential buildings but also sites for cultural facilities, welfare facilities, gardens, and circulations. It argues that the general principals of microdistrict are, 1. Reflecting socialism by providing the most convenient living for people, 2. Planning a microdistrict in the most economical way in both construction and management, and 3. Making a microdistrict as a cozy and beautiful environment. The chapter also covers the scale, structure, layouts, programs, and so one, which will be discusses below.

The final chapter moves on to larger scale than microdistrict and describes about residential district planning. It argues that there are different levels of cultural and neighborhood living facilities. First is, obviously, the ones that serve people within a microdistrict, and the second one serves residential district level. Lastly the biggest facilities serve the whole city. It indicates that those facilities serving residential district, which mostly is composed with four to five microdistricts, include library, movie theatre, post office, grocery, hospital, and light industry factory.

In short, the guidelines addresse almost all aspects of the residential development process, from deciding on the physical size and inhabitant scale of the housing block to program distributions in relation to residential buildings. It does not address the unit plan of each house; however, it suggests types of residential buildings and discusses whether they should use a corridor-type or staircase-type layout. The guidelines provide a clear design strategy at the level of urban design for housing development, and the major points of the guidelines are discussed below.

1.3.1 The Scale of Microdistricts

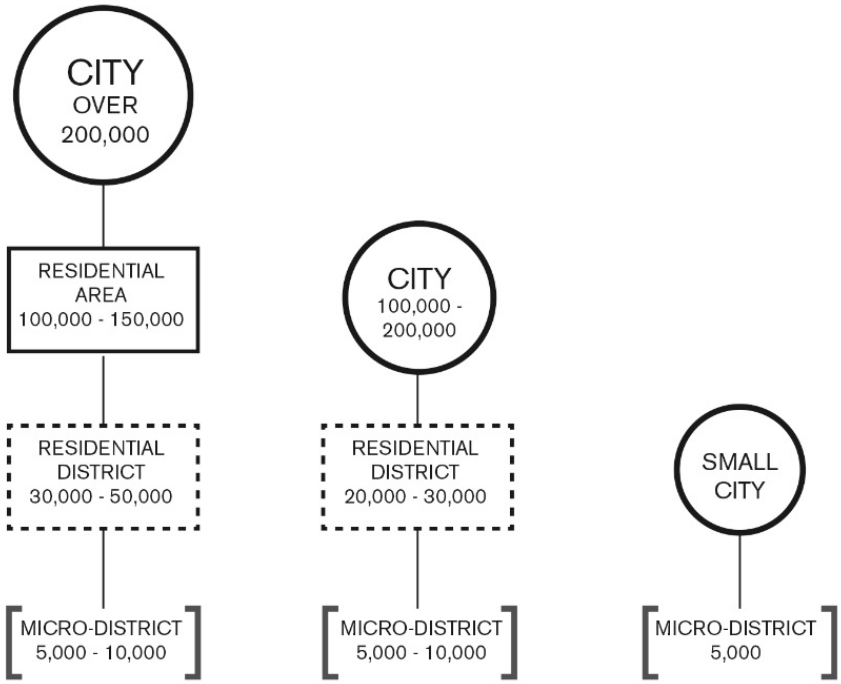

Figure 11. Structure of Microdistrict[148]

As the name indicates, a microdistrict is the basic unit that structures a city. Rather than being divided administratively, a socialist city is a combination of microdistricts. Microdistricts form a residential district; residential districts form a residential area; and the residential areas form a city. The main reason the socialist city is structured based on microdistricts is that it is important for socialist cities to pursue spatial equality, which means that the city should provide people equal access to their needs, such as commercial, cultural, or leisure spaces and facilities. Therefore, structuring the city using microdistricts as a basic module distributes such programs in the district so that people have equal access to them, and this is one way to realize the concept of spatial equality. In microdistricts, residential districts, and residential areas, programs are allocated based on the frequency of their use.

As the theory of microdistricts is based on accessibility to service amenities, their physical depends on walking distance. Each service amenity, such as a school, nursery, or store, has a limitation in distance called a service radius. For instance, the microdistrict guidelines suggest that schools have a service radius of 750 meters, while for nurseries, it should be under 500 meters. This means that students should be able to access their schools

[148] Yim, Dongwoo, Prokopljević Jelena, and Rafael Luna. Unprecedented Pyongyang. New York: Actar Publishers, 2016.

within 750 meters of where they live, and parents should be able to walk their children to nurseries located within 500 meters of where they live.

Nonetheless, the maximum service radius extends up to 1,000 meters; in general, the allowable walking distance should take less than 10 minutes. In the guidelines, walking speed is calculated at 4km per hour, which is about 650 meters per 10 minutes. The scale of a microdistrict is therefore defined by this measure. For a rough estimate, assuming that the microdistrict is a square, the area is about 20 hectares, and the longest distance between two points is 650 meters. This means that, no matter where a service amenity is located within the microdistrict, it should be possible to reach it within 10 minutes. Thus, the guidelines suggest that the optimum size of a microdistrict, though it may differ depending on the size of the city, should be 15 to 20 hectares in most major cities in North Korea.

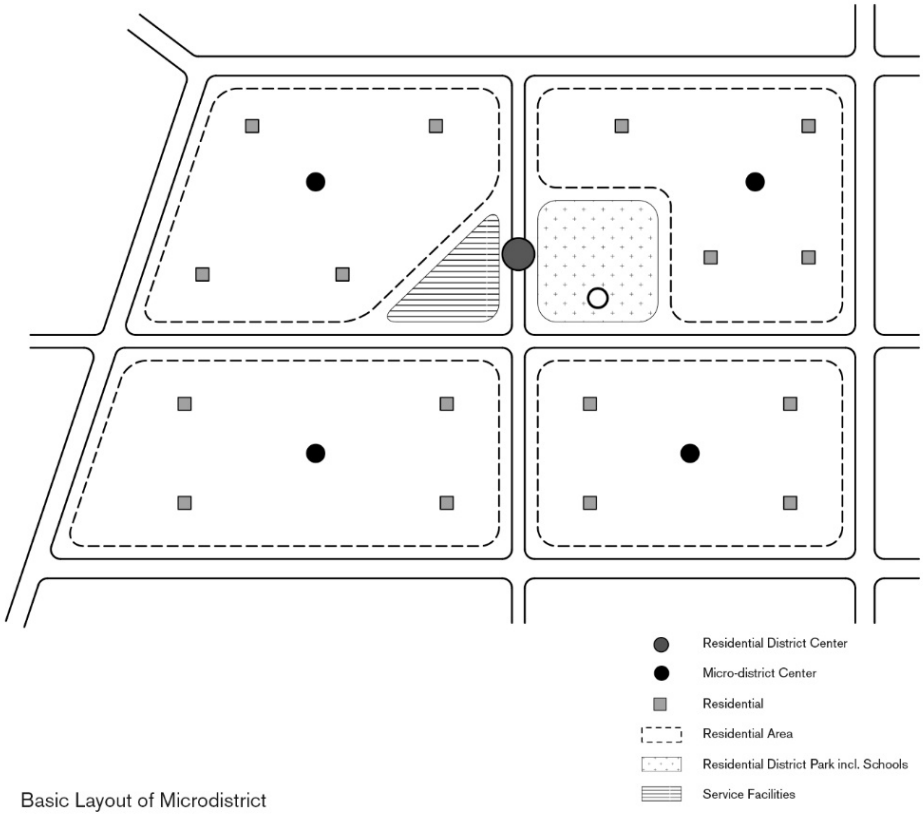

Figure 12. Basic Composition of Microdistrict [149]

Although 20 hectares is considered the optimal size for North Korean cities, cities such as Hamhung or Chungjin, which needed to adopt completely new residential complexes

[149] *Ibid.*

for their expansion, or cities such as Kaesung, which needed to keep the existing fabric, had larger microdistricts. These could be up to 35 hectares, or 600 square meters. In this case, service amenities were to be distributed inside the district rather than at the perimeter so that the service radius to any amenity was no more than 650 meters.

Walking distance is one of the most crucial factors to determine the size of a microdistrict. However, the guidelines indicate that the microdistrict should be of a certain size to include the necessary programs. For instance, if only the construction costs of infrastructure are considered, such as those for a water line or heating plant, the most economically sized microdistrict would be under 10 hectares. This size would provide a much shorter walking distance than a 20-hectare microdistrict. However, in this case, due to restriction of its size, the microdistrict would not be able to contain the necessary service amenities. Therefore, even though walking distance or economic construction costs are important factors, according to the definition, microdistricts must include a variety of service amenities, and their scale is defined as being between the minimum size needed to include those amenities and the maximum size determined by walking distance.

Figure 13 Microdistrict in East Pyongyang drawn by author

Another value that affects the size of a microdistrict is the height of residential buildings and their density. To sustain a microdistrict, a certain number of inhabitants is

needed. For instance, a school cannot be sustained effectively with too few students, who would require only a handful of class rooms. In this case, more students should be counted to sustain the school, which means that either the area of the microdistrict or its density must increase. However, as the area is bound to the walking distance, the only way to increase student population is to increase density by creating taller residential buildings.

Even though a microdistrict is the basic unit of a city, it consists of several residential groups. However, as these residential groups are housing compounds only and do not include other public programs, a microdistrict, which provides access to public programs as well as infrastructure, is still considered the basic unit of a city. Each residential group has about 1,000-1,500 or 2,000-2,500 residents, and four to five groups are combined around a service center to comprise a microdistrict.

Table 2. Microdistrict Size Proposal for Each City [150]

	City	Size of microdistrict (ha)	Inhabitants	Etc.
1	Pyongyang	15-20	5,000-6,000	Some microdistricts have more than 10,000
2	Hamhung	15-35	5,000-10,000	Some are 20-35 ha with 10,000-12,000 inhabitants
3	Chungjin	15-18	5,000-6,000	
4	Wonsan	20	5,000-9,000	
5	Sariwon	12-15	3,000-9,000	
6	Shinuiju	12-16	3,000-4,000	
7	Kaesung	17-53	6,000-15,000	
8	Kanggye	15-16	3,800-7,000	
9	Haeju	18-28	4,000-9,000	
10	Hyesan	15-26	4,000-8,000	
11	Songrim	13-15	3,000-4,000	
12	Nampo	15-25	5,000-8,000	

[150] 리순건, and 백완기. 주택소구역계획. 평양: 국립건설출판사, 1963. Li-sun-geon, and Baeg-wan-gi. Ju-taeg-so-gu-yeog-gye-hoeg. pyeong-yang: gug-lib-geon-seol-chul-pan-sa, 1963.

13	Kimchaek	15-20	4,000-7,000	
14	Shinpo	10-20	4,000-6,000	

1.3.2 Layout of Microdistricts

Layout is another important aspect of microdistricts, and residential buildings determine their overall structure. As a microdistrict is a unit that forms the larger structure of city, the layout of the microdistrict is determined not only by the relationship between residential buildings, but also by how a layout fits into surrounding context, including how it is perceived from outside the compound.

As the North Korean microdistrict was adopted as a tool to supply mass housing in a short time span, another crucial factor in compound layout was efficiency in construction. This concerned efficiency in terms of time as well as economic efficiency. As mentioned above, building a microdistrict also means creating the cityscape. Therefore, decisions about the layout of a microdistrict were made based on how it functioned internally and how it formed the urban structure and led to savings in cost and time during the city's reconstruction.

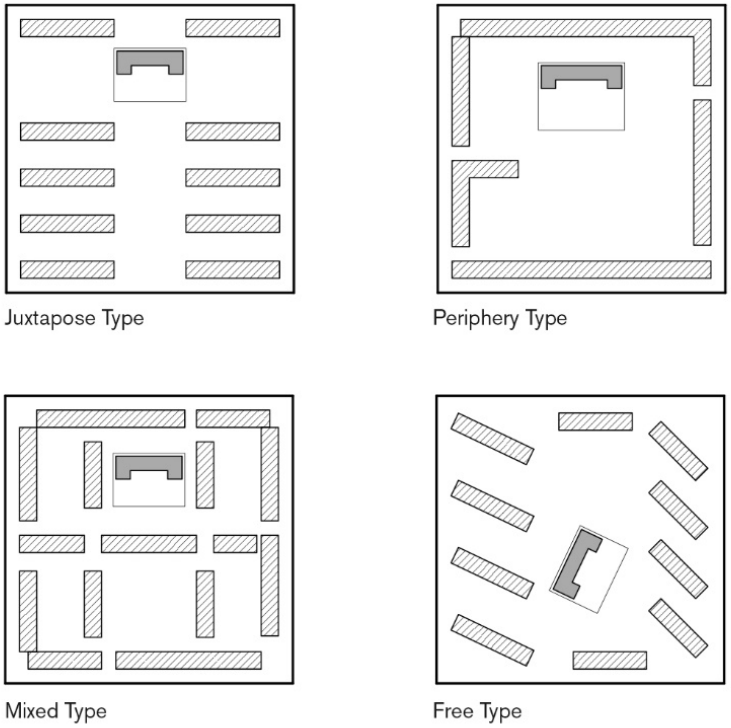

Figure 14. Four Layout Types of Microdistricts [151]

[151] Redrawn by author. 리순건, and 백완기. 주택소구역계획. 평양: 국립건설출판사, 1963. Li-sun-geon, and Baeg-wan-gi. Ju-taeg-so-gu-yeog-gye-hoeg. pyeong-yang: gug-lib-geon-seol-chul-pan-sa, 1963.

The guidelines suggest four types of layout for North Korean microdistricts: parallel, perimeter, mixed, and free. The parallel type was the most commonly used layout during the reconstruction period. In North Korea and in many other socialist counties, it was common because it is the easiest to implement; in contrast to the other layouts, only one residential typology is needed to delineate the compound. Therefore, it is easier to use the prefab construction method for this repetitive typology. The guidelines note that the advantage of this type is that it has better sun orientation than the other layouts. This is based on the assumption that the residential building is a single loaded-corridor type with a south-facing living room. Unlike Khrushchevka's plan, which has a staircase between two units, the parallel type suggests the single loaded-corridor type because of the sun orientation. This is considered an advantage because, in traditional Korean architecture, orientation towards the south was extremely important due to climate conditions. Therefore, it is not only an efficient type to build, but it also provides sufficient natural sunlight to each unit. However, its disadvantage is that it cannot form a communal open space surrounded by residential buildings. In microdistricts, communal open space is generally enclosed by buildings, such as a plaza or square in European cities, but in the parallel type, there is a disadvantage of forming such a space.

The second layout type is perimeter type; it is similar to block housing in many cities. The advantage of this type is its cost efficiency in constructing a city. In fact, the construction cost of a building would not be lower than with the other types. However, as mentioned above, North Koreans considered the microdistrict to be both a basic residential complex and a unit that forms the city. Therefore, the construction cost of a microdistrict concerns not only the building construction cost, but also that of the city. Further, this perimeter type allows them to form a perspectival view from surrounding boulevards, as the linear buildings at the perimeter of the microdistrict follow the lines of boulevards. Therefore, it is less necessary to add additional buildings or landscape features to form streetscapes. However, unlike the parallel type, the perimeter type has disadvantages in orientation. As the main residential buildings run parallel to the surrounding streets, instead of being orientated around the sun, some buildings on streets that run from north to south have east- or west-facing units. Even though the guidelines indicate that some cities located at higher latitudes should have west-facing units, as having enough sunlight during the winter is more important for them rather than heat gains during the summer, in general, west-facing units have historically been unpopular in the Korean Peninsula. Facing the streets causes another issue. Although linear

buildings following streets may create better streetscapes, units in those buildings are directly exposed to noise, dust, or vibration from the streets.

The mixed type was suggested to take advantage of the parallel and perimeter types and to minimize their disadvantages. As mentioned above, the perimeter type is cost efficient and has other advantages; however, most residential units are exposed to unpleasant elements from streets. Thus, in the mixed type, the parallel type is implemented in the compound interior so that those units, at least, would be protected from unpleasant elements. The advantage of this type is that it creates quiet inner courtyards that can be categorized based on their use. As two types are mixed, there should have been enough site area to apply this layout, but it was most commonly used in the 1950s. This was also because the first phase of reconstruction in the period began in flat areas, where grid structures were easily applied.

The last layout type is the free type, which does not follow either sun orientation or surrounding streets. This type was used when a geometric layout was not possible due to complicated topography or site conditions. Unlike in the 1950s, when the mixed type could be implemented on rather flat land, in the 1960s, sites with topography and atypically shaped sites were developed, and the free type was implemented in these conditions. Because the layout allowed buildings to respond to the topography or shape of the site, it was considered a cost-effective construction method. This type was used often in the 1980s, when residential buildings became taller than 20 stories, and they took on shapes that were more formal than a plain, rectangular box. Unlike the three other layout types, the free type has more freedom in the composition of buildings, and thus when the actual building shapes are not rectangular but rather curved or triangle-shaped, they are laid out freely, as they cannot be made parallel to elements such as streets, the orientation of the sun, or even other buildings.

These four layout types were widely applied in urban residential complex models. In rural microdistricts, the parallel type was often used in rural areas for residential buildings that were less linear, shorter, or not as formal as urban ones. In rural areas, there was less reason to create streetscapes; thus, a south-facing layout, which was the most important factor in the rural areas, was generally implemented.

Meanwhile, in urban areas, all layout types confronted the noise and dust from streets while still needing to allow enough daylight into each unit for hygiene. Therefore, when residential buildings were on and faced side streets and were set back a sufficient distance of five to 10 meters, landscape buffers were planned. Schools facing large streets had to be set back at least 20 meters. As mentioned before, for socialists, providing a better living environment was the most important criterion; therefore, such buffer zones or rules about

being set back were generously applied. The guidelines also suggested that daycares and kindergartens should be located inside compounds and never face large streets.

In addition, regardless of layout type, the guidelines clearly indicate that all residential units should have at least three hours of direct daylight throughout the year. This regulation sought to maintain a certain level of hygiene. As socialist urban planning emerged from witnessing poor hygiene conditions during the industrial era, increasing the quality of hygiene for living was crucial. Therefore, the guidelines recommend that all units face south or have a southeast orientation. The only exception, as mentioned above, was cities at higher latitudes because, in those regions, receiving sufficient daylight during the winter was more important than gaining heat during the summer.

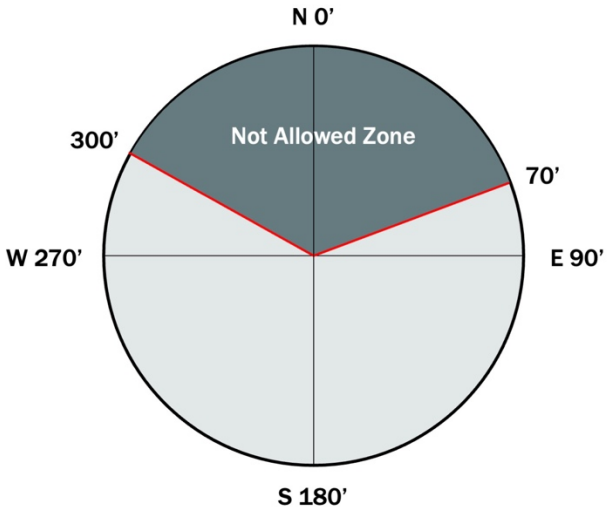

Figure 15. Orientation Allowance for Residential Buildings [152]

1.3.3 Greenspace/open Space

The guidelines specify that residential buildings' footprints should not exceed 20% to 25% of the microdistrict. In the modern standard, this footprint ratio is a model for rural rather than urban areas. In most modern cities, the footprint ratio is no lower than 60% in urban areas. Even though the socialist microdistrict theory was developed as an urban housing model, it clearly indicates that the building footprint should be minimized to provide enough open space in the compound.

[152] Redrawn by author. 리순건, and 백완기. 주택소구역계획. 평양: 국립건설출판사, 1963. Li-sun-geon, and Baeg-wan-gi. Ju-taeg-so-gu-yeog-gye-hoeg. pyeong-yang: gug-lib-geon-seol-chul-pan-sa, 1963.

In fact, some areas of Pyongyang, such as near the Botong River, had a building coverage ratio of higher than 80% before the war. By implementing taller apartments, a new microdistrict could reduce this ratio and provide more open space. This is because, although it is an urban housing model, the microdistrict was not meant to be a higher-density housing model. Socialists prevented a city with a large population and higher density that distinguishes itself radically from rural areas. Through various strategies and policies, socialist urban planning tried to abolish the gap between urban and rural areas. Thus, the microdistrict theory was to be applied as an urban housing model and avoid denser complexes. It designated enough open space to provide resting places for residents, as well as enough distance between residential buildings for each unit to have sufficient sun exposure.

Open space consisted of three elements: greenspace, playgrounds, and play fields. The guidelines suggest that greenspace should be about 40% of the total residential district. That amounts to 10 sqm per person in a two- to three-story area, 6 sqm per person in a four- to five-story area, and 4 sqm per person in a six- to eight-story area. Further, it had to be covered mostly with lawns and landscape features for both children and adults. The greenspace was meant for residents' hygiene and health, so it had to be located along residential buildings to create buffer zones between them.

There are three levels of greenspaces. The first is the ju-taeg-jeong-won (주택정원, residential garden), the smallest greenspace, which was located directly in front of residential buildings. The second is the ju-taeg-gun-jeong-won (주택군정원, residential group garden), which was a courtyard formed by a group of residential buildings. Finally, the so-gu-yeog-jeong-won (소구역정원, microdistrict garden) is the largest garden in a microdistrict and has enough facilities for adults to rest and for children to play.

Playgrounds, one of the open space elements, were implemented in greenspaces differently. For instance, playgrounds for children under 5 years old were to be located either in residential gardens or residential block gardens, as they were not to be farther than 300 meters from residential buildings. Meanwhile, playgrounds for those under 15 years old were meant to be located in microdistrict gardens, as they required more space.

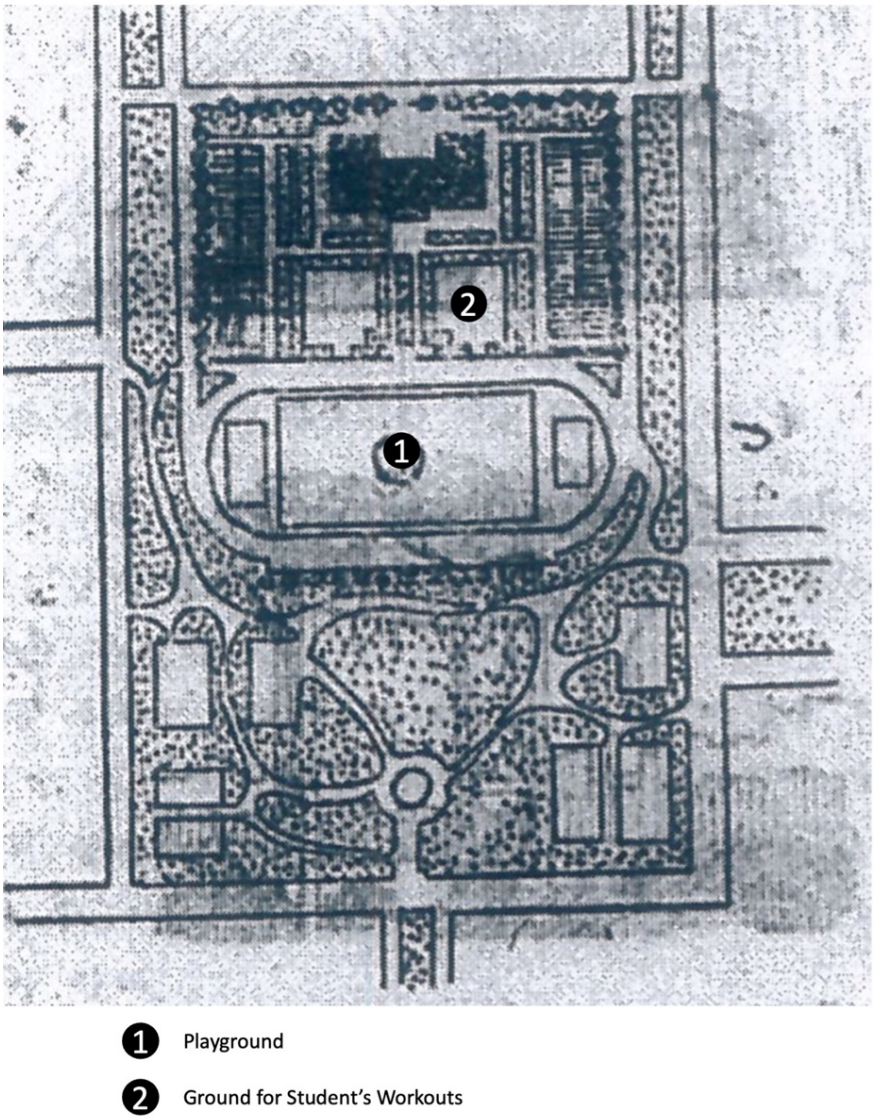

Figure 16. Open Space Plan in School Area[153]

Greenspace was used to create a buffer not only between residential buildings in microdistricts and unpleasant urban elements outside, such as noise, dust, or wind from streets, but also between buildings in the microdistrict. As microdistricts aim to create a sustainable community both socially and functionally, some undesirable facilities for residents are located within them, such as gas stations, storage, or light industry factories. In non-socialist cities, these necessary facilities are excluded from residential districts due to their undesirability. However, in microdistricts, they are placed in the district, as they are still essential. Therefore, the North Korean microdistrict guidelines insist that greenspace be

[153] 리순건, and 백완기. 주택소구역계획. 평양: 국립건설출판사, 1963. Li-sun-geon, and Baeg-wan-gi. Ju-taeg-so-gu-yeog-gye-hoeg. pyeong-yang: gug-lib-geon-seol-chul-pan-sa, 1963.

implemented between those facilities and residential buildings so that the quality of living environment remains sufficiently high.

1.3.4 Vehicle Circulation in Microdistricts

Even though the microdistrict is considered an urban module that forms a city, vehicle circulation within the microdistrict was limited. First, in a socialist city, the city government should provide enough public transportation so that people have equal accessibility to all urban amenities. Second, living and working should have a close relationship in terms of physical distance, leading to a lower need for vehicle movement. Sometimes, a microdistrict contained cottage industries or light industrial factories to allow imminent adjacency between work and living spaces. Finally, vehicles were considered undesirable for the living environment because of their noise and smoke; therefore, they were to be kept at a distance from living quarters. Vehicle circulation was not considered a higher-priority criterion than providing a better living environment. Therefore, the guidelines indicate that vehicle circulation should not interrupt residential areas or greenspace, and there should be no thru-traffic in a microdistrict.

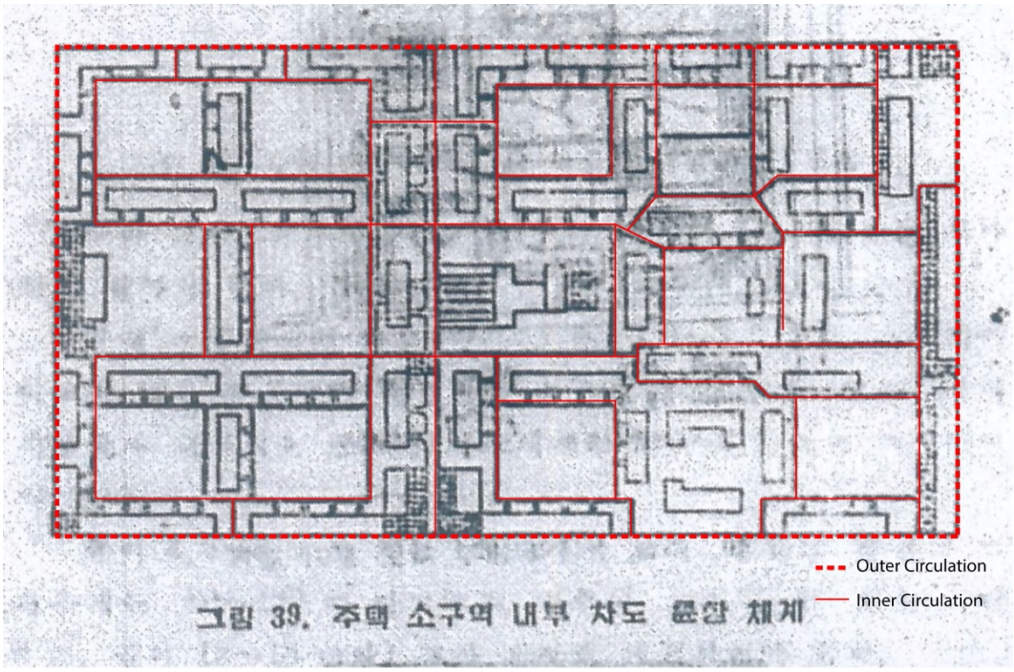

Figure 17. Vehicle Circulation in a Microdistrict[154]

However, vehicle circulation in the microdistrict would still be necessary—not because individual residents needed personal vehicles, but because facilities such as gas

[154] 리순건, and 백완기. 주택소구역계획. 평양: 국립건설출판사, 1963. Li-sun-geon, and Baeg-wan-gi. Ju-taeg-so-gu-yeog-gye-hoeg. pyeong-yang: gug-lib-geon-seol-chul-pan-sa, 1963.

stations, waste management, or daily product supply require access and circulation for large vehicles. Thus, minimum vehicle circulation to these facilities was planned but had to be clearly separated from pedestrian circulation. In addition, the inner vehicle circulation was to be separated from gardens, schools, kindergartens, and daycare centers so that the microdistrict remained safe and pleasant.

The guidelines suggest four types of vehicle circulation systems in a microdistrict: an inner circular system, an inner junction system, a direct access system, and a pass-through system. The inner circulation system has the best accessibility to each building; however, such systems quickly became too long and were thus not cost efficient. Aside from the construction cost, another disadvantage is that streets in such systems intrude between residential buildings and greenspaces, and children's safety decreases as streets become longer.

The second system is the inner junction system; it is similar to the inner circular system in that it has several access points to the inside of a microdistrict from adjacent streets, but, unlike the inner circular system, the inner junction system has junctions inside the district where vehicle circulation divides into several smaller streets. These split streets remain inside and do not connect with the main streets around the microdistrict, so few streets allow thru-traffic in the compound.

The third system concerns direct access from adjacent streets. This system can be considered efficient because it reduces the overall length of streets while having adequate accessibility to residential buildings. It can also be separated from greenspaces so that vehicles do not interfere with inhabitants. However, the increased number of access points to a microdistrict from adjacent streets may cause traffic issues on the main streets.

Finally, the pass-through system can be considered. However, this system was never suggested because it divides a microdistrict into three or four zones, which means that resident would have to confront vehicle circulation when accessing amenities. As this system is more traffic driven, it creates thru-traffic in the microdistrict, as well. It is also inefficient in construction, as the streets are generally longer.

Similar to layout types and open space rules, the main criterion of vehicle circulation is the environment's quality of living; therefore, vehicle circulation should not use a traffic-oriented solution but rather provide access to facilities with a minimum level of conflict with residential and open spaces. Sometimes. microdistrict gardens are used to prevent thru-traffic of circulating vehicles.

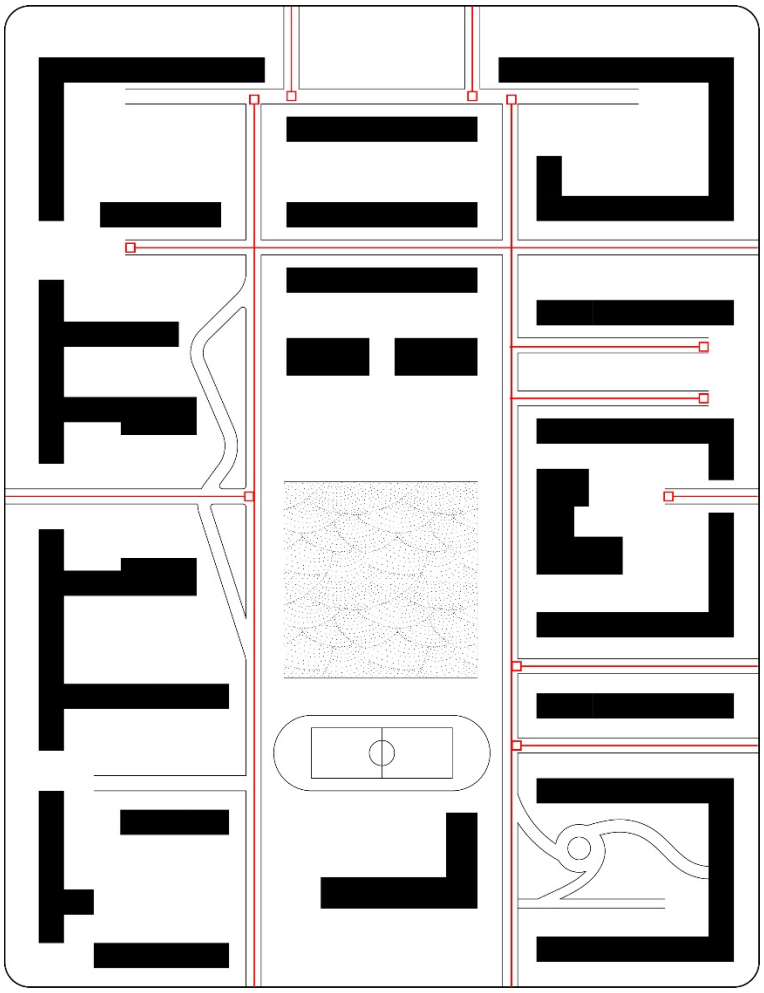

Figure 18. Vehicle Circulation Diagram shown on Daetaryong Standard Microdistrict No. 87 analyzed and drawn by author

1.3.5 Programs in Microdistricts

As microdistrict theory aims to create a sustainable community, it contains a variety of programs that are relevant to inhabitants' daily lives. Along with main residential units, public programs such as schools, kindergartens, and nurseries for children are distributed throughout microdistricts. In addition, commercial sites for daily use, such as supermarkets, shops, restaurants, grain distribution storage, and other civic amenities are distributed in the microdistrict. To maintain the high quality of inhabitants' hygiene, clinics, public baths, laundromats, and barbershops are also present. Finally, as the microdistrict is meant to be a sustainable unit, gas stations, light industry or cottage industry factories, and storage or shops are also part of the program. These are all considered public programs for the residents, and the guidelines indicate that the average area for these facilities should be 7 to 8 sqm per person, which means about four hectares in a 5,000-inhabitant microdistrict.

As microdistricts are a housing model for families with children rather than single people or couples without children, these amenities are the most important elements of the microdistrict. Further, socialism, which is based on people's enlightenment, includes a paternalistic gesture that the nation must educate all children in the public education system. In theory, in a socialist society, all adults must work and be part of production; thus, the nation should provide enough kindergartens and nurseries that both parents can work during the day.

In Korea, during the colonial period, the education rate in the 1940s was very low. More than 85% of the whole population did not have any formal education, and only 1% received education beyond the middle-school level.[155] North Koreans thought that this low rate in education was mainly due to distances to schools; therefore, after independence in 1945, North Korea allowed people to be educated in any facilities, such as culture clubs, public halls, or enemy's houses (an "enemy's house" is an empty house formerly owned by the Japanese during the colonial era), to which people had easier access. Additionally, in 1946, North Korea set guidelines dictating that school districts had to be within a three- to five-kilometer radius so that students could walk to schools. By 1949, a total of 4,254 school districts existed in the nation.

This effort to provide better access to school was successfully achieved through microdistricts. For the first five years, between independence and the Korean War, North Korea used public facilities from the colonial period, including enemy/s houses, as educational facilities to create better access. There were few schools, and there was little time and a low budget to build new ones. However, after the war, during reconstruction, accessibility to schools was resolved by applying microdistrict theory, which defined schools as one of the main public programs that had to be a short distance from residences. Therefore, instead of the school district defined in 1946, students began attending schools within their microdistrict.

Table 3. Service Radius by Program[156]

Program	Unit per 1,000 ppl	m^2 per unit	Service radius (m)
Civic Office	1	6-7	1,000
kindergarten	70-80	6-7	500
daycare	65-75	7-7.5	300-500
restaurants	30-35	3-4	700-1,000

[155] Kim, Min-A. "A Study on the Planning of Microdistricts in Post-War North Korea ," 2018
[156] 리순건, and 백완기. 주택소구역계획. 평양: 국립건설출판사, 1963. Li-sun-geon, and Baeg-wan-gi. Ju-taeg-so-gu-yeog-gye-hoeg. pyeong-yang: gug-lib-geon-seol-chul-pan-sa, 1963.

groceries		162	500-700
Hardware stores		108	1,000
Elementary school	180-190 ppl	3.2-4	1,000

Microdistrict guidelines indicated that schools had a service radius of 750 meters, or a 10-minute walking distance, and should be located close to greenspace and far from main streets, boiler buildings, public laundry, stores, or storages facilities. In addition, students should be able to travel to schools without encountering any major vehicle circulation. Therefore, schools were mostly located in the middle of microdistricts, and they were to have a properly sized play field on the south or southeast side of the school building, leading to a size of about 1 to 1.5 hectares for the school site. In sum, schools were to be located far from major streets and have a site area of between 1 and 1.5 ha, and in microdistricts with more than 10,000 inhabitants, where two elementary schools were needed, they were to be located together to have larger common playfields.

In addition to schools, programs for kindergartens and nurseries were thought to have advantages when combined. There were certain area requirements for each program per capita, but if they were planned separately, there were to be multiple kindergartens and nurseries in a single microdistrict, and each would have insufficient open space unless they were planned together. Therefore, by increasing the capacity of kindergartens and nurseries, there would be enough surrounding open space and a buffer from other undesirable features. The service radius of these facilities was 350 to 500 meters, which was less than the radius for schools.

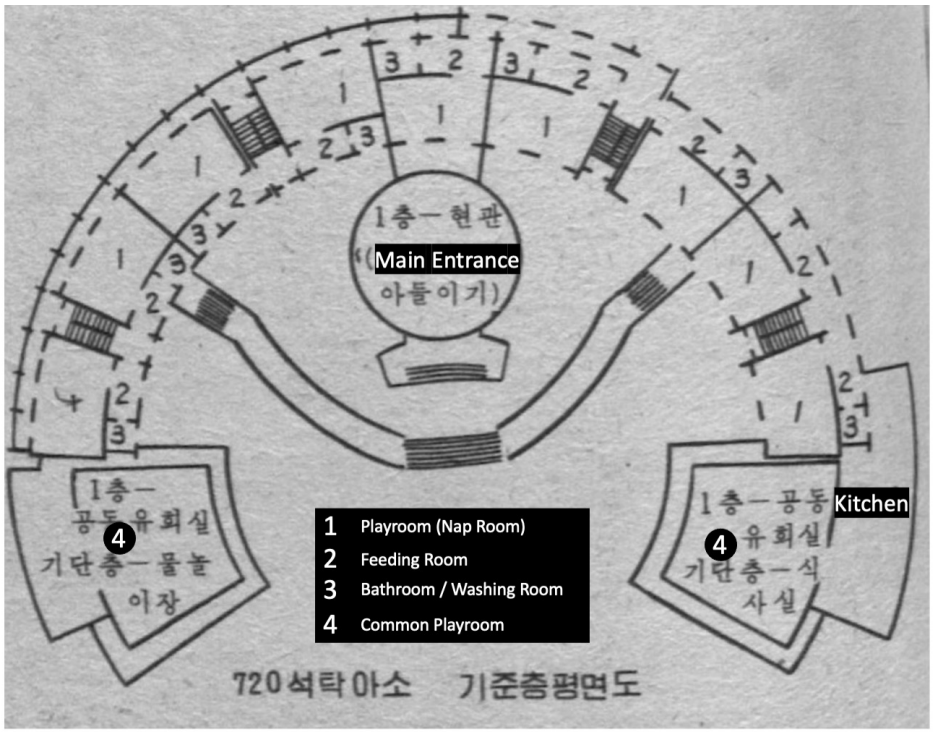

Figure 19. 740-person Daycare Facility in Gwangbok Street Development [157]

Service amenities such as stores, restaurants, supermarkets, movie theaters, and libraries were located based on the frequency with which they were needed. The guidelines categorized three main levels of amenities. Those that are needed every day were to be located within a service radius of 400 to 500 meters. These amenities include those related to daily supplies and people's enlightenment. In the 1960s, public libraries, such as newspaper reading rooms or children's libraries, occupied the first floor or residential buildings.[158] This effort was related to increasing the accessibility to schools to educate people from their childhood through their old age. Amenities that were needed only occasionally were located in the 750- to 1500-meter service radius zone, and these created residential district centers. Lastly, the service amenities for all citizens of the city were not directly related to layout of microdistricts; rather, they were considered in terms of the regional structure.

When the most imminent service amenities are located along streets, there were four options. The center of residential districts contained civic buildings, district gardens, play fields, movie theaters, libraries, and cultural clubs as well as grocery stores, hardware stores, seafood stores, restaurants, post office, bank, repair shops, and hospitals.

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[157] 조선건축 1, 1990. Jo-seon-geon-chug 1, 1990.

[158] 리화선. 조선건축사. 서울: 발언, 1994. Li-hwa-seon. Jo-seon-geon-chug-sa. Seo-ul: Bal-eon, 1994. (History of North Korean Architecture)

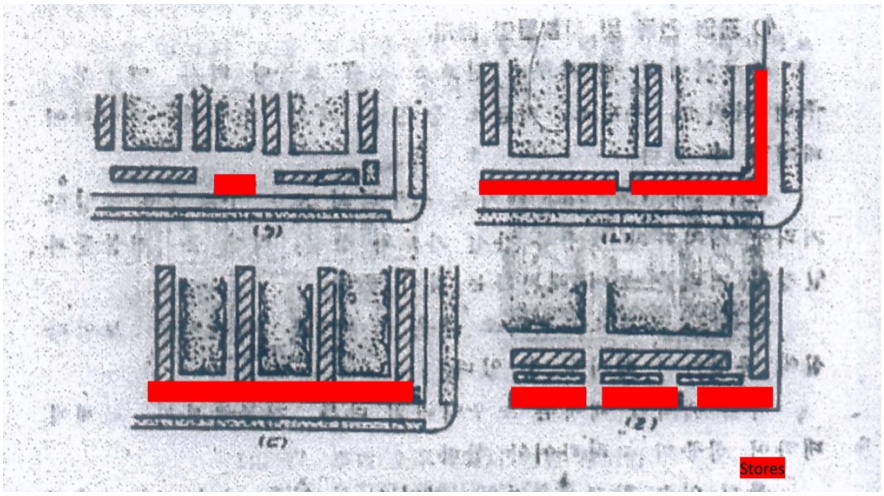

Figure 20. Four Different Ways of Locating Stores[159]

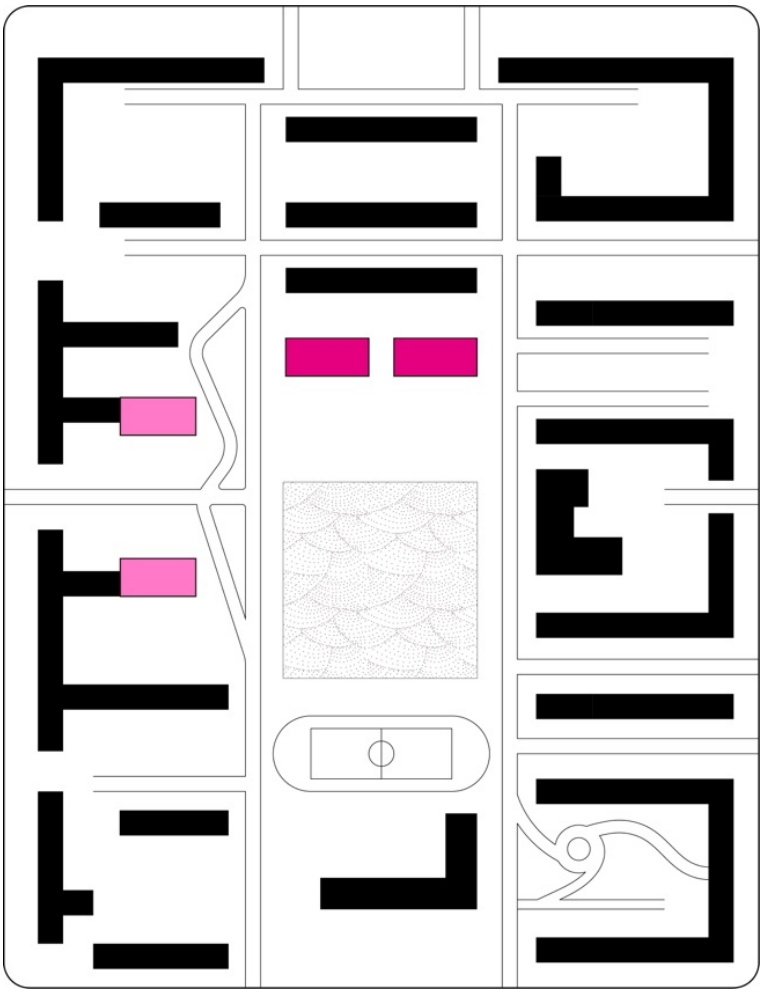

Figure 21. Daycares and Kindergartens in Daetaryong Standard Microdistrict No. 87 analyzed and drawn by author

[159] 리순건, and 백완기. 주택소구역계획. 평양: 국립건설출판사, 1963. Li-sun-geon, and Baeg-wan-gi. Ju-taeg-so-gu-yeog-gye-hoeg. pyeong-yang: gug-lib-geon-seol-chul-pan-sa, 1963.

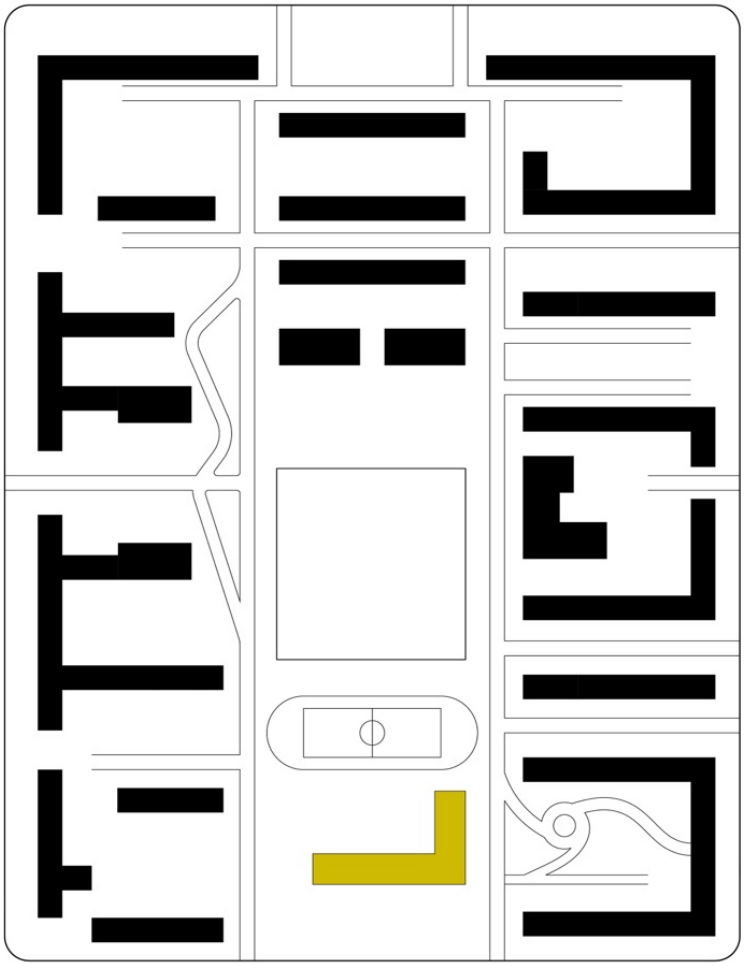

Figure 22. Elementary School in Daetaryong Standard Microdistrict No. 87 analyzed and drawn by author

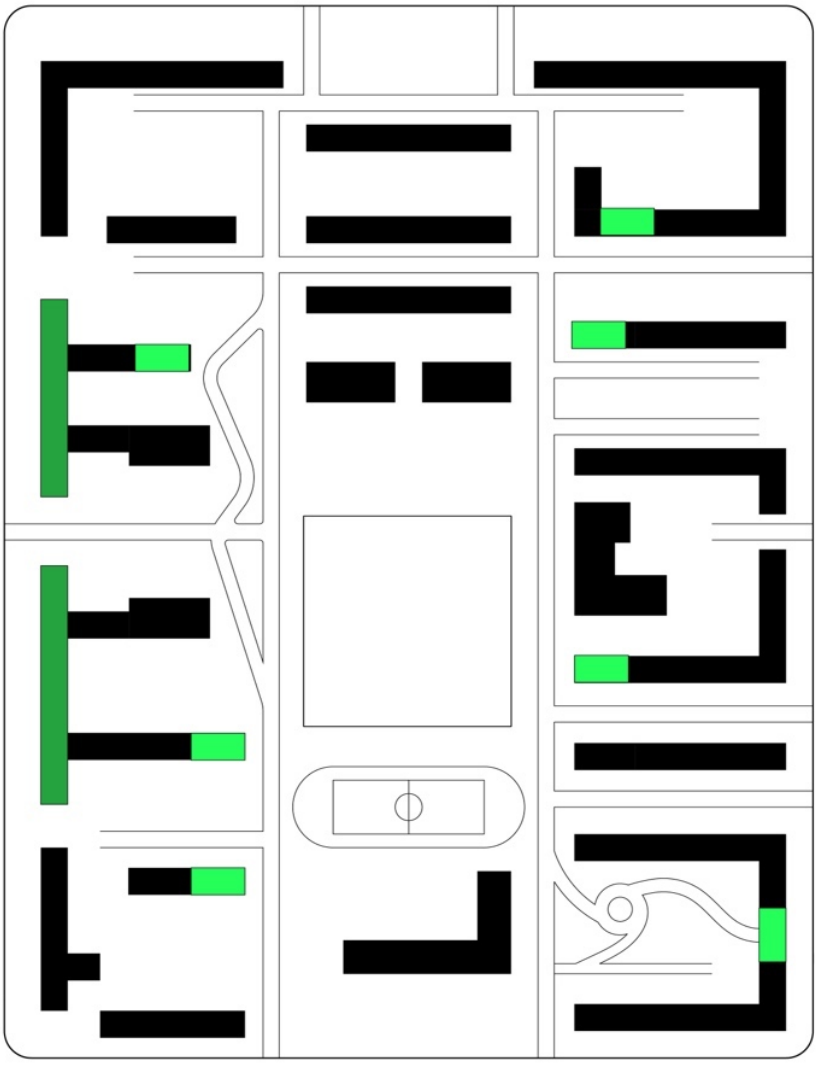

Figure 23. Stores and Restaurants in Daetaryong Standard Microdistrict No. 87 analyzed and drawn by author

1.3.6 Factories in Microdistricts

One of the unique programs of microdistricts that differs from Perry's neighborhood unit theory is that they contain light or cottage industries that do not harm the living environment in the district. In a socialist city, everyone has to work and be part of production. In the early stage of socialism, the production literally meant product production rather than knowledge production; this is why, during the Mao Zedong era in China, even university professors were obligated to do compulsory labor for several years during their terms in schools. Mao attempted to increase the proportion of workers in a city from 4% to 25% of the population and insisted that the city should be transformed from a city of consumption into a

city of production.[160] These efforts to make a city of production were widely adopted in socialist countries, including North Korea.

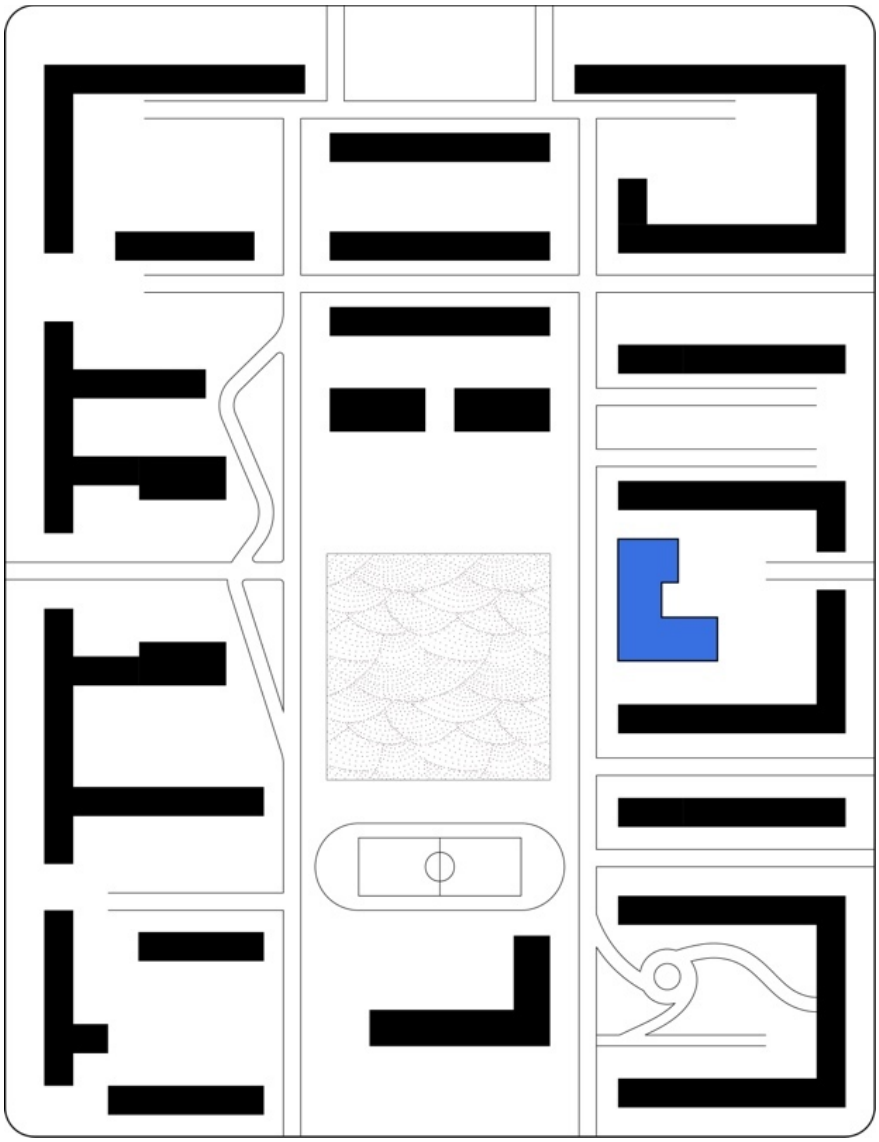

Figure 24. Small Factory in Daetaryong Standard Microdistrict No. 87 analyzed and drawn by author

In the 1960s, in North Korea, light or cottage industries were located in microdistricts, and sometimes they were located in the lower floors to provide direct access to the workplace from living quarters, which was part of enhancing workers' living environment and welfare by reducing commuting time. Therefore, microdistricts in North Korea were not only spaces

[160] Zhao, Liang. Modernizing Beijing: Moments of Political and Spatial Centrality. Ann Arbor, MI: ProQuest, 2007.

where people enjoyed their cultural and educational benefits, but also where they lived, worked, and had leisure time.[161]

In North Korea, this concept was developed as the Ga-nae-jag-eob-ban (가내작업반, work factory unit), where mostly women in microdistricts worked. It is related to enhancing women's rights and their participation in production. Socialism, in which all people should have equal rights, holds that the different social rights of men and women are caused by the elimination of female workers from the field. Therefore, starting in 1958, North Korea—which had had a patriarchal system for centuries—tried to develop social structures to encourage women's participation in the nation's economic structure. Even though many social policies were enacted in the late 1940s to enhance women's rights, it was not until the late 1950s that the nation recovered major industries and factories and thus needed a larger workforce (Kim, 2018). Starting in the 1960s, production spaces where women could work started to spread into microdistricts. These included not only laundromats or food production work units for the microdistrict, but also light industries for the city. These cottage work units paid women workers based on the amount they produced,[162] and by the end of the 1960s, more than 200,000 women worked in these cottage work units.[163]

Figure 25. Work-units in a microdistrict [164]

[161] 리화선. 조선건축사 2. 평양: 과학백과사전종합출판사, 1989. Li-hwa-seon. Jo-seon-geon-chug-sa-2. Pyeong-yang: Gwa-hag-baeg-gwa-sa-jeon-jong-hab-chul-pan-sa, 1989. (History of North Korean Architecture 2)

[162] 리창근. 로동행정사업경험. 평양: 사회과학출판사, 1989. Li-chang-geun. Lo-dong-haeng-jeong-sa-eob-gyeong-heom. Pyeong-yang: Sa-hoe-gwa-hag-chul-pan-sa, 1989. (Experience in Labor Administration Project)

[163] 안기필. "부산물 직장에서 로동 및 임금조직." 로동 10, 1958. An-gi-pil. "Bu-san-mul jig-jang-e-seo lo-dong mich im-geum-jo-jig." Lo-dong 10, 1958. (Labor and Salary Structure at a Byproduct Company)

[164] "北경제지 '원가절감' 강조." NK 조선. Accessed March 16, 2023. http://nk.chosun.com/news/articleView.html?idxno=106201. "Buk-gyeong-je-ji 'won-ga-jeol-gam' gang-jo."NK jo-seon. Accessed March 16, 2023.

1.4 Red Bauhaus Brigade in North Korea

As mentioned, during and after the Korean War, there were massive amount of supports from the Socialist Bloc to North Korea. They not only included financial and resources but also included technological support through a variety of engineers. As reconstruction of the destroyed North Korean cities was the main objective of the support, it was not inevitable for Socialist Bloc countries to send architects and urban planners to North Korea. As part of the wave, some of Bauhaus members were sent to North Korea in the 1950s, and they drafted overall reconstruction plan of North Korean cities from urban planning perspective through residential typologies.

Among many other socialist architects' works, the most significant works were done by Red Bauhaus Brigade members, led by Konrad Püschel, sent from German Democratic Republic (GDR). Püschel started his school in 1927 at Bauhaus Dessau when Gropius was still the director of the school. However, soon after Püschel started his school, Hannes Meyer became the second director of the school, and Püschel was very much influenced by Meyer's new philosophy. Meyer insisted that architecture is not an aesthetic profess but is just an organization that reflects social needs. In fact, Meyer thought that architecture is a byproduct of a society rather than a creation like art. Under Meyer's premises, Püschel developed his interest in social value of architecture, and in the end, when he received his diploma in 1930, Mies van der Rohe, the third director of Bauhaus, stated that Püschel focused on residential designs and social value of them.[165]

Therefore, it was not surprising when Püschel followed his mentor Meyer moved to Moscow in late 1930s. In the 1930s, Bauhaus was already having threats under the Nazi regime. It is a well-known fact that the regime conceived Bauhaus as cultural Bolshevism, and the Nazi regime sealed off the institution in 1933. This resulted architects who played major roles in Bauhaus to migrate to other places in the world. Mies van der Rohe, the third director of Bauhaus, moved to the United States in 1937, the same country and year as Walter Gropius, the first director of the school. Meanwhile, as a Marxist, Meyer decided to the Soviet Union along with his six students including Püschel. It was called Red Bauhaus Brigade.

Red Bauhaus Brigade was well accepted in the Soviet Union as they were pushing new construction of socialist cities throughout the country. Following the 1917 revolution, the Soviet Union initiated its initial Five-Year Plan, which focused on rapid industrialization.

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[165] Konrad Püschel, Wego eines Bauhauslers. Erinnerugen und Ansichten (Dessau: Anhaltische Verlagsgesellschaft, 1977)

Siberia, with its abundant natural resources such as timber, coal, and iron, became a hub for mining, foundries, and factories. To accommodate the growing population of industrial workers, the Communist Party aimed to fund the building of "new socialist cities" or "Sotsgorods." These urban areas were designed to serve as a utopia for workers, combining modernity, efficiency, and practicality with cleanliness, harmony, and aesthetic appeal. [166] And the Communist Party invited Western architects, mostly from Germany and the Netherlands where the Modernism was widely accepted, to build new cities and housings in the 1920s and 30s.[167] The Red Bauhaus Brigade was actively involved in the process, because this was a real chance that architectural process needed to reflect condition of the society and the social value as Meyer insisted.[168] However, the brigade decided to leave the Soviet Union when Stalin forced architects to reflect nationalism in their design, and as a result, Meyer left for Swiss in 1936 and Püschel also left in 1937.[169]

While teaching at the Weimar University, Püschel had a chance to participate in reconstruction of North Korean city. Right after the Korean War, Kim Il Sung asked GDR for supporting the reconstruction of Hamhung, and GDR decided to support for ten years from 1955. Püschel participated in the reconstruction of Hamhung from 1955 through 1959 as the team leader of urban planning section of DAG. DAG, Deutsche Arbeitsgruppe Hamhung, which means German Working Group Hamhung, was a group formed by the GDR to send engineers and architects to North Korea, specifically to Hamhung that was massively destroyed during the Korean War, in the 1950s in order to help the reconstruction of the nation.[170]

The East German government formalized the project on February 17, 1955 after two delegations from East Germany visited Hamhung to gather information. The program aimed to provide scientific and technical support for project planning and management, as well as mentorship and training for Korean workers in Hamhung, along with the delivery of building materials and infrastructure. [171] Originally, the project was set to run for a duration of 10

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[166] D'Hooghe, Alexander. "Science Towns as Fragments of a New Civilisation: The Soviet Development of Siberia." Interdisciplinary Science Reviews 31, no. 2 (2006): 135–48. https://doi.org/10.1179/030801806x103352.

[167] Kotkin, Stephen. Steeltown, USSR: Soviet Society in the Gorbachev Era. Berkeley: University of California Press, 1992.

[168] Konrad Püschel, Die Tätigkeit der Gruppe Hannes Meyer in der UdSSR in den Jahren 1930 bis 1931, in *Wissenschaftliches Kolloquium vom* 27. bis 29. (Okt. 1976) in *Weimar an der Hochschule für Architektur und Bauwesen zum Thema: 50 Jahre Bauhaus Dessau*, p. 470.

10. Ibid., p. 470.

[169] Püschel, Die Tätigkeit, p. 472.

[170] Reference: Bundes-Archiv Berlin, DC20-630 (Bereich Außenpolitik 1950-1959).

[171] Ibid.

years. However, due to the changing political climate and the opposing positions of North Korea and East Germany in the Sino-Soviet split, the project concluded two years earlier than intended after eight years. The final group of German advisors returned to East Germany in 1962.[172]

Figure 26 The German work group DAG - which led the reconstruction project of Hamhung - and their families[173]

Püschel, who was leading the urban planning for the reconstruction of Hamhung, made efforts to implement GDR's "16 Principles of Urban Design." These principles were announced to rebuild the GDR cities devastated by the World War II with a socialist ideology.[174] After the war, the population of Hamhung was about 170,000, and it was one of the cities that that had massive bombing during the war, because it was a major industrial city of North Korea. Thus, there was a major shortage in housing stocks when the DAG, including Püschel, first arrived in 1955. When he first arrived, Püschel found out that there was already

[172]Frank, Rüdiger. Die DDR Und Nordkorea - Der Wiederaufbau Der Stadt Hamhùng Von 1954-1962. Shaker Verlag, 1996.

[173] © Professor Matthias Schubert D 23968 Wismar Muschelring 17 / Wikimedia Commons

[174] On September 6, 1950, the East German government made an announcement regarding this legislation. Edmund Collein, a colleague of Püschel, and Kurt Liebknecht, the director of city planning for the reconstruction of East Germany, wrote about the rebuilding of various East German cities, including Berlin, which were destroyed during World War II. This legislation builds upon the Athens Charter and aligns with the political theme of monumental buildings and the Soviet ideology of creating socialist cities that prioritize demonstrations.

a reconstruction master plan drawn by the Soviet Union engineers.[175] However, Püschel thought the plan was not reflecting urban conditions of Korea, and therefore, he redrew the master plan reflecting other urban structures of pre-war Korean cities, such as Seoul and Mokpo.[176] In the master plan, he not only researched climate, geography, and soil conditions of Hamhung but also introduced modern design methods, such as orientation, ventilation, visual axis, and neighborhood concept. He also proposed residential compounds based on microdistrict concept.[177] And this residential component, low-rise and linear housings, was used to form urban axis of Hamhung. In the 'Comprehensive Construction Plan of the City of Hamhung,' an urban axis was set as perpendicular line to Seongchun River defining it as the urban development path. Jongsung Street, which was originally called as Wilhelm Street in the 1950s named after the president of GDR then, was one of two streets that formed this axis.[178] Linear type residential buildings were built on both sides of the street to emphasize the axis. Püschel insisted that it resembled the Stalinallee, which is now called Karl-Marx-Allee, that was also constructed as part of reconstruction plan of Berlin from the World War II.[179]

DAG's active involvement is also witness by Dr. Tongsam Shin who participated in the group as an interpreter. He was born in 1930 in Chongpyong, South Hamgyong province in North Korean part that is about 30km away from Hamhung and went to GDR in 1950 as the first North Korea government scholarship program student. After being part of Hamhung reconstruction, Tongsam went back to GDR and finished architecture school at Dresden University of Technology, which he had started before participating in the Hamhung reconstruction. He later exiled to West Germany in 1959 and became West German and South Korean.[180] Tongsam is one of few people who experienced all four divided countries; South and North Korea, and West and East Germany. He insisted that the DAG architects actively used neighborhood unit concept in residential development plans, because the East German

[175] Jang, Kyoung Seok, and Hyung Min Kim. "Hamhung, the Second-Largest North Korean City: Dynasty Urbanism, Colonial Urbanism and Socialist Urbanism." Cities 114 (2021): 103191. https://doi.org/10.1016/j.cities.2021.103191.
[176] Konrad Püschel, 'Ein Überblick über die Entwicklung und Gestaltung koreanischer Siedlungslagen', in Wissenschaftliche Zeitschrift der Hochschule für Architektur und Bauwesen Weimar, IV. Jg. (1958/59), H.5, 1959, pp. 459-477.
[177] Bezirk Zentrum, Hoesang district, Banryong district, Sapori district, and Hamju district were configured into 6-11 microdistricts.
[178]Yim, Dongwoo. "Hamhung: Traces of the Bauhaus Remain in the Korean Peninsula." SPACE 620 (July 2019).
[179] Ibid.
[180] Sin, T.-sam. "1955-1962-Yŏn Ku Tongdok Tosi sŏlgyet'im Ŭi Hamhŭng-si wa hŭngnam-si ŭi Tosi Kyehoek: Sin Tong-Sam chŭngin ŭi Tosi Kyehoek Yŏksajŏk Koch'al." Nonhyŏng, 2019

architects and planners already had experiences building Wohnkomplex, a German version of socialist microdistrict, during the post-war reconstruction in late 1940s and early 1950s.[181] He argues that application of neighborhood unit concept, or microdistrict theory, in North Korea was at least twenty years earlier than South Korea.[182]

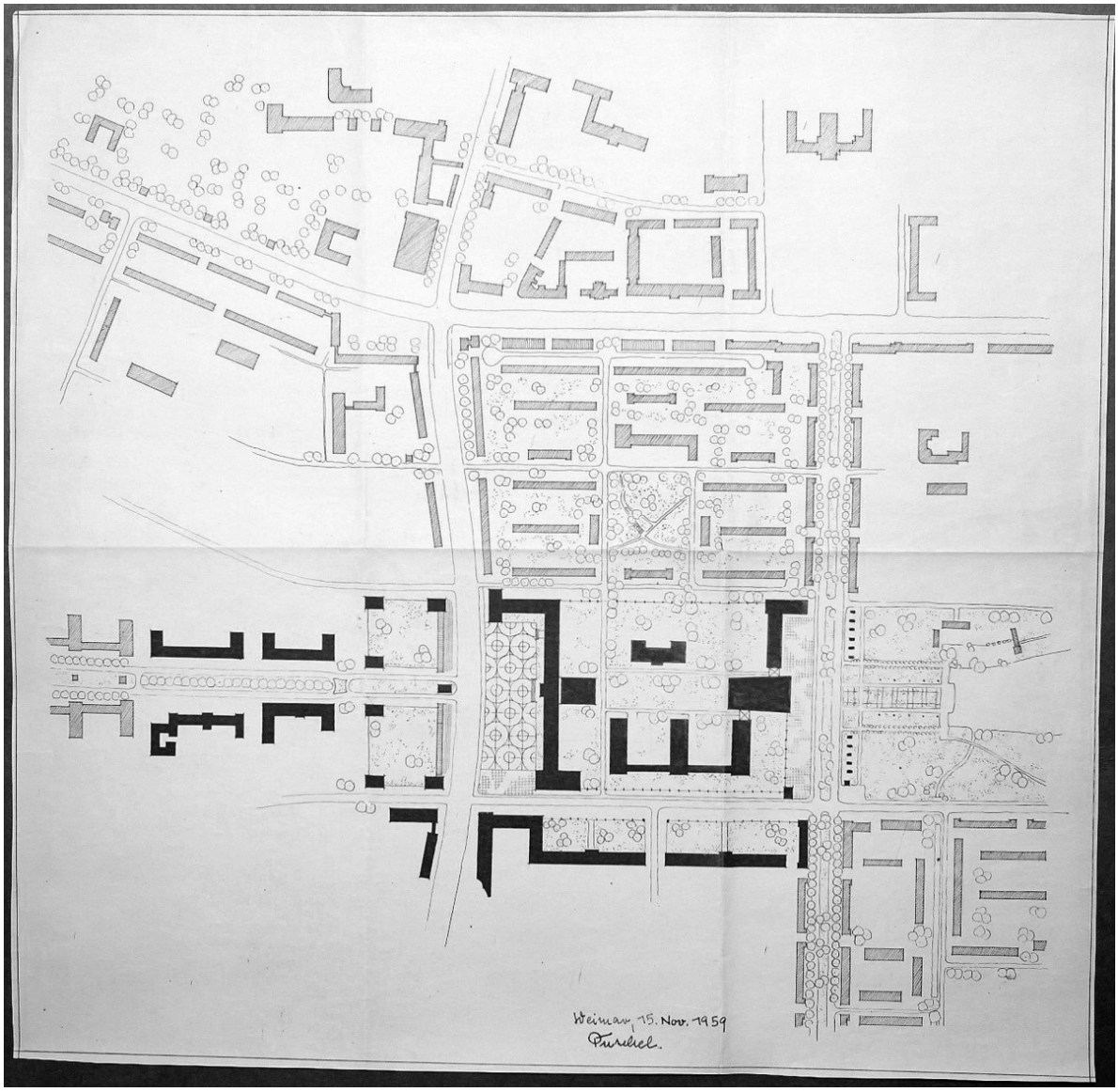

Figure 27'Construction Plan of the Central Square of Hamhung', planned by Konrad Püschel in November 15, 1959[183]

[181] Ibid.
[182] Ibid.
[183] Stiftung Bauhaus Dessau / © (Püschel, Konrad)

Figure 28Urban condition of Hamhung where the 1950s plan still remains[184]

After Püschel left for GDR in 1959, Karl Sommerer took over the position and led the reconstruction plan of Hamhung.[185] Sommerer argued that city planning should prioritize democracy and the people's well-being. He believed that government buildings should not be situated in the central square and designed the square with cultural facilities in mind. He also preferred a low-rise format for the national institution and emphasized the importance of an open and public composition that incorporates nature.[186] In the end, either Püschel's symbolic square proposal or Sommerer's less symbolic and more democratic square proposal was realized. Because the DAG had to leave Hamhung in 1962, before the construction of the square, due to Sino-Soviet split.[187]

[184] https://commons.wikimedia.org/wiki/File:Hamhung_(14298554245).jpg
[185] Hideo Tomita, "Wohnkomplex in the 1930s USSR and 1950s North Korea by an East German Architect", Proceedings of 11th International Symposium on Architectural Interchanges in Asia, September 2016, Tohoku University, pp. 2288 – 2292.
[186] Sommerer's letter to Püschel on March 21, 1960 [Source: Bauhaus-Archiv Dessau, Püschel, Korea, I_010202_D. p. 2.].
[187] Kim, Youngcheol. "Architecture and City Planning of Konrad Püschel." SPACE 620 (July 2019).

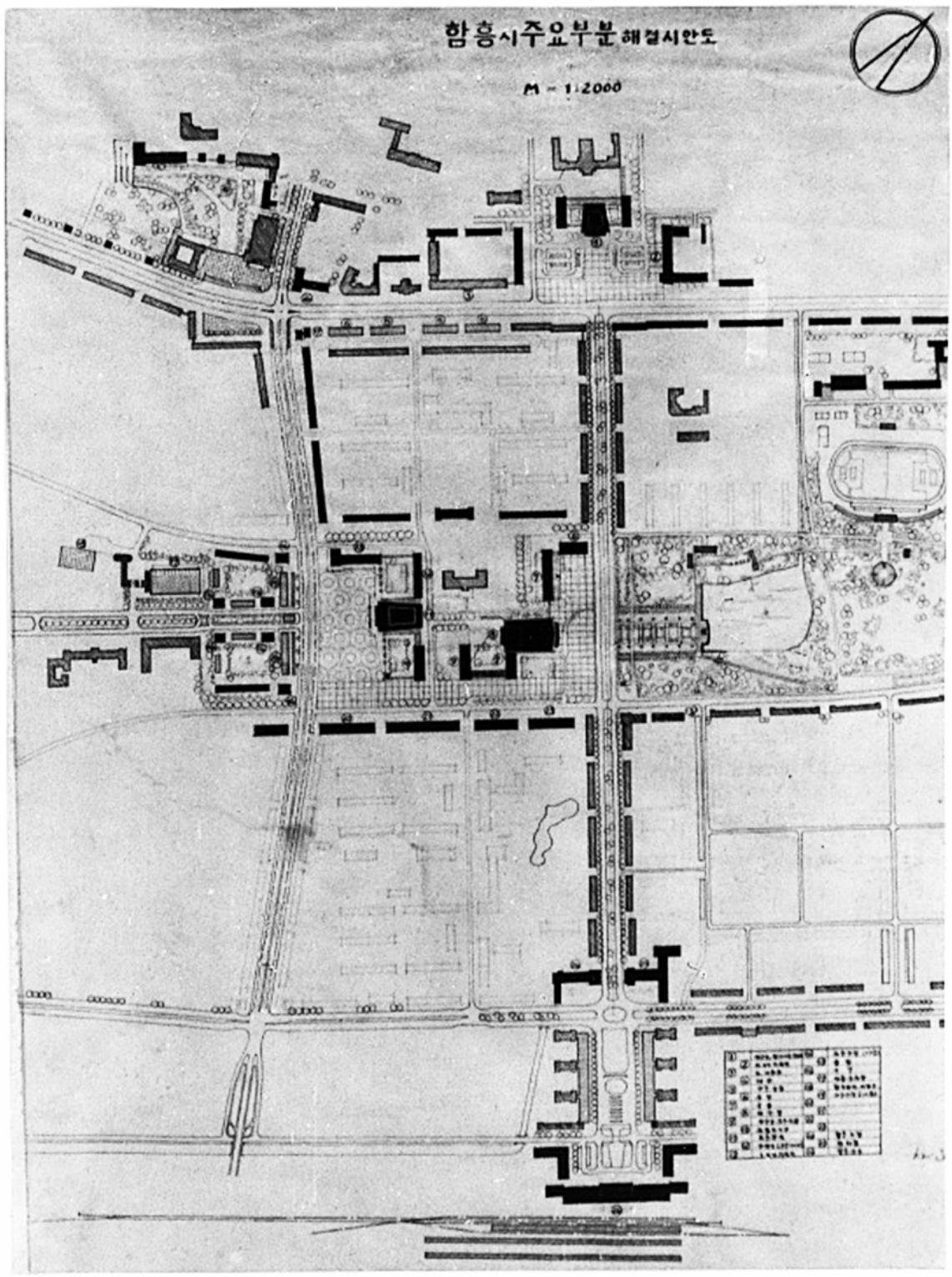

Figure 29 Master Plan drawn by Karl Sommerer[188]

[188] ©Bundesarchiv Berlin / Signiture: D20

Chapter 2: Cases of Microdistrict Developments; from the 1950s through the 2010s

Located in the center of the northern part of the peninsula, Pyongyang has been understood as a strategic city throughout Korean history. Its name means “large, sunny plain area,” and it had one of the largest champagne areas for agriculture and the second-largest river in the Korean peninsula. Therefore, all dynasties in the peninsula designated Pyongyang as a strategic point if not the capital city. Its importance lasted through the agricultural era and into the modern industrial era, when Imperial Japan, as the occupier of the peninsula, used Pyongyang as the center of military logistics in wars against all East Asian countries. This historic context largely determined North Korea’s choice of capital city when the nation formed in the 1940s.

Furthermore, North Korea considered Pyongyang the nation’s representative city, and thus, the majority of national-scale developments, including housing, were focused there during the reconstruction period in the 1950s after the Korean War (1950-1953). Although many microdistrict experiments were conducted in other cities, as well, this chapter focuses on the evolution of microdistricts in Pyongyang, where most major developments and representative projects occurred.

2.1 History of Pyongyang

2.1.1 Pre-colonial Era

In the fifth century, Pyongyang was designated as the capital city of Goguryeo (BC 37-AD 668). This was the first time the city is noted in the history of the Korean peninsula. In that era, the peninsula was divided into three kingdoms: Goguryeo, Baekje, and Shilla. During this period, these three kingdoms fought for Hansung, the region where Seoul is now located, as it contains the Han River and large champagne for agricultural land. To expand its territory towards the south and Hansung, Goguryeo, which was located in the northern part of the peninsula, moved its capital to Pyongyang from Kuknaeseong, which was located further north. It built Pyongyang-seong, the city fortress, in 427. The fortress was about 16 kilometers long and was constructed mostly in the flat zone of the city, using Moran Hill as the hillside for a watchtower. As its main competitors, Baekje and Shilla, were located to the south, the fortress was built northwest of the Daedong River, which could be used as a natural barricade.

Pyongyang-seong consisted of four areas: Naeseong (내성, inner wall), Oeseong (외성, outer wall), Bukseong (북성, north wall), and Jungseong (중성, center wall). As the

name suggests, Naeseong, the inner wall, was the most secure area and contained the royal palace; it was located between the Bukseong and Jungseong and bordered the river so that it was secure against invasions. Today, Kim Il Sung Square and the Grand People's House are located in this area. Bukseong, meanwhile, was located on Moran Hill and served as the watchtower for the whole fortress. Jungseong was located on the southern side of the Naesŏng and faced the two rivers of Pyongyang, the Daedong and Botong Rivers, and Botong Gate faced towards the latter. The gate has been relatively well preserved and was used as a benchmark during the air bombing by the American military in the Korean War. This was where upper-class people lived and administrative buildings were located. Oeseong was located in the flat plain of the city, and middle-class people lived in this area. Following the urban structure of Chang'an in China, which was then the largest city in East Asia, Pyongyang-seong implemented an 84-square meter grid structure in the city. As it was located on a flat pain, in Oesŏng, this grid system could be applied particularly well.

Figure 30 Restored map of Pyongyangseong[189]

[189] Image source from Northeast Asian History Network http://contents.nahf.or.kr/

Pyongyang lost its importance during the Later Silla Dynasty (AD. 668-935) but flourished again in the Goryeo Dynasty (AD. 918–1392). As the dynasty that announced it inherits the legacy of the Goguryeo Dynasty, Pyongyang, which was the capital city in the Goguryeo Dynasty, was also considered a strategic city in the dynasty. The dynasty designated four capitals in total: Hansung, which is now Seoul; Gaeseong; Gyeongju, which was the capital of Later Silla; and Pyongyang. Pyongyang was then called Seogyeong, which means “capital of west,” as, among the four capital cities, it was located in the western-most area of the peninsula. With one of the largest champaigns in the peninsula, Pyongyang grew its agricultural industries and flourished. Thus, an increasing number of aristocrats had both economic and political power in the dynasty. In the 1100s, these aristocrats led a campaign—which ultimately failed—to move the main capital city from Gaeseong to Seogyeong.

In the Joseon Dynasty (1392-1897), after the Goryeo Dynasty, Pyongyang was the second-largest city on the Korean peninsula after Hanyang (Seoul), which was the dynastic capital. As in the previous dynasty, Pyongyang continued to flourish, and thus, it was famous for its arts, culture, and entertainment. In addition, the city had beautiful natural scenery, leading to the development of a touristic course to enjoy eight of the most significant natural settings there. Many banquets were held, and courtesans registered by the government also lived in Pyongyang. This was possible because Pyongyang did not have to pay tax to the central government; rather, it ran its own tax collection. With these freedoms and prosperity, the city could develop commercial and manufacturing industries in the later part of the dynasty, which became the backbone of the city during the colonial period.

Goguryeo Dynasty (BC 37 - 668)
고구려 시대

220_The Han Dynasty comes to an end with establishment of the Three Kingdoms in ancient China.
395_Roman Emperor Theodosius I dies, causing the Roman Empire to split permanently.
570_Birth of Mohammad, founder of Islam.
618_Tang Dynasty of China initiated by Li Yuan.

Major Cities

Unifeid Silla Dynasty (668 - 935)
통일신라 시대

726_Byzantine Emperor Leo III the Isaurian destroys the icon of Christ above the Chalke Gate in the capital city of Constantinople, beginning the first phase of the Byzantine Iconoclasm.
805 to 820_Tang Dynasty was under the rule of Emperor Xianzong of Tang.

Major Cities

Goryeo Dynasty (918 - 1392)
고려 시대

927_Kingdom of England becomes a unified state.
1099_The Siege of Jerusalem by European Crusaders.
1347_The Black Death, on its march across Asia to Europe, reaches Constantinople.

Major Cities

Joseon Dynasty (1392 - 1897)
조선 시대

1453_Constantinople falls to the Ottoman Turks, ending the Byzantine Empire and beginning the Ottoman Empire.
1492_Christopher Columbus landed in the Americas from Spain.
1804_Napoleon crowns himself Emperor of the French.

Major Cities

Figure 31. History of Pyongyang before 20th Century[190]

[190] Yim, Dongwoo, Prokopljević Jelena, and Rafael Luna. Unprecedented Pyongyang. New York: Actar Publishers, 2016.

Figure 32. Trace of Pyongyangseong on the current Pyongyang satellite image[191]

2.1.2 Japanese Colonial Period

Although Pyongyang was one of the most flourishing cities in the Korean peninsula, it did not grow into a modern city until the late 19th century. In 1897, the city opened its port for foreign trade, and the population grew from 20,000 to 30,000 within a decade. This was just the beginning. During the Japanese colonial period (1910-1945), the population grew to 300,000, more than 10 times the population when it first opened the port.

[191] Ibid.

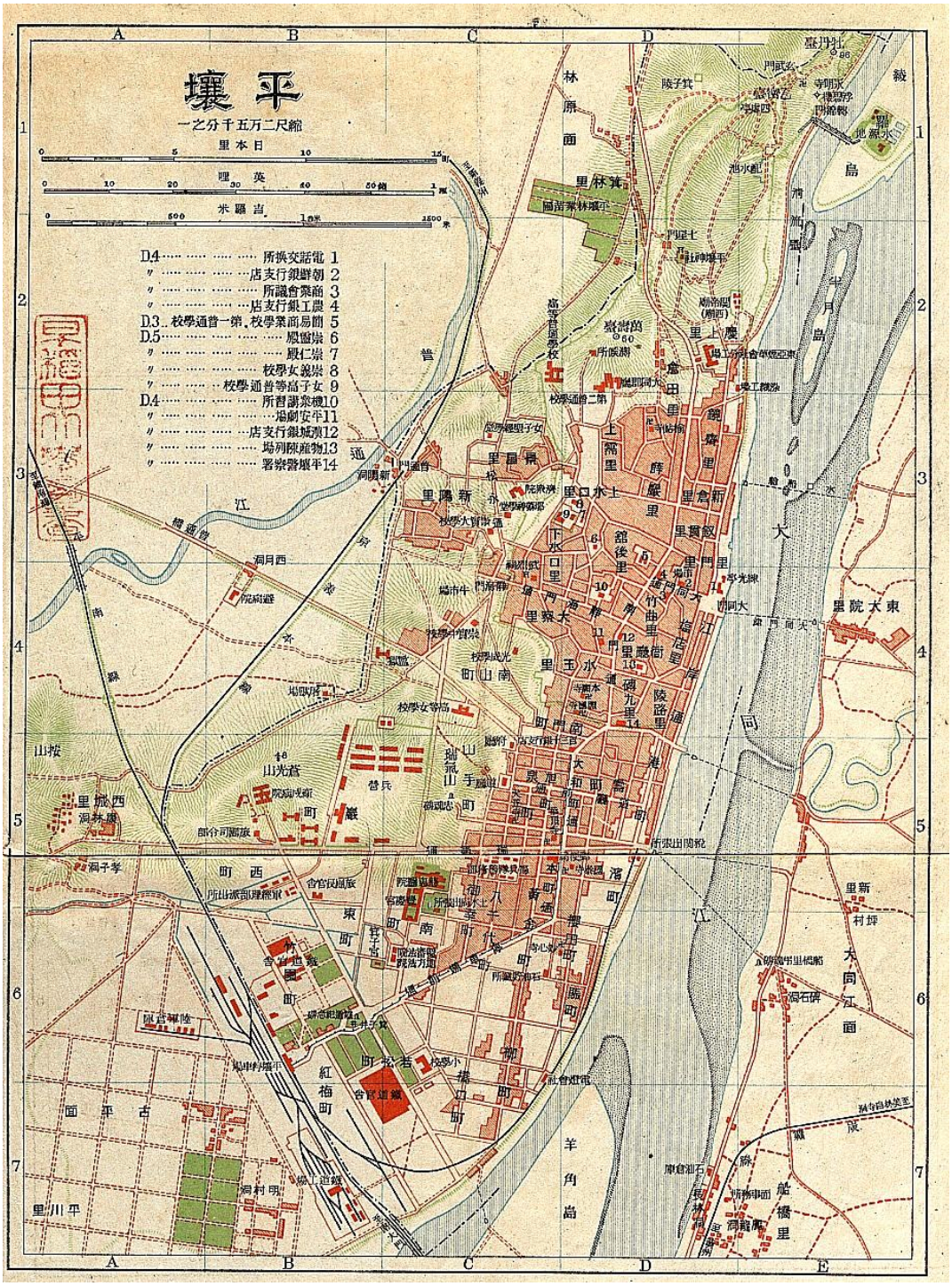

Figure 33 Pyongyang map in 1919[192]

[192] http://ifs.nog.cc/keropero888.hp.infoseek.co.jp/city/heijo.html

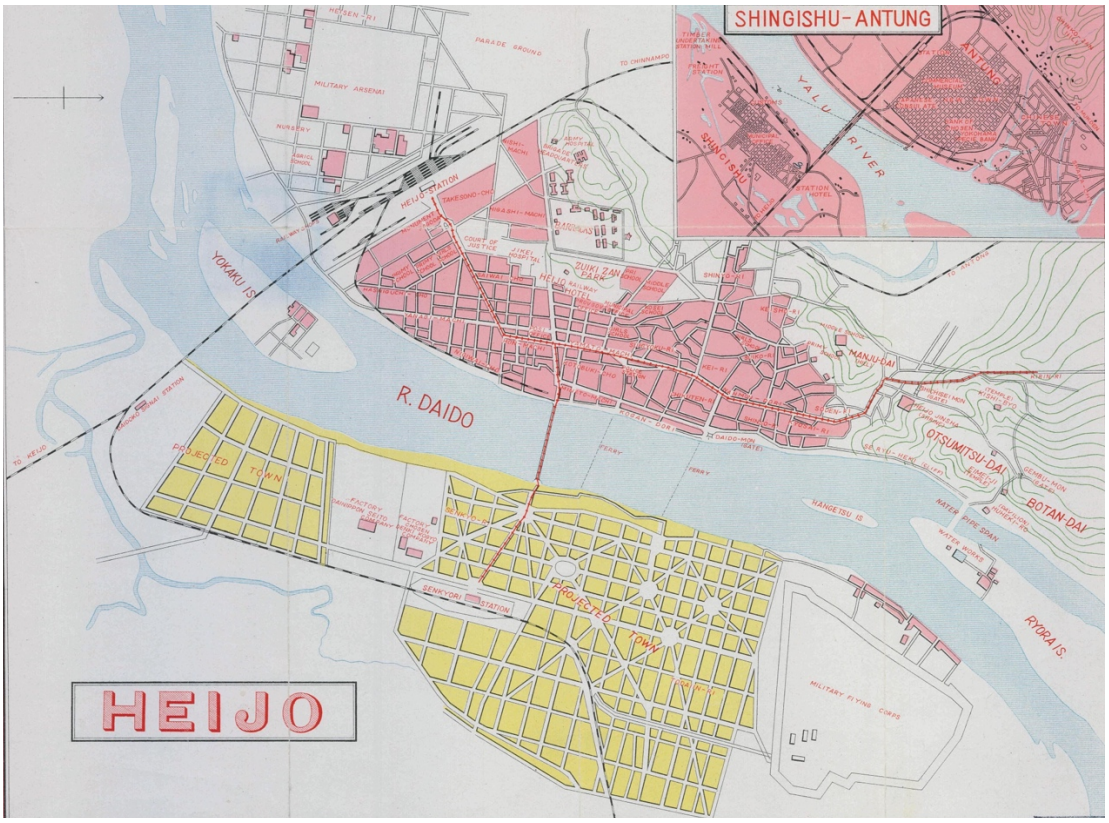

Figure 34 Japanese tourist map of Pyongyang in 1921[193]

Until the 1930s, Pyongyang was one of the fastest-growing cities in the peninsula because of the merchants and commerce that formed a solid industrial foundation in the Chosun Dynasty. Additionally, as it had been under that dynasty, Pyongyang was a major tourist destination, even during the colonial period. As new railways were constructed, the city's shape started to transform from the traditional walled city to a modern city. Traces of the wall that were maintained for hundreds of years disappeared, and the city gained new boundaries. It expanded across the Daedong River for the first time in history with the introduction of new bridges for both railways and pedestrians.

From the 1920s through the 1930s, while the Emperor of Japan prepared a war against China—which occurred in 1937—Pyongyang was designated as the site of an armory camp. More factories and military camps, including an air force camp, were constructed to prepare for the war. A new master plan was created to house more Japanese residents in a new town on the east side of the Daedong River. It was influenced by the Haussman plan of Paris. The master plan was not fully realized; however, new military camps, factories, and railways were

[193] Library of Congress, Geography & Map Division. Heijo is Japanese name of Pyongyang. Pink zone is the current urban area and the yellow zone is newly master planned area.

constructed on the east side of the river and reformed the whole urban structure of the area, or, in some cases, built it from nothing.

During the colonial period, the boundary of Pyongyang expanded, and the spatial hierarchy of the city changed. Before the colonial period, traces of Pyongyang-seong still remained; therefore, administrative areas, upper-class residential areas, and middle-class areas were zoned separately and did not have a strong urban axis, as the city was formed based on zones. However, when the railway was first constructed in 1905, the traces of the city wall were removed, and a new main street, Yamato-machi (大和町), was constructed perpendicular to the railway. Starting with the Pyongyang station, where the main street started, many civic buildings, such as post offices or basilica, were located along the street. This new axis cut through the boundaries between Oesŏng, Chungsŏng, and Naesŏng.

2.1.3 The Beginning of North Korea and the Reconstruction Plan

After independence from the Emperor of Japan in 1945, the Korean peninsula was loosely divided into two, North and South. In 1948, the dominant party in each territory founded an official nation, and the division became official. The Democratic People's Republic of Korea, the official name of North Korea, was established, and Pyongyang, then the largest city in North Korean territory, was its capital city.

Figure 35 1946 Map drawn by US Army[194]

Only a few years later, the Korean War (1950-1953) broke out, and the whole peninsula was engulfed in the conflict. As Pyongyang was both the capital city of North Korea and a strategic armory camp, the city was targeted with air bombing by the US Air Force.[195] Because of the bombing in 1952, an operation called Pressure Pump, more than 30 factories and 1,500 buildings were destroyed. The city was fully destroyed. Nonetheless, Kim Il Sung, the leader of North Korea, decided to keep Pyongyang as the capital city even after the war and thus began preparing a reconstruction plan for the city.

[194] Source from The University of Texas at Austin The University of Texas Libraries. Original scale 1:12,500. Army Map Service L951 1946.
[195] 학송현. "유엔공군의 평양 대공습작전," n.d. Hag-song-hyeon. "Yu-en-gong-gun-ui pyeong-yang dae-gong-seub-jag-jeon, n.d. (Airstrikes at Pyongyang by UN Airforce) https://m.blog.naver.com/PostView.nhn?blogId=afytpark&logNo=20067131855&proxyReferer=https%3A%2F%2Fwww.google.com%2F

The architect Kim Jung Hui drew the reconstruction master plan; he was then was studying in Moscow, and the first proposal was released in 1952. It included few socialist urban planning aspects and was instead similar to the 1930s master plan by the Emperor of Japan. The boundaries and scale of the city were similar, and even the orientation of the two master plans was the same. However, the plan was revised, and a new reconstruction master plan was created towards the end of the war; today, that plan is the backbone of the city's structure. This new reconstruction plan included socialist urban planning aspects, such as a green area as a buffer zone between districts and symbolic urban spaces that gravitated urban activities.

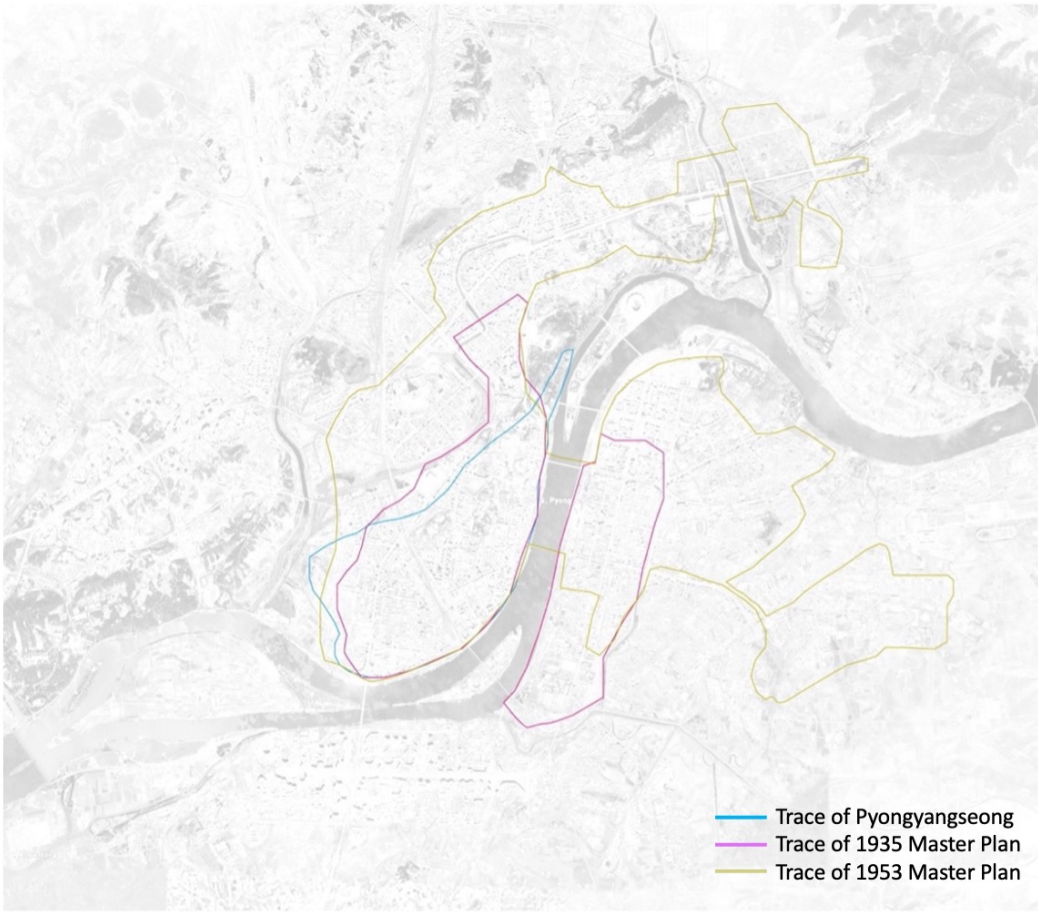

Figure 36. Boundaries of Pyongyang in History drawn by author

2.2 Microdistrict Developments in North Korea

Because Pyongyang was the capital of North Korea, microdistricts was actively implemented there not only during the reconstruction period after the war, but also throughout three generations of Kim's leadership, from Kim Il Sung (1948-1994) through Kim Jung Il (1994-2011) and Kim Jung Un (2011-present). Even though the city was completely destroyed during the Korean War between 1950 and 1953, Pyongyang was reconstructed and

developed based on the previous urban structure from the ancient period through the Japanese Colonial period (1910-1945).

The structure of the city has four major boundaries: those of Pyongyang-seong, the colonial period, the reconstruction plan in the 1950s, and the most urbanized area of the current city. The overall area of administrative Pyongyang is about 2,400 km^2; however, most urban developments happened in relation to the last boundary, which has an area of only about 200 km^2. Although traces of historic boundaries were removed throughout history, especially during the war, it is important to understand them because they are still understood as cultural and customary boundaries. For instance, the Pyongyang-seong area is still considered the center of the city; the district's name is still Chung-gu-yeok, which means "central district."

The evolution of microdistricts in Pyongyang can also be understood through these boundaries. During the reconstruction period, the Kim Il Sung regime started building microdistricts within the limits of Pyongyang-seong and then moved on to East Pyongyang, where it was first developed during the colonial period. In the transition period between Kim Il Sung and Kim Jong Il, microdistrict developments went beyond the 1953 master plan boundary, as the city's population had grown much more than originally expected. Recently, in the Kim Jong Un regime, instead of expanding the city's boundaries, major microdistrict developments occurred in the Pyongyang-seong area. Obsolete housing built before the 1970s was demolished and replaced with massive high-rise residential microdistrict developments in Pyongyang during the Kim Il Sung era started with reconstruction of the city from the war. As mentioned above, other socialist countries greatly supported the city's reconstruction; therefore, socialist aspects, including microdistrict theory, were encoded in the city's built environment. Initially, the city was planned to be home to one million people, which was later increased. However, in the early stage of the reconstruction, the developments followed the master plan quite closely.

2.2.1 The Kim Il Sung Era

The first stage of reconstruction focused on Chung-guyeok, which was designated as the central area of the city in the 1953 master plan and was also within the boundary of Pyongyang-seong. In ancient times, the area was Chungsŏng, from which the name Chung-guyeok derives, and Pyongyang defined this area as the center of the city and the site of the most important civic and administrative facilities. Although the first phase of reconstruction

took place there, major microdistrict developments began emerging on the east side of Daedong River.

Just after the first reconstruction period, the city's development took place in East Pyongyang, which is across Kim Il Sung Square. It was not part of Pyongyang-seong; it was an active district during the colonial period, as it was physically connected to central Pyongyang through newly built bridges, the Daedong and Okryu Bridges. The area was first developed as a new town in the 1930s and was included in the reconstruction plan as part of the central area of the city.

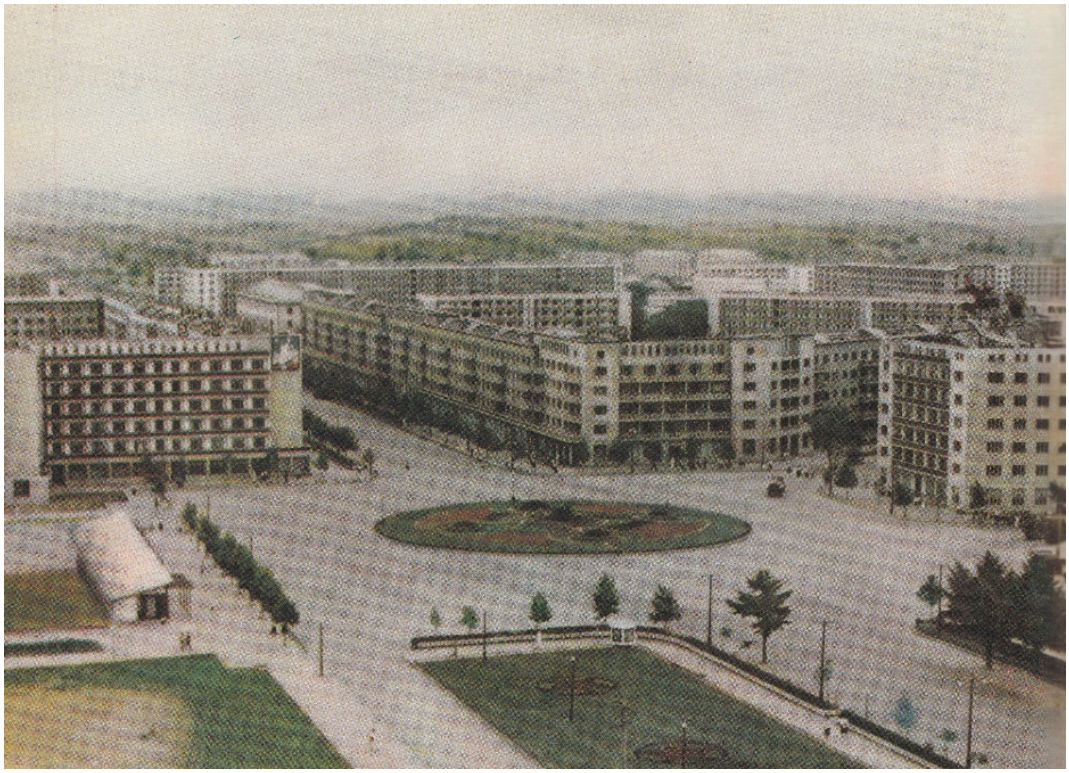

Figure 37. East Pyongyang in the 1950s [196]

Dong-pyeong-yang 17,18 ho so-cheung sallimjip gu-hoeg (동평양 17,18 호 소층 살림집 구획, East Pyongyang Sallimjip Plan No. 17 and No. 18) and Dong-pyeong-yang 59ho ju-taeg so-gu-yeog (동평양 59 호 주택 소구역, East Pyongyang Microdistrict No. 59) were built during this period. As the area had been developed under the master plan, its original composition was well organized with a grid pattern; theories of microdistricts could thus be implemented there with little modification.

[196] Korea Today, 1959.

In the North Korean Terminology Dictionary, sallimjip (살림집) is described as a house for livelihood that is based on a family unit.[197] In North Korea, the terms is widely used to describe all housing types from a single-family detached house to apartment units.

One unique aspect of North Korea's urban development is that it occurred as part of boulevard developments.[198] The names of developments, aside from those from the early reconstruction period, were named after boulevards. This was because the city had insufficient infrastructure, and the developments had to accompany the construction of major boulevards. In the 1950s, Cheong-nyeon-geo-li [199] (청년거리) and Gae-seon-mun-geo-li (개선문거리) were constructed as the first major boulevards in the city. In the 1960s, Mo-lan-bong-geo-li (모란봉거리), which connected the Arch of Triumph and Mansoo Bridge, and Sungri Street, which was originally called Stalin Street and Kim Il Sung Street, were reconstructed, and many other major streets followed, such as Seo-mun-geo-li (서문거리), Man-su-dae-geo-li (만수대거리), Yeong-gwang-geo-li (영광거리), Chil-seong-mun-geo-li (칠성문거리), and Hae-bang-san-geo-li (해방산거리). Since the 1970s, the scale of these boulevard developments had grown considerably as high-rise buildings were introduced. Cheon-li-ma-geo-li (천리마거리), Bi-pa-geo-li (비파거리), and Nag-won-geo-li (낙원거리) were developed in the 1970s as major microdistrict streets, and Chang-gwang-geo-li (창광거리), Mun-su-geo-li (문수거리), Gwang-bog-geo-li (광복거리), and Cheong-chun-geo-li (청춘거리) were developed in the 1980s.

During this period in the Kim Il Sung regime, one of the largest revolutions in North Korean microdistricts was the height of their buildings. No microdistrict buildings were more seven stories in the 1950s and early 1960s, both because the city's population was smaller, but also, or in fact mainly, because new technologies such as construction cranes, elevators, and modern heating systems were not yet fully developed.

[197] 북한건설용어집. (2015). 국토교통부. Bug-han-geon-seol-yong-eo-jib. (2015). Ministry of Land, Infrastructure and Transport (North Korean Construction Terminology Dictionary)
[198] Chŏn Sang-in. Pukhan, Tosi Ro Ikta. Sŏul T'ŭkpyŏlsi: T'ongilbu T'ongil Kyoyugwŏn, 2015.
[199] geo-li (거리) is a Korean terminology of boulevard.

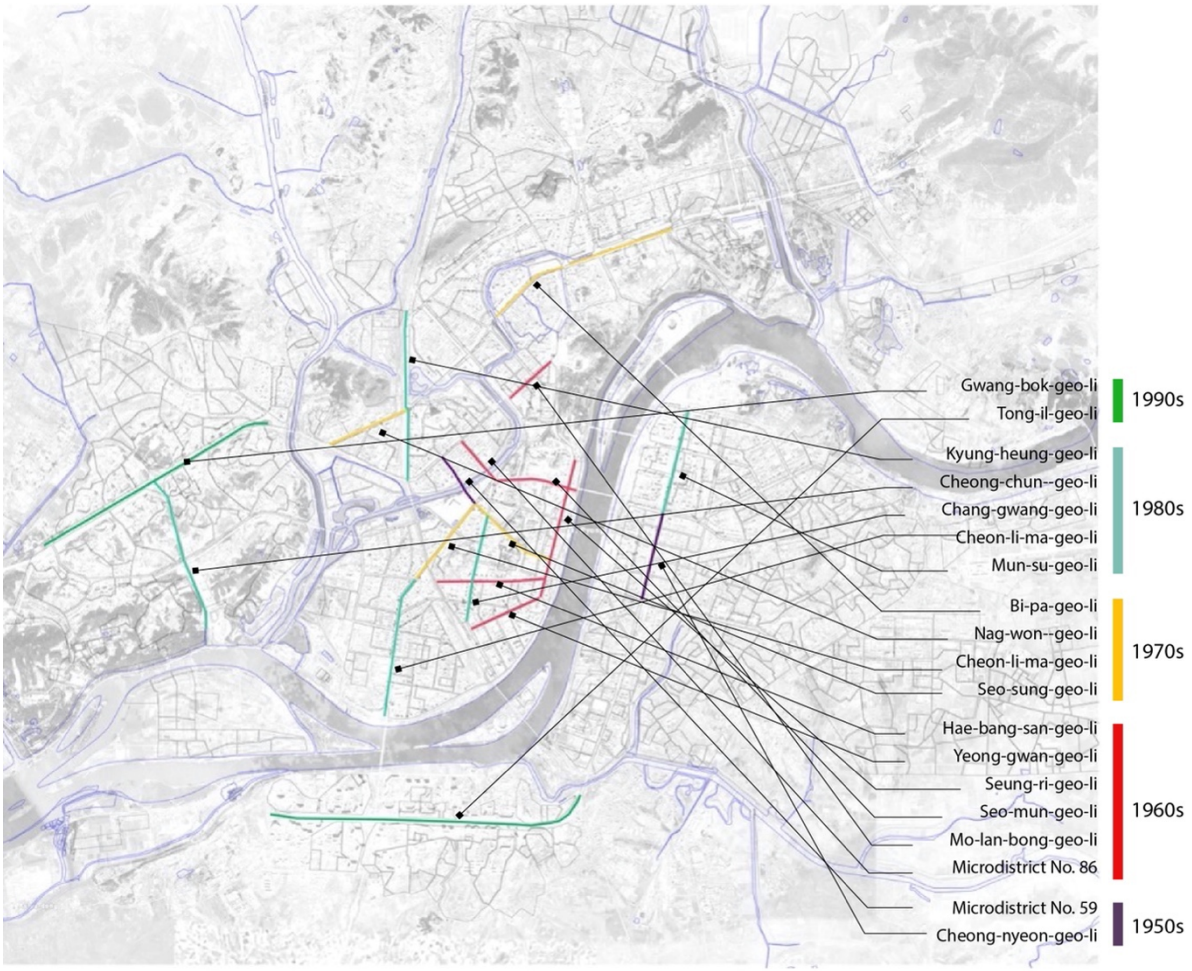

Figure 38. Major Street Developments throughout periods drawn by author

However, starting in the 1970s, microdistrict buildings became taller with the introduction of elevators and construction cranes. In the early 1970s, Cheon-li-ma-geo-li and Seo-seong-geo-li were developed with 15-story buildings, followed by the Lag-won-geo-li development, which was over 20 stories. This growth in building height continued until the late 1980s and finally reached 45-story buildings. This period overlapped with the Soviet Union's development of high-rise buildings in its microdistricts. At the same time, the population growth in major cities in North Korea was so dramatic that the nation had to use high-rise options to accommodate enough inhabitants per microdistrict development.

As Juche ideology, the North Korean version of the socialist revolution, grew, the nation also developed its own version of a socialist microdistrict, the ju-taeg-so-gu-yeog , in the 1960s. The 1963 guidelines by Lee Soon Gun (Ri-sun-geon) have been the backbone of housing development in North Korea, including in Pyongyang, ever since. During this period, microdistrict guidelines were set, and residential typology was developed to reflect

both the theory of microdistricts and the North Korean lifestyle culture. In the 1960s, North Korea also suggested its own housing model, a single-corridor type, that could be implemented in microdistricts.

2.2.2. The Kim Jong Il Era

Kim Jong Il, the second leader of North Korea and the son of Kim Il Sung, ruled the regime from 1994, when his father died, until his death in 2011. Even though his official takeover happened in 1994, Kim Jong Il had become heir apparent in the 1980s and had led major national projects since then. Given his special interest in art and architecture, he had a large influence on the architectural styles of the era, which also changed the form of microdistrict housing. In his essay "On Architecture," Kim Jong Il insisted that architecture should be not only functional, but also aesthetic.[200]

Two major microdistrict developments that reflect the regime's ideology are the Gwang-bok-geo-ri (광복거리), and Tong-il-geo-li (통일거리) developments. Both were developed between the late 1980s and early 1990s in the Kim Il Sung regime but were mostly led by Kim Jong Il, who was already the commander-in-chief then. Both were massive developments that responded to the city's population increase and had more than 50,000 units, targeting almost 10% of the city's population. Even though the basic rule of these developments followed microdistrict theory, two unique characteristics distinguished them from previous microdistrict developments in the city: the location of the developments and their architectural typology.

[200] Kim Jong Il . Geon-chug-ye-sul-lon: 1991. 5.Pyongyang: Jo-seon-no-dong-dang chul-pan-sa, 1992. (On Architecture by Kim Jong Il)

Figure 39. Lag-won-geo-li in the 1980s [201]

The Kwang-bog-geo-li (광복거리), and Tong-il-geo-li (통일거리) developments were the first two major microdistrict developments in Pyongyang that were located outside the reconstruction plan area. In the reconstruction plan of the 1950s, Pyongyang was originally planned to have one million inhabitants, but the city grew to over a million by in the 1960s and to over two million in the 1980s. Therefore, the city needed a new strategy to accommodate the population increase in new areas that could allow large-scale microdistrict development. In 1989, Kim Jong Il planned to develop 20,000 housing units in Tong-il-geo-li (통일거리) by 1992 to celebrate the 80th birthday of Kim Il Sung and another 16,000 units by 1993.[202] Although the second development was not completed due to the Arduous March (1994-1998), it remains one of the largest developments in North Korea. Meanwhile, Kwang-bog-geo-li (광복거리) was developed to house 25,000 units in the same period as that of Tong-il-geo-li (통일거리).

[201] Jo-seon-min-ju-ju-ui in-min-gong-hwa-gug. Pyongyang : Jo-seon-hwa-bo-sa, 1986.
[202] 통일거리. Tong-il-geo-li (n.d.). Retrieved October 22, 2022, from http://encykorea.aks.ac.kr/Contents/Item/E0070649

These two areas were connected to central parts of the city through major boulevards, Kwang-bog-geo-li (광복거리), and Tong-il-geo-li (통일거리), and as they were new developments, they had weak district plans. Microdistrict programs were spread along the streets, while few cross-streets were implemented. Unlike microdistricts in central Pyongyang, the locational character on the fringe of the city allowed the developments to have a more formal approach to residential buildings. In his essay "On Architecture," Kim Jong Il argued that residential buildings should reflect the unique living cultures of North Korea, and architecture should be artistic in addition to functional.[203] Therefore, residential buildings adopted a more formal approach to shape; cubical shapes were avoided to make North Korean buildings more unique. The names reflected the buildings' shapes, such as "windmill" and "wave." Indeed, this formal approach was quite unique; in other socialist countries, such as the Soviet Union or Eastern European countries, even when the height of residential buildings increased dramatically, from five stories to more than 40, the functional box plan remained relatively unchanged.

Along with the formal approach, these developments were when the residential buildings went taller than forty stories. As mentioned above, the developments were made to accommodate an increasing population; therefore, residential buildings that housed more inhabitants were necessary. However, at the same time, as the taller residential buildings required more open spaces in between, these microdistricts needed much larger site plans than those in central Pyongyang. Their locations allowed larger site plans, as they were newly constructed in undeveloped areas.

It dramatically changed the form of microdistricts in terms of the open space plan and their size. In the previous era, microdistricts' open spaces were placed between residential buildings. Residential gardens or group gardens were planned in those spaces as buffers between residential buildings and as leisure areas for inhabitants. The guidelines suggested that the built area should be about 20% of the site area to balance built and unbuilt areas. However, in the microdistricts in Kwang-bog-geo-li (광복거리), and Tong-il-geo-li (통일거리), the open space ratio increased dramatically due to the height of the buildings, and often, these open spaces were left out areas rather than open space for resting. Recently, these left out areas have become new opportunities for infill developments in the districts.

[203] Kim Jong Il . Geon-chug-ye-sul-lon: 1991. 5.Pyongyang: Jo-seon-no-dong-dang chul-pan-sa, 1992. (On Architecture by Kim Jong Il)

The taller buildings made the development site larger than those with microdistricts that had 10- to 15-story buildings. Consequently, the sites did not adhere to certain aspects of the North Korean microdistrict guidelines from 1963. The guidelines suggested that the proper size of a microdistrict was not larger than 20 hectares, with exceptions such as Chungjin or Hamhung, where new towns were developed. Even in those exceptions, a single microdistrict was to be fewer than 35 hectares. However, in the Kwang-bog-geo-li (광복거리) and Tong-il-geo-li (통일거리) developments, the size of a microdistrict was about 60 hectares, three times larger than the suggested size of a microdistrict for Pyongyang. Even though taller towers were understandably necessary to accommodate more inhabitants efficiently, the size of microdistricts in the plan stopped meeting the guidelines' essential requirements. The walking distance to service amenities, such as schools and stores, increased. An increased microdistrict area meant an increase in residential districts' area, as well. The residential district areas in these developments exceeded the average area the microdistrict guidelines suggested. The Kwang-bog-geo-li (광복거리) development was about 280 hectares and contained five microdistricts, while the Tong-il-geo-li (통일거리) development was about 700 hectares and contained several microdistricts.

The walking distance to service amenities, especially stores, could not be amended due to the structure of the microdistrict. As mentioned above, these microdistrict developments were did not conform to the existing urban fabric; therefore, the major streets in the middle, Kwang-bog-geo-li (광복거리), and Tong-il-geo-li (통일거리), were the only major thoroughfares along which the stores could be located. Therefore, despite the advantages of being located along major streets, some service amenities had to be placed on the fringe of microdistrict, creating a major disadvantage in terms of accessibility by foot.
These stores along the main streets were also used as architectural gestures that reflected Kim Jong Il's theory. He believed that cityscapes should be beautiful and could be created with harmoniously composed elements that balanced horizontal and vertical architecture. In Kwang-bog-geo-li (광복거리), and Tong-il-geo-li (통일거리), the stores along the streets functioned as horizontal elements in the foreground, while the vertical residential towers balanced the perspectival view in the background. Therefore, the store designs had become a crucial aspect of the architectural design, and Jo-seon-geon-chug (조선건축), a prestige architectural magazine in North Korea, introduced unique store designs that emphasized horizontality in massing and facade design.

While the two major microdistrict developments described above were implemented during the early period of Kim Jong Il's regime, the trends of housing developments changed in the second half. During the first half, for a decade in the 1990s, no major development plans were completed other than the Kwang-bog-geo-li (광복거리), and Tong-il-geo-li (통일거리) developments, which were planned in 1989 and built by 1991. Starting with the fall of the Berlin Wall in 1990, the socialist economic bloc had begun to collapse, resulting in the so-called Arduous March in North Korea between 1994 and 1998. Nearly half a million people died from famine during this period,[204] and the nation thus had no capacity to plan housing developments in the mid-1990s.

Figure 40. Tong-il-geo-li Sallimjip [205]

However, the situation had changed when North Korea announced economic reforms in 2002.[206] The reform plan allowed a partially market-oriented economy and allowed a new class of people, called *don-ju*, to emerge and grow. The new emerging class led private housing developments and the real estate market. Although those developments carried high risk, the real estate market in the private sector was growing. The scale of these developments was limited, and they were mostly single-tower developments about 15 stories high. They were mostly located in the central part of the city, which still contained low-rise houses that

[204] Goodkind , Daniel, Loraine West , and Peter Johnson . Rep. A Reassessment of Mortality in North Korea, 1993-2008 . Washington, D.C. , 2011.

[205] 오늘의 평양. 서울: KBS 영상사업단, 2000. O-neul-ui pyeong-yang. Seoul: KBS Yeong-sang-sa-eob-dan, 2000.

[206] Kim, Suk Jin. "The Limits of Economic Reform in North Korea under the Kim Jong-Un Regime: Lessons from Chinese Experiences." International Journal of Korean Unification Studies 30, no. 2 (2021): 1–28.

could be redeveloped as taller apartment buildings. As there were no major public development plans led in the early 2000s, Pyongyang permitted such private developments, allowing a market economy to fill the gap between public and private.

After a long and difficult period, Pyongyang began establishing nation-level plans around 2012 to celebrate the 100th anniversary of Kim Il Sung's birth year, and with the catchphrase "Strong and Prosperous Nation," North Korea, especially Pyongyang, launched a series of development plans, from symbolic cultural projects to housing developments. The Chang-jeon-geo-li development was a major housing development plan that Kim Jung Il implemented at the end of his regime.[207] The scale of the development was massive. Located in the center of the city, only 700 meters from the Kim Il Sung Square, it has more than 2,700 housing units and has towers 45 stories tall across 14 residential buildings.[208] It redeveloped an area that had about 2,500 mid-rise housing units that were developed in the 1970s. Even though it has more than 100 service amenities, including a primary school, it marks the beginning of a new housing development era in which the microdistrict guidelines were no longer valid or closely followed.

2.2.3 The Kim Jong Un Era

Kim Jong Il did not see the end of the Chang-jeon-geo-li development, as he died in 2011, and his successor, Kim Jong Un, celebrated the development's completion in 2012. As mentioned above, the Chang-jeon-geo-li development can be considered the first public-led development project that broke the rules of microdistrict theory. Two other major real estate developments that had been realized during the Kim Jong Un regime starting in 2012 followed: the Mi-lae-gwa-hag-ja-geo-li[209] development in 2015 and the Lyeo-myeong-geo-li (Ryomyong Street) development in 2017. Although the Eunha Scientist Street development was also completed during this regime, the Chang-jeon, Mirae Scientist, and Ryomyong Street developments were considered representative projects that showed the direction of economic reform in the Kim Jong Un regime.

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[207] "평양 창전거리 北 첫 '뉴타운'...창전거리 아파트 준공." 서울신문, June 21, 2012. https://www.seoul.co.kr/news/newsView.php?id=20120622500017. "Pyeong-yang chang-jeon-geo-li Bug 'cheos nyu-ta-un'...chang-jeon-geo-li a-pa-teu jun-gong." Seoul Newspaper, June 21, 2012. (Pyongyang's the first new town Chang-jeon-geo-li Apartment is Completed)

[208] "평양 창전거리 건설 비하인드," May 20, 2018. http://m.jajusibo.com/a.html?uid=39729. "Pyeong-yang chang-jeon-geo-li geon-seol bi-ha-in-deu," May 20, 2018. (Behind story of Pyongyang Chang-jeon-geo-li development)

[209] Also known as, Mirae Scientist Street

One of the main changes in his regime that differentiates it with previous two is economic transformation of the country. After disconnection to other socialist countries and a long Arduous March in the 1990s, North Korea finally took an economic reform in 2002. It is called policy for 'Economic Management Improvement' which aimed to improve economic conditions and overcome facing economic difficulties then. Originally, it was meant to improve the economy instead of converting the nation into a market economic society, therefore, it was called "improvement" and considered as "practical socialism" by North Koreans.[210] This change allowed people to start their own small businesses, such as small trades, sales, and manufacturing, and as a result, a new economic-class, called *donju*, emerged in the society.[211] The change happened incrementally, and by the time when Kim Jong Un took over the office, donju had already became major source of private real estate developments in the country.

Since taking office in 2012, Kim Jong Un has mostly focused on developments in Pyongyang. Based on a number of photos released in *Rodong Newspaper*, the only official newspaper in the nation, Jin-Hee Ahn argues that Kim Jong Un has mostly conducted field inspections in Pyongyang, unlike his father, Kim Jong Il, whose travel for field inspections took him all over nation. The three development projects mentioned above are the result of his activities focused on the city.[212]

The Mirae Scientist Street development, located in Chungkuyeok, was completed in 2015. Located near the Daedong River, directly across from the leisure-oriented Ryanggakdo island, it is a high-rise and high-density development, including a 53-story tower and a total of 2,500 units in an area of over 40 hectares. The total footprint is about 870,000 square meters, which makes the overall FAR 2.3. As the name suggests, it was developed to provide housing for scientists and professors in universities, such as Kim Chaek University of Technology.[213] In a way, it is similar to typical residential developments in Pyongyang, street based development. It was developed along a six-lane street, originally called Ansan Street, which is

[210] Chung, Young Chul. "North Korean Reform and Opening: Dual Strategy and 'Silli (Practical) Socialism," Pacific Affairs, Vol. 77, No. 2 (Summer, 2004), 2004.
[211] Donju literally means "lord of money," which basically is people with money in North Korean society.
[212] Ahn, Jin Hee. "The Sopic Regime of North Korea Landscapes in Field Guidance Photographs of Rodong Sinmun ," 2019.
[213] Sim, David. "North Korea: Kim Jong-Un Opens Atom-Shaped Science and Technology Building [Photos]." International Business Times UK. International Business Times, December 30, 2015. https://www.ibtimes.co.uk/north-korea-kim-jong-un-opens-atom-shaped-science-technology-building-photos-1526161.

almost one kilometer long, and it redeveloped an obsolete neighborhood in the center of the city.

The Ryomong Street development was finished in 2017 in Daesungsan-guyeok. The development is almost three kilometers long, extending from Kumsusan to Yonghung Crossing. The total site area is 900,000 square meters, and the footprint is 1,728,000 square meters, which makes the FAR 1.9. More than 4,800 residential units are provided, including six schools, three kindergartens, and three daycare centers.[214]

Although they generally focus on residential buildings, these developments follow the programmatic suggestions of the microdistrict guidelines from the 1960s. Nurseries and schools are situated near other service amenities and civic facilities. For instance, the Ryomyong Street development contains six schools, three nurseries, and three daycare facilities, and in the Mirae Scientist Street development, there are 17 service buildings in total that house more than 150 stores. However, the proportion of these service amenities is not the same as the microdistrict guidelines recommend. For instance, Changgwang Department Store, a five-story shop on Mirae Scientist Street, is a commercial store not just for district residents, but for Pyongyang citizens in general.[215] In the Changjon Street development, the Pyongyang Children's Department Store, a four-story, 5,000-square meter building, also serves the overall city rather than the district.

[214] "북한 평양 여명거리 준공 모습 (1)." SPN 서울평양뉴스, May 16, 2017. http://www.spnews.co.kr/news/articleView.html?idxno=514. "Bug-han pyeong-yang yeo-myeong-geo-li jun-gong mo-seub (1)." SPN Seoul-Pyongyang News, May 16, 2017 (Pictures of Ryomyong Street development)

[215] 조정훈. "北 평양 창광상점 내.외부 사진 공개." 통일뉴스, October 1, 2015. https://www.tongilnews.com/news/articleView.html?idxno=113864. Jo Jeong-hun. "Bug pyeong-yang chang-gwang-sang-jeom nae.oe-bu sa-jin gong-gae." Tongil News, October 1, 2015. (Inside and Outside Photos of Changgwang Department Store)

Figure 41. Ryomyong Street Development[216]

Compared to previous major housing developments in the Kim Jong Il era, these three developments, especially the Mirae Scientist Street and Ryomyong Street developments that Kim Jong Un began, have unique features that differentiate them from the previous era. The first is their location. As mentioned above, the Gwangbok Street and Tongil Street developments in the late 1980s and early 1990s were the first large-scale developments outside the city center. They were to meant to accommodate the city's increasing population, and those locations were some of the few choices for a large-scale development. However, the recent developments in Kim Jong Un's regime were located in the central area of the city. The Mirae Scientist Street development is located in Chungkuyeok,[217] which is considered one of the central areas of Pyongyang, and it is less than three kilometers from Kim Il Sung Square, which is half the distance between the square and the Tongil Street development. The Ryomyong Street development is about four kilometers from the square, which still is considered the center of the city, and its metro station, Jonu station, is nearby. The Changjon Street development is near the Sungni metro station, which is less than 800 meters away from Kim Il Sung Square. These developments clearly demonstrate locational advantages that differ from the major developments in the previous regime. The Changjon and Mirae Scientist Street developments are waterfront developments with views of the Daedong River. Even though the Daedong River is one of the most important factors in city planning in Pyongyang, there has been no waterfront development in the city until recently. In the case of the Mirae Scientist Street development, it is even more obvious that the riverfront is considered an

[216] Yom , Song Hui. "Ryomyong Street - Energy-Saving Green Street." Explore DPRK, February 16, 2020. https://exploredprk.com/articles/ryomyong-street-energy-saving-green-street/.
[217] The meaning of *"chungkuyeok"* is the central district. It is located within Pyongyangsong and is still considered the center of the city today.

advantage for developments there. Although the Changjon Street developments provide river views from the apartments, on the ground floor, it did not have much effort taking advantage of being by the river. Meanwhile, in the Mirae Scientist Street development, open spaces and parks are designed around the river, and in some respects it resembles Battery Park in New York in that it takes full advantage of the riverfront. The Ryomyong Street development can be understood as a transportation-oriented development (TOD) of Pyongyang. It starts at the Jonu metro station and extends towards the Gwangmyong metro station, where Kumsusan Palace of the Sun[218] is located.

The second characteristic of these developments is that they have tall buildings but average density. All three—Changjon Street, Mirae Scientist Street, and Ryomyong Street—used existing city patterns and redeveloped obsolete areas in the city. These areas were first developed during the Kim Il Sung regime with mostly five- to seven-story residential buildings, which were replaced by 30- to 40-story residential towers. The development of high-rise residential buildings during the Kim Jong Il regime included more planned open spaces to maintain distance between buildings; the radio of inhabitants per area was thus quite low despite the buildings' height. For instance, the Gwangbok Street development housed about 25,000 inhabitants in 400 hectares. However, in the Kim Jong Un regime, as the developments reoccurred in the central part of the city, the densities were higher than in the developments on the periphery. The Mirae Scientist Street development provided about 2,500 house units in a 39-hectare site, which amounts to 288 people per hectare (ppl/ha), while the Ryomyong Street development housed 4,800 units in a 90-hectare site, or 240 ppl/ha. These numbers are much higher than the massive developments in the previous regime, which had fewer than 100 ppl/ha. Instead, the density of these new developments was closer to the original microdistrict guidelines, which suggested 3,000 to 5,000 people per 15- to 20-hectare microdistrict. This is an interesting figure, as these developments were five to seven times higher than what the original microdistrict guidelines suggested. The reason is that more open spaces were included in the recent developments as the buildings became higher. It also indicates that these developments were less about making the city denser and more about replacing obsolete structures with new ones.

Thirdly, these developments emphasized the individuality of each building design. Aside from the Changjon Street development, which was planned in the Kim Jong Il era, the

[218] *The Kumsusan Palace of the Sun* is a building that serves as the mausoleum for Kim Il-sung, the founder of North Korea, and for his son Kim Jong-il, both posthumously designated as eternal leaders of North Korea.

two other major developments in the Kim Jong Un regime clearly differ from the previous developments. Previously, housing developments in Pyongyang always had prototypes for residential buildings. Regardless of the location, density, or building height, from single-story houses to 40-story towers, one or several residential prototypes were repeatedly implemented in microdistricts. However, in the Mirae and Ryomyong Street developments, each tower had a unique design that differentiated it from other buildings. This is a surprising change in North Korea, which formerly favored the most effective prototype in residential developments. Even when symbolic and nationalistic designs were used for cultural buildings, residential buildings were distributed in a paternalistic way, and their designs were consistent. This change reflects how Kim Jong Un's perspective on architecture differed from that of his father, Kim Jong Il. While Kim Jong Il emphasized harmony and balance between horizontal and vertical masses, Kim Jong Un insisted that demonstrating Juche ideology in architecture was important; therefore, he argued, each independent piece of architecture should have unique, artistic, and individual aspects.[219] In this regard, he changed the Pyongyang University of Construction and Building Materials to the Pyongyang University of Architecture to emphasize the role of architectural design.[220]

With these unique characteristics—central location, density, and individuality in design—these developments in Kim Jong Un's regime are often called "Pyonghatten" projects, signaling the appearance of Manhattan in Pyongyang.

2.3 Six Cases of Microdistrict Developments in Pyongyang

Six cases of Pyongyang's microdistrict developments were chosen carefully, ranging from the 1950s to 2010s, to achieve a more in-depth understanding of the evolution of North Korean microdistricts; These cases were analyzed based on their location, development scale, compound layout and unit type, building system, and construction methods. These analyses give clues not only about development trends throughout Pyongyang's history, but also of the city's living conditions and cultures. In addition to this analysis, interviews with defectors

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[219] 조정훈. "北 김정은, 미래과학자거리 현지지도..'여기가 우리의 현실.'" 통일뉴스, October 21, 2015. http://www.tongilnews.com/news/articleView.html?idxno=114149. Jo Jeong-hun. "Bug Kim Jong Un, mi-lae-gwa-hag-ja-geo-li hyeon-ji-ji-do..yeo-gi-ga u-li-ui hyeon-sil." Tongil News, October 21, 2015

[220] "평양건축종합대학." "Pyeong-yang-geon-chug-jong-hab-dae-hag." (Pyongyang General University of Architecture) Wikipedia. Wikimedia Foundation, March 7, 2022. https://ko.wikipedia.org/wiki/%ED%8F%89%EC%96%91%EA%B1%B4%EC%B6%95%EC%A2%85%ED%95%A9%EB%8C%80%ED%95%99.9

from the city were conducted to comprehensively understand the material culture of its microdistrict.

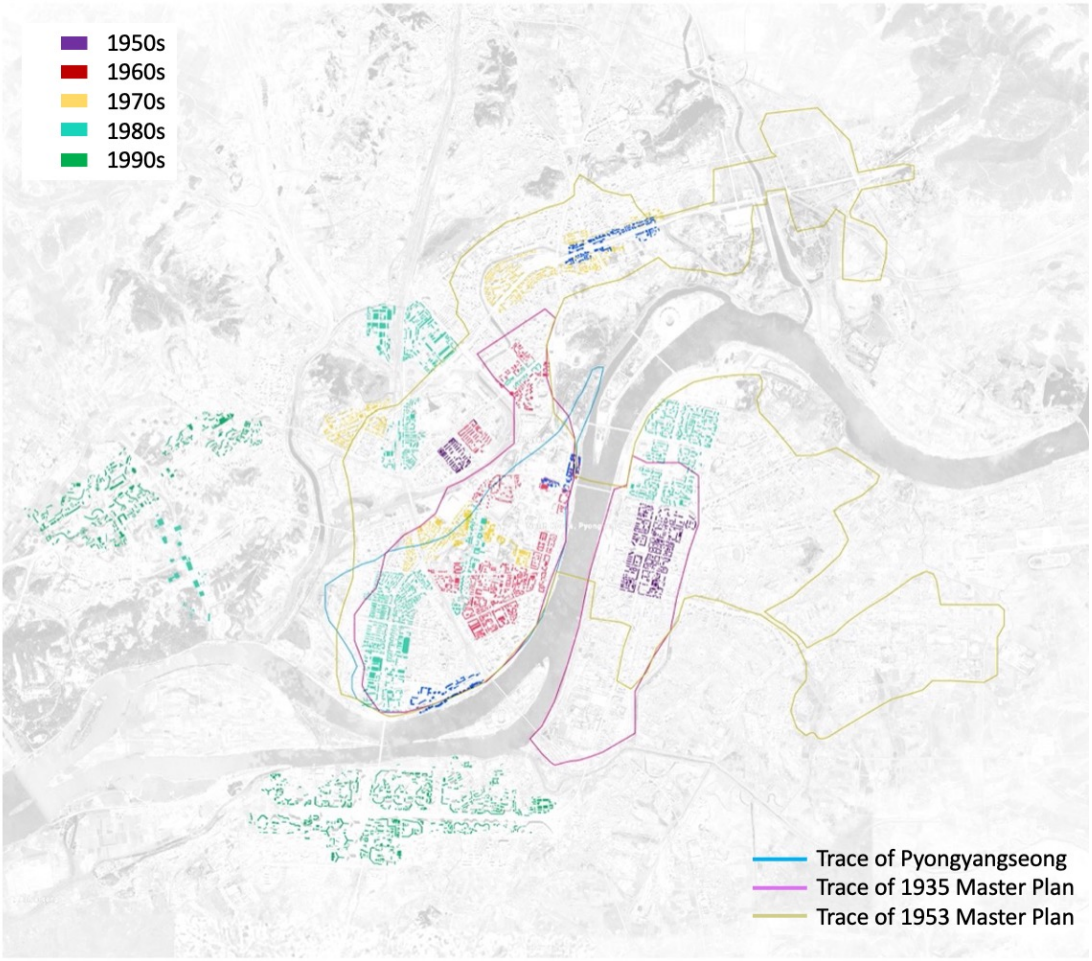

Figure 42. Major Microdistrict Developments in History. Drawn by author

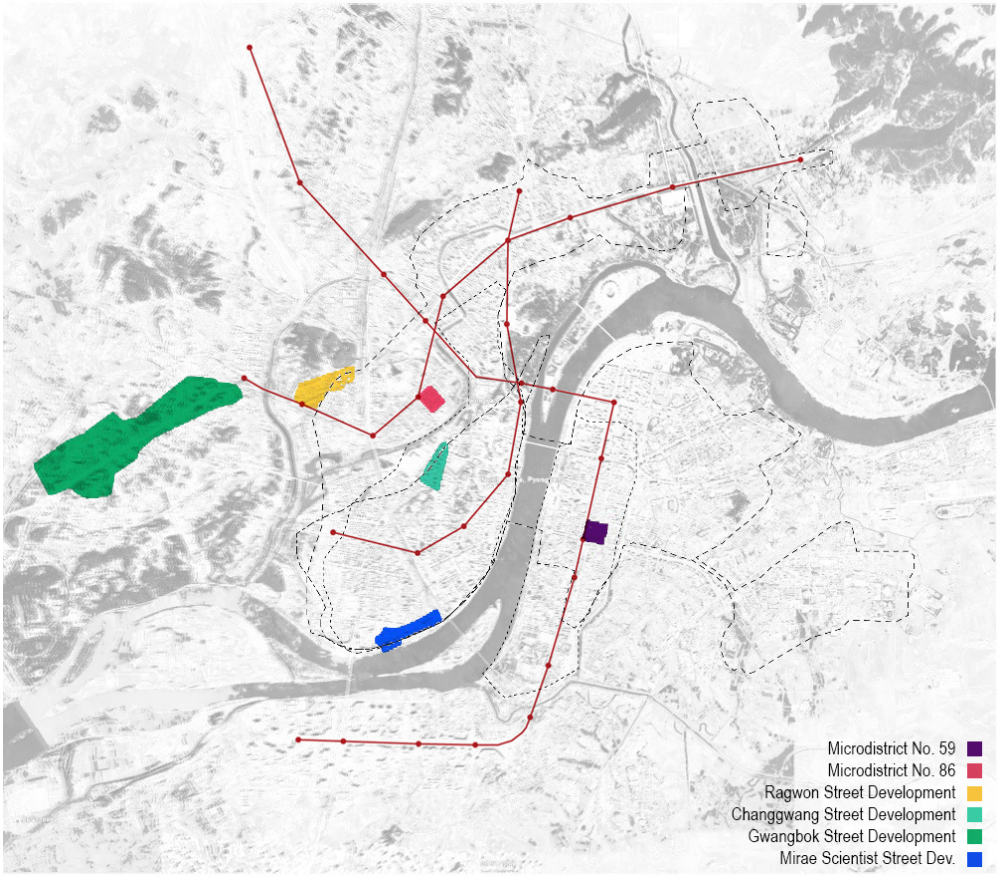

Figure 43 Six case studies in relation to the subway line

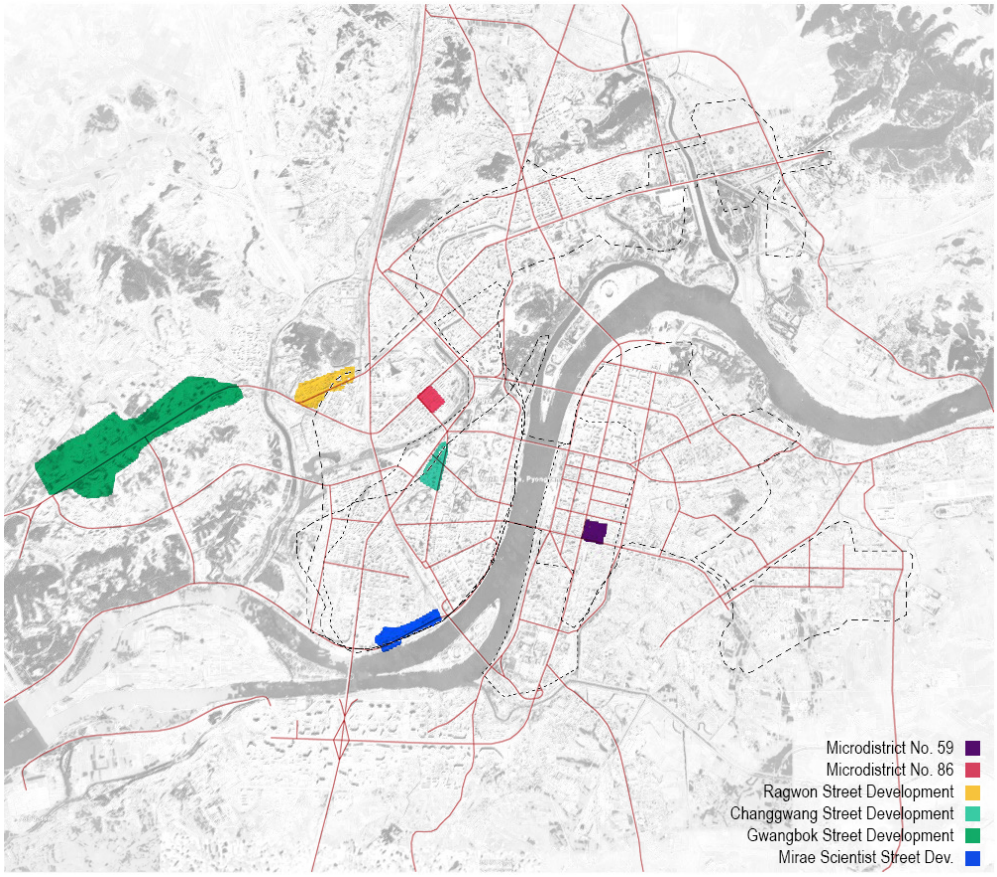

Figure 44 Six case studies in relation to major roads

2.3.1 Microdistrict No. 59

As part of a reconstruction plan from the Korean War, Microdistrict No. 59, built in 1958, was developed during the Kim Il Sung regime in the East Pyongyang Area, Tongsin-dong, Dongdaewon-guyok. The area was originally developed as a new town during the Japanese occupation in the 1930s and was included as one of the major development areas in the reconstruction plan. In the 1953 Reconstruction Master Plan, it was considered part of the "central Pyongyang" district along with Kim Il Sung Square, which was across the Daedong River. It is one of few areas in the city where a grid pattern was implemented well, and it is located near Saesalim Street, which runs over the Daedong Bridge; built in the 1920s, it was the first bridge in the city.

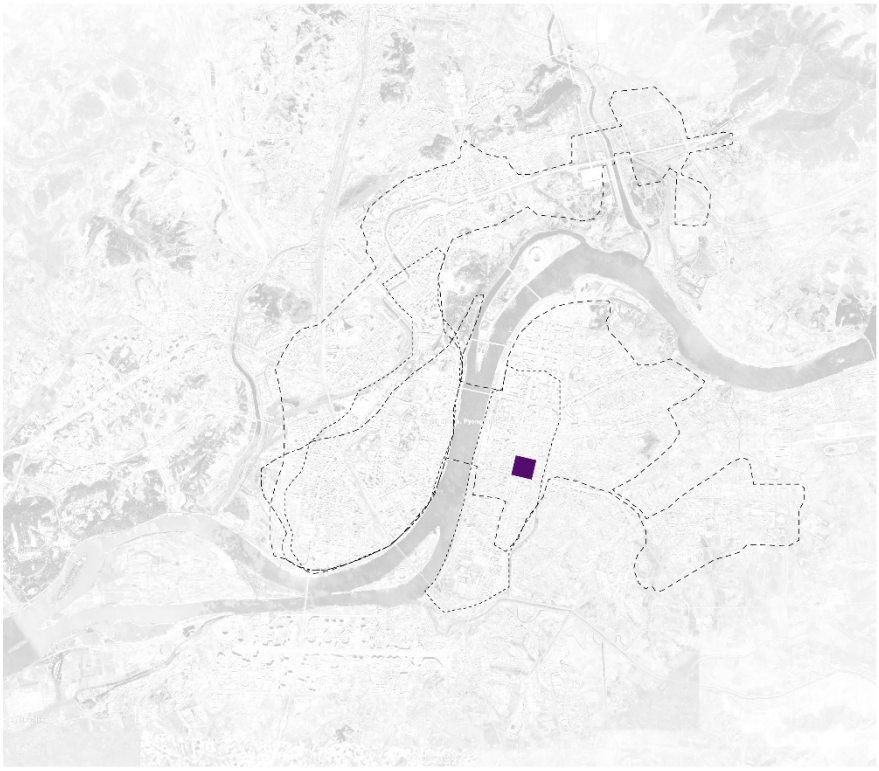

Figure 45. Microdistrict No. 59 in relation to historic traces, drawn by author

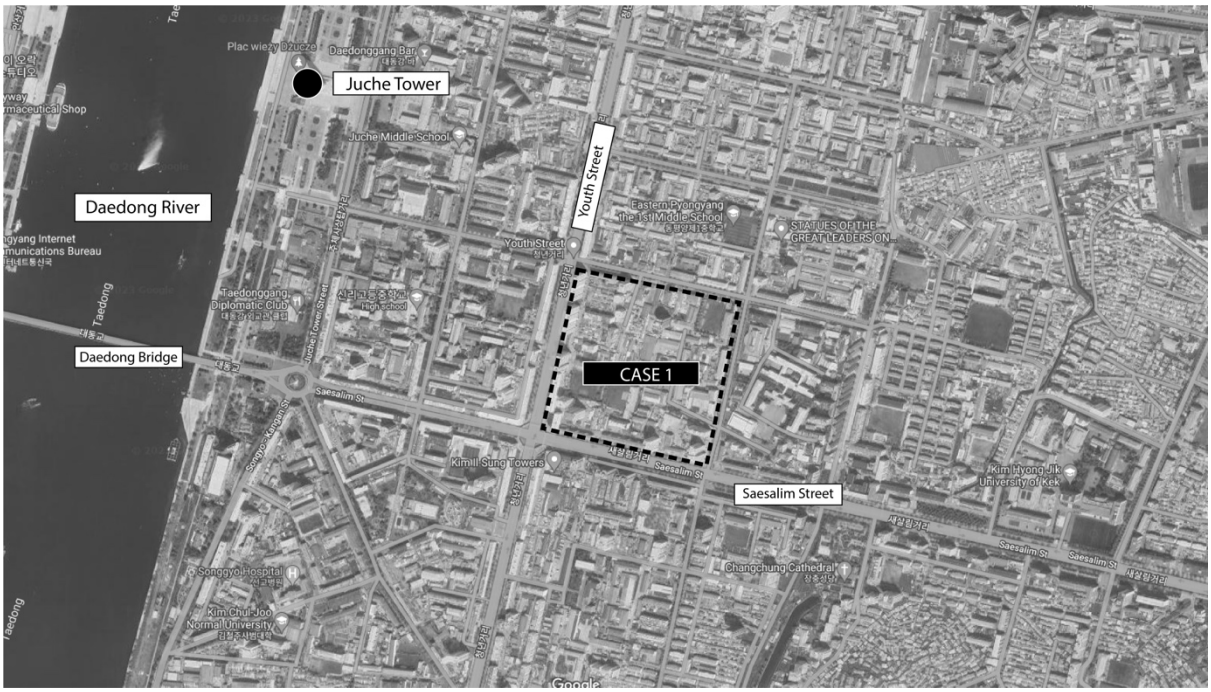

Figure 46 Location of Microdistrict No. 59

The overall site area of Microdistrict No. 59 is 14.5 hectares, which is typical and corresponds to the microdistrict guideline suggestions for Pyongyang. The guidelines in the 1960s suggested 15- to 20-ha microdistricts in Pyongyang, which would contain 5,000 to 6,000 residents. Even though this district was built before the North Korean microdistrict guidelines, it was similar to the guidelines because it followed the Soviet Union's microdistrict rules.

When it was first built in the 1950s, the microdistrict consisted of five-story residential buildings with no service amenities on the ground floor. However, in the 1980s, several standalone 15-story tower-type residential buildings were built in the microdistrict. These infills were designed not only to provide more housing, but also to reflect Kim Jong Il's architectural language, which insisted on harmony between buildings' horizontality and verticality. Therefore, the new, tower-type buildings created a perspectival effect, with a five-story linear building at the front and 1-story vertical buildings set back from the street.

Figure 47. Microdistrict No. 59 retrieved from Pyongyang 3D image by Visicom[221]

Of the four layout types suggested in the 1960s microdistrict guidelines, Microdistrict No. 59 follows the mixed-layout design. It has residential buildings on the periphery, and they form the block as well as streets, while other residential buildings inside the block are laid out parallel. Interestingly, the inner buildings are oriented along an east-west axis rather than running from north to south. The guidelines indicate that the mixed-layout type has the advantage of orienting residential buildings towards the south, which is a crucial cultural factor in Korean residential design. However, Microdistrict No. 59, which was built before the guidelines and designed mainly by Eastern European architects, did not necessarily follow the sun orientation.

[221] Red marks are the buildings that have unit plans of Figure 38. 39. 40.

Figure 48 Layout of Microdistrict No. 59[222]

In the 1950s, during the reconstruction period, the so-called *sektzia (쎅찌야)* plan was widely used. Known as a plan type introduced by the Soviet Union architects, sektzia type is described as multiple sallijip (units) on a floor that share one common staircase. [223] In the *sektzia* plan, two or three units are grouped around a staircase. This *sektzia* type is used in Microdistrict No. 59 for both linear residential buildings at the periphery and those inside the block. Instead of introducing a corridor-type layout for the linear buildings, the *sektzia* type was considered a more efficient way of providing circulation.

Figure 49. Pyongyang Worker's Flat (1954)[224]redrawn by author

[222] Original source from Calvin Chua and Chosun Exchange, redrawn by author
[223] 북한건설용어집. (2015). 국토교통부. Bug-han-geon-seol-yong-eo-jib. (2015). Ministry of Land, Infrastructure and Transport (North Korean Construction Terminology Dictionary)
[224] 대한건축학회. Rep. 통일대비 북한 SOC 현황 정보 조사 및 시나리오 기반 주거공급·인프라 조성 기본계획 수립 최종보고서. 국토교통부;국토교통과학기술진흥원, 2018. Dae-han-geon-chug-hag-hoe. Rep. Tong-il-dae-bi bug-han SOC hyeon-hwang jeong-bo jo-sa mich si-na-li-o gi-ban ju-geo-gong-geub-tbs-in-peu-la jo-seong gi-

Figure 50. Sallimjip Sektzia Plan (1956)[225] redrawn by author

Figure 51. Sallimjip Sektzia Plan[226] redrawn by author

At the beginning of the reconstruction, *ondol*, the Korean traditional floor heating system, was applied. In brief, the *ondol* uses heated vapor from the kitchen, and it runs underneath the floors before exiting through the chimney. Even though some North Korean architects argued that fireplaces should be used for heating systems, as in the West, Kim Il Sung insisted that the traditional *ondol* was so integrated into Koreans' lifestyles that it should be kept even in new, five-story residential buildings. This means that the kitchen level has to be lower than other rooms, typically 500 to 600 mm, so that the heat can run underneath the rooms.

bon-gye-hoeg su-lib choe-jong-bo-go-seo. Gug-to-gyo-tong-bu;gug-to-gyo-tong-gwa-hag-gi-sul-jin-heung-won, 2018
Location of these types are marked in red in Figure 37.

[225] Ibid. Location of these types are marked in red in Figure 37.

[226] Ibid. Location of these types are marked in red in Figure 37.

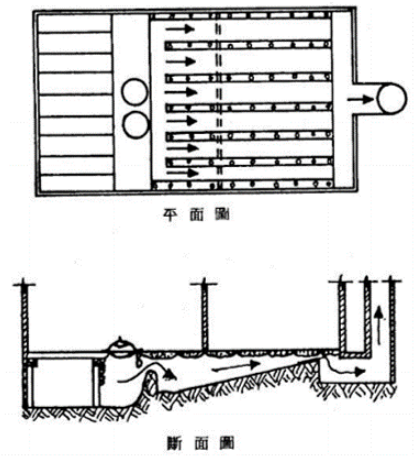

Figure 52. Ondol System Applied in Microdistrict No. 57 Sallimjip[227]

A brick block masonry construction method was used in the microdistrict. This method does not require high-end engineering or special machines; therefore, this method was widely used during the reconstruction era in the 1950s. As most microdistricts in the period were five to six stories, this construction method was viable when the nation had few factories to supply construction materials.

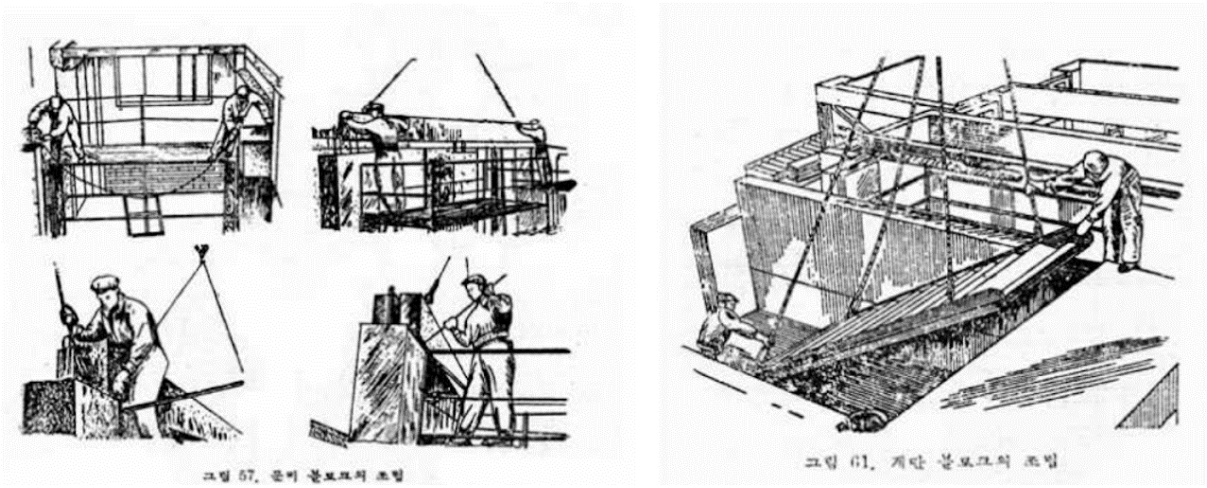

Figure 53. Brick Block Masonry Construction [228]

[227] Ibid.
[228] Ibid.

2.3.2 Microdistrict No. 86

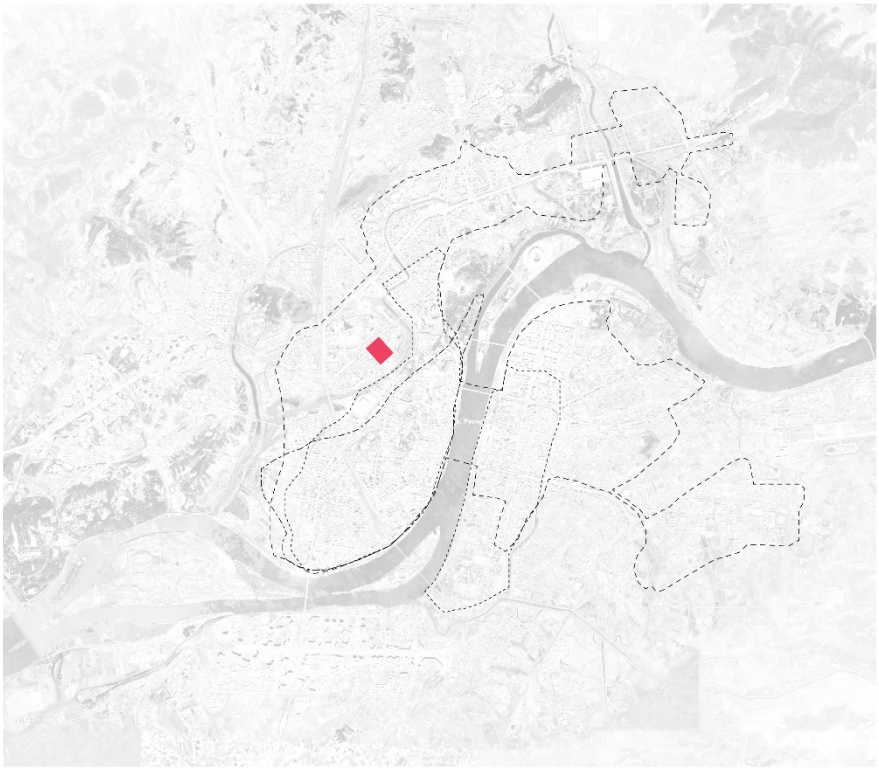

Figure 54. Microdistrict No. 86 in relation to historic traces, drawn by author

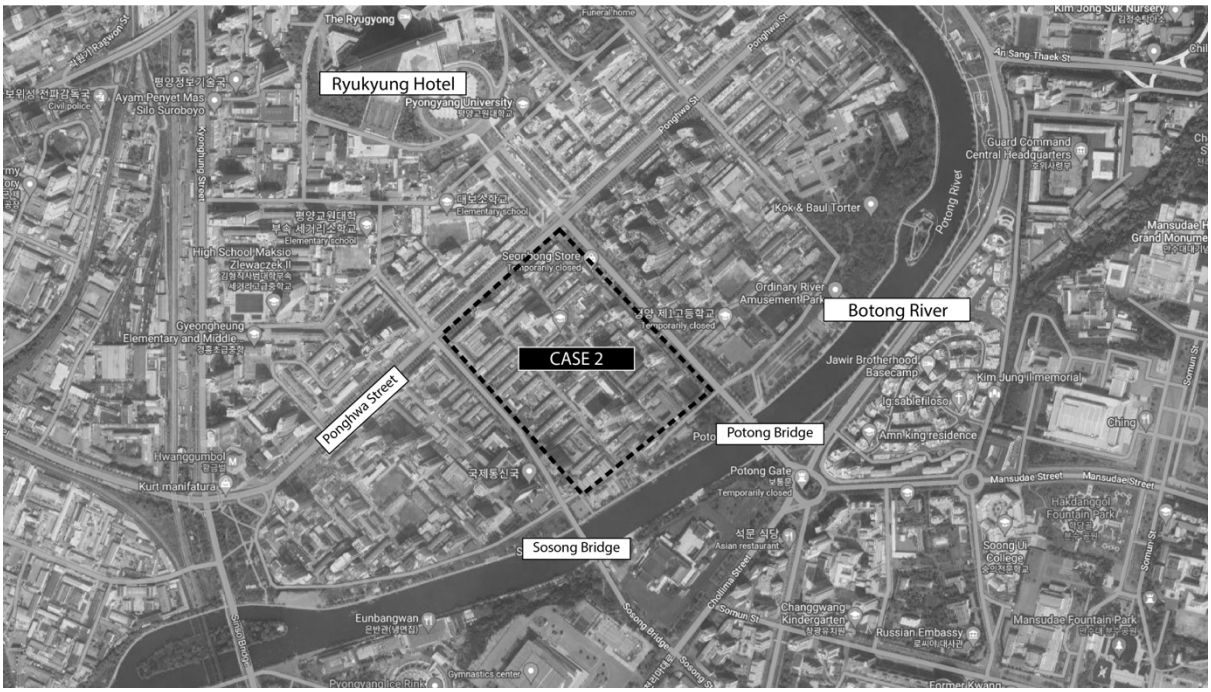

Figure 55 Location of Microdistrict No. 86

Located in Sinwon-dong, Botonggang-guyok, Microdistrict No. 86 was built in 1963 after the first wave of the reconstruction period had ended and when the North Korean Microdistrict Guidelines were first published. Today, the area is well known for the Ryukyung Hotel. However, until the Japanese Colonial era, it was an agricultural area despite

its proximity to the city center. This was because the nearby Botong River often flooded until North Korea completed its first restoration project in 1946. The area appeared in in the 1953 Reconstruction Master Plan, in which it was one of several satellite districts with what is now the Ryukyung Hotel's location as the district's central square. It is one of few areas in West Pyongyang that has clear grid-patterned developments, and Microdistrict No. 86 was part of the pattern.

Figure 56. Microdistrict No. 86 retrieved from Pyongyang 3D image by Visicom[229]

The site area is 21.5 hectares and roughly follows the microdistrict guidelines. As it was built in 1963, when the guidelines were published, the site area may not have been chosen based on the guidelines, but similar to Microdistrict 59., it influenced the guidelines' suggestions of the proper size of microdistricts for Pyongyang.

[229] Red marks are the buildings that have unit plans of Figure 48.

Figure 57 Layout of Microdistrict No. 89[230]

Most residential buildings in the district are five stories tall, with some exceptions built in the 1980s. Similar to Microdistrict 59, originally, all residential buildings in the district were five stories, but some 15-story residential towers filled in the microdistrict.

Figure 58. Periphery Type Microdistrict [231]

[230] Original source from Calvin Chua and Chosun Exchange, redrawn by author
[231] Korea Today, 1959.

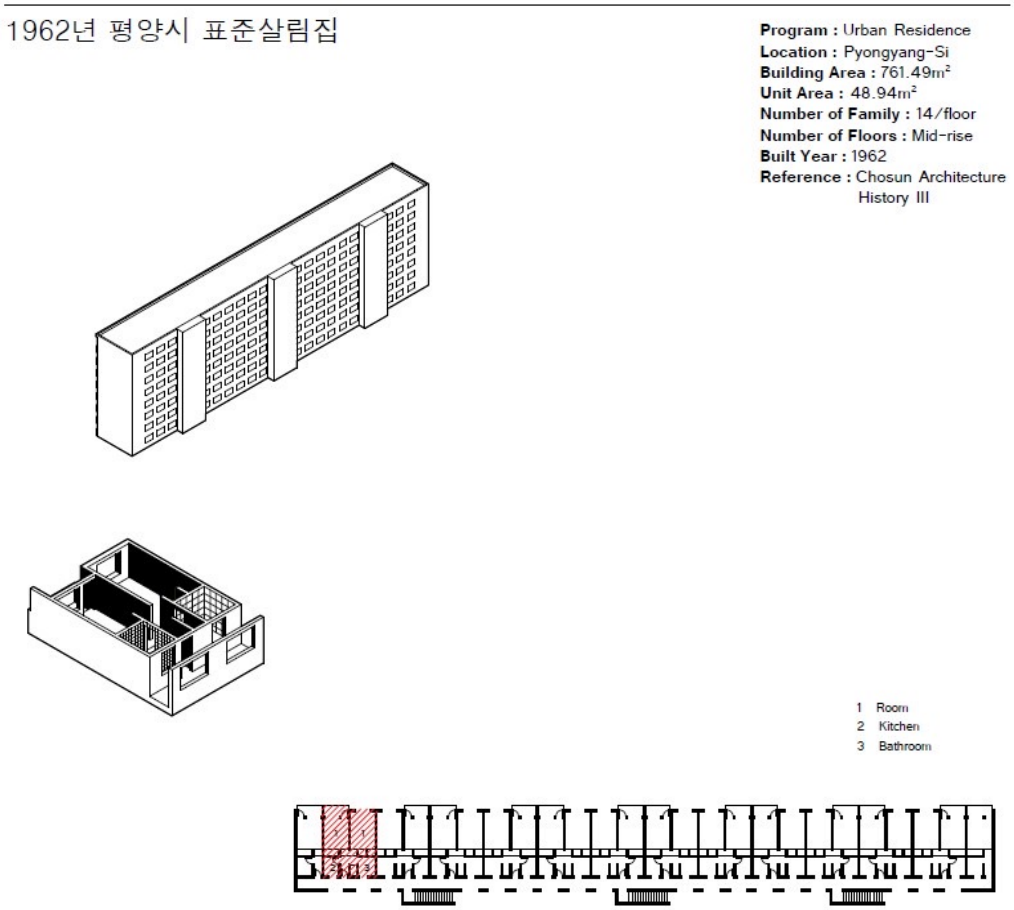

Figure 59 Standard Sallimjip Type announced in 1962

Unlike Microdistrict No. 59, Microdistrict No. 86 has a parallel-type layout in terms of block layout. Even though some linear residential buildings form the periphery of the block on one side, the other sides are open, as is typical in the parallel-type layout. As the guidelines say, the parallel type has the advantage of having better sun orientation for units, and the microdistrict uses this advantage in the layout. In Microdistrict No. 59, which was strongly influenced by Eastern European architects, this factor was not closely followed. However, in Microdistrict No. 86, which was built as the North Korean microdistrict guidelines were being written, the orientation of the residential buildings was considered more carefully to reflect the residential culture of Korea.

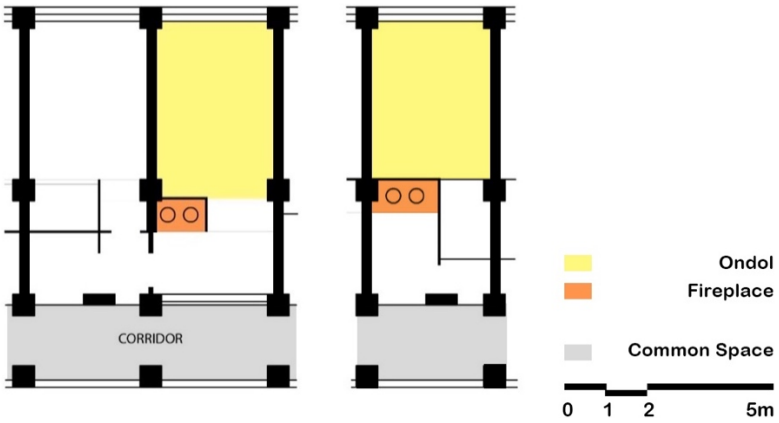

Figure 60. Corridor Type Unit Plans [232] redrawn by the author

Along with *sektzia* type, which was also introduced in Microdistrict No. 59, the new corridor-type residential units were introduced in this microdistrict. In fact, the type was first introduced during the reconstruction period. The DAG introduced corridor-type residential plans, and starting in the late 1950s and early 1960s, the Pyongyang City Construction Institute started developing its own corridor-type plans and implementing them in microdistricts. The construction method defined the dimensions of these plans.

The "horizontal *ondol*" was first developed in Microdistrict No. 86. As the traditional *ondol* required more than 500 mm of depth to create heat vapor circulation underneath the floors, it was impractical for multi-story residential buildings. Therefore, the horizontal *ondol* was developed to minimize the discrepancy between the levels of the kitchen and the other rooms. Later, the discrepancy disappeared when central heating systems were introduced, but this is considered a transitional period, in which microdistricts retained traditional Korean architectural aspects in modern socialist architecture.

[232] 대한건축학회. Rep. 통일대비 북한 SOC 현황 정보 조사 및 시나리오 기반 주거공급·인프라 조성 기본계획 수립 최종보고서. 국토교통부;국토교통과학기술진흥원, 2018. Dae-han-geon-chug-hag-hoe. Rep. Tong-il-dae-bi bug-han SOC hyeon-hwang jeong-bo jo-sa mich si-na-li-o gi-ban ju-geo-gong-geub-tbs-in-peu-la jo-seong gi-bon-gye-hoeg su-lib choe-jong-bo-go-seo. Gug-to-gyo-tong-bu;gug-to-gyo-tong-gwa-hag-gi-sul-jin-heung-won, 2018.
Location of these types are marked in red in Figure 45.

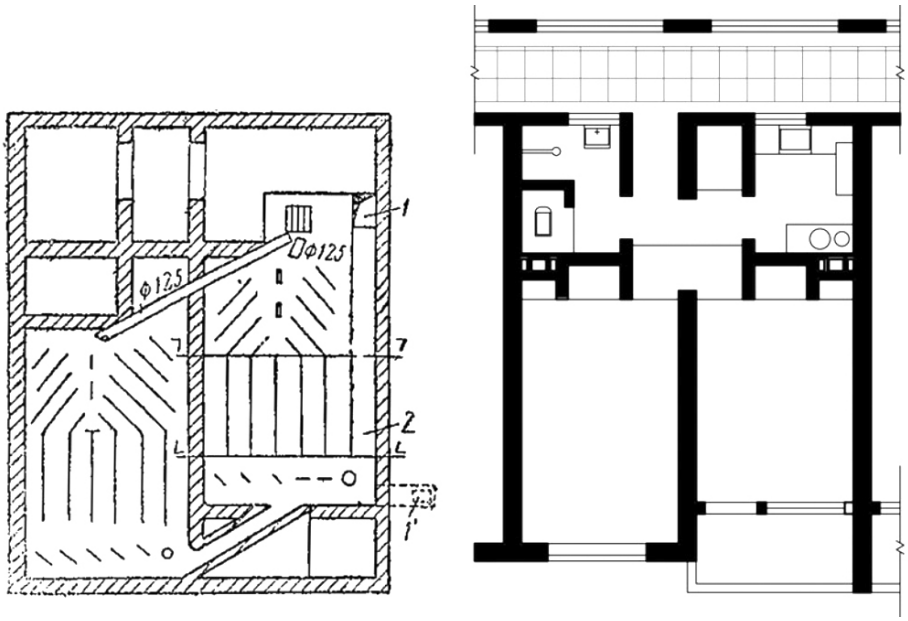

Figure 61. Ondol System Applied in Microdistrict No. 86 Sallimjip[233]

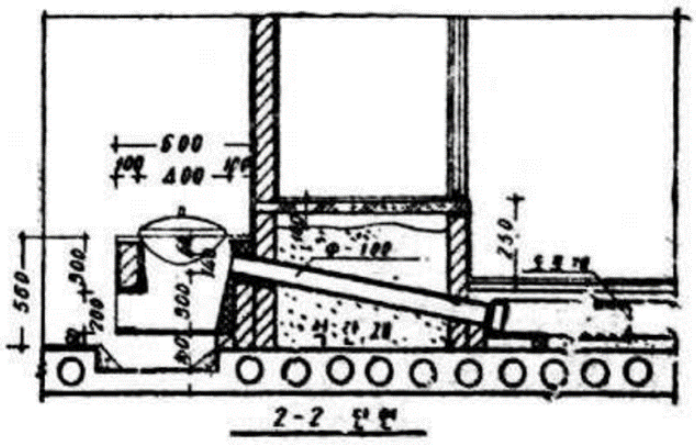

Figure 62. Horizontal Ondol System[234]

A modular-type prefabrication system was used. By then, factories and machines for construction materials had been developed, and more sophisticated prefabrication systems could thus be developed, unlike in the 1950s. This modular prefab lowered on-site processing and increased construction efficiency.

[233] Ibid. Location of these types are marked in red in Figure 45.
[234] Ibid.

2.3.3. The Ragwon Street Development

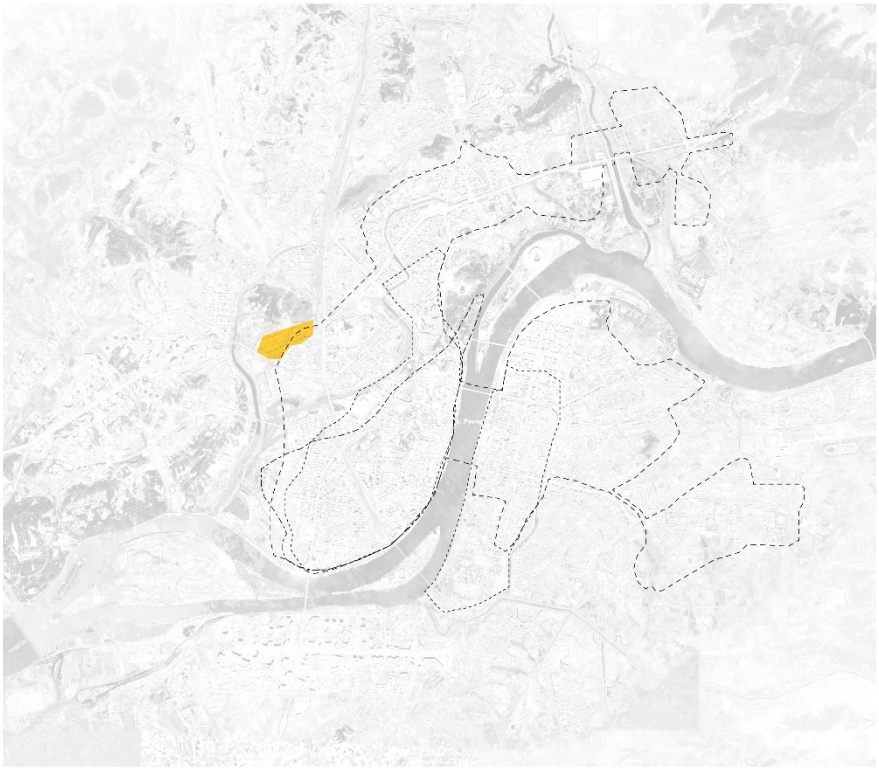

Figure 63. Ragwon Street Development in relation to historic traces, drawn by author

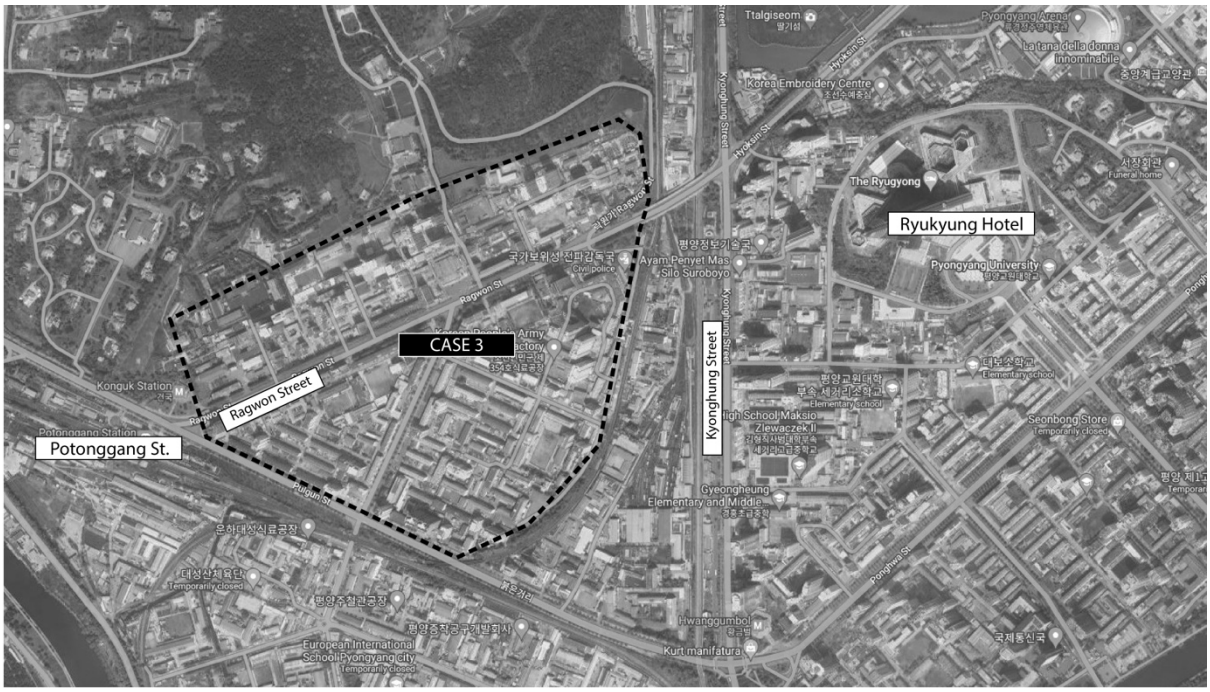

Figure 64 Location of Ragwon Street Development

This development is in Botonggang-guyok, where the Ryukung Hotel is located. It was not part of an area developed during the Chosun Dynasty or Japanese Colonial era; rather, it was included in the 1950s reconstruction master plan. Even though it was at the limit of the master plan area, now, it is an important node that connects the Gwangbok Street

Development, the largest residential compound developed in the early 1990s, to the city center.

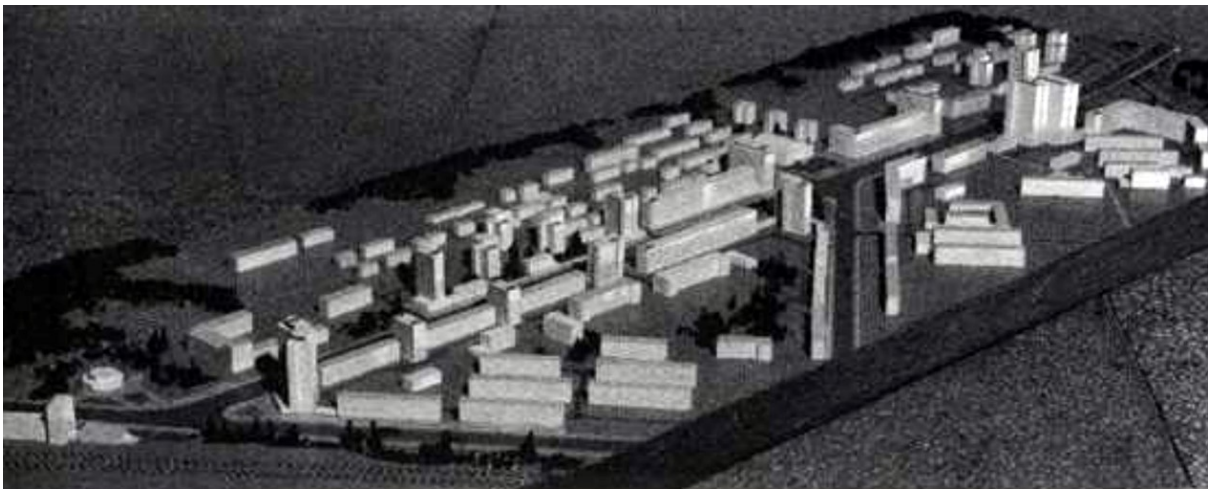

Figure 65. Ragwon Street Development [235]

Figure 66. Ragwon Street Development retrieved from Pyongyang 3D image by Visicom

Completed in 1975, the Ragwon Street Development is one of the milestone projects in Pyongyang's microdistrict development history. Its size, over 60 hectares, was significantly larger than in the previous period, and it was also much higher. This was possible because of

[235] Ibid.

technological achievements. Elevators were commonly used in microdistrict developments in the 1970s, and a new floor heating system was introduced along with a central heating system.

Figure 67. High-rise Sallimjip in Ragwon Street Development[236]

[236] Pyongyang. Foreign Languages Publishing House, 1975.

Figure 68 Layout of Ragwon Street Development[237]

Central heating systems for the floor heating and a gas supply for kitchens began to be implemented. These two modern systems replaced the obsolete *ondol* system that used heat from the kitchen to heat the floors. This old *ondol* system not only made construction complicated due to the required discrepancy in levels, but it also limited the number of rooms with floor heating. However, the new system of central hearing and gas supply allowed more freedom in the floorplan layouts and the building's overall height. The kitchen no longer had to be right next to the rooms.

[237] Original source from Calvin Chua and Chosun Exchange, redrawn by author

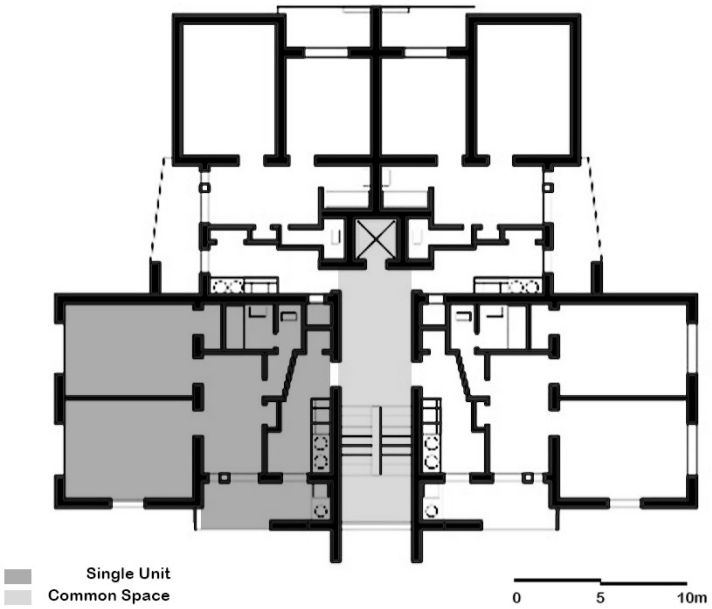

Figure 69. Unit Plan of High-rise Sallimjip[238]

Large, precast concrete walls were the construction method; this also allowed an increase in the height of the building and speed of development. It was part of the Chollima Movement, which started in 1956 and emphasized efficient, rapid economic growth. In the beginning of the 1970s, North Korea declared that the Chollima Movement was the major strategy of socialist construction. In addition, the 1970s was considered the first decade of full recovery from the Korean War. Therefore, in the 1970s, larger-scale developments were constructed much more quickly, including the Ragwon Street Development.

This microdistrict development shows the transition from the early North Korean microdistrict model to a new one. It arranged five- to seven-story linear residential buildings along the street and inserted 20-story high-rise towers in between. The linear buildings followed the old standard housing unit model, while the towers needed a new unit plan to accommodate the new typology.

[238] Source from 조선건축(Jo-seon-geon-chug) redrawn by the author.

Figure 70. Ragwon Street Development during Construction[239]

2.3.4 The Changgwang Street Development

Figure 71. Changgwang Street Development in relation to historic traces, drawn by author

[239] 대한건축학회. Rep. 통일대비 북한 SOC 현황 정보 조사 및 시나리오 기반 주거공급·인프라 조성 기본계획 수립 최종보고서. 국토교통부;국토교통과학기술진흥원, 2018. Dae-han-geon-chug-hag-hoe. Rep. Tong-il-dae-bi bug-han SOC hyeon-hwang jeong-bo jo-sa mich si-na-li-o gi-ban ju-geo-gong-geub-tbs-in-peu-la jo-seong gi-bon-gye-hoeg su-lib choe-jong-bo-go-seo. Gug-to-gyo-tong-bu;gug-to-gyo-tong-gwa-hag-gi-sul-jin-heung-won, 2018.

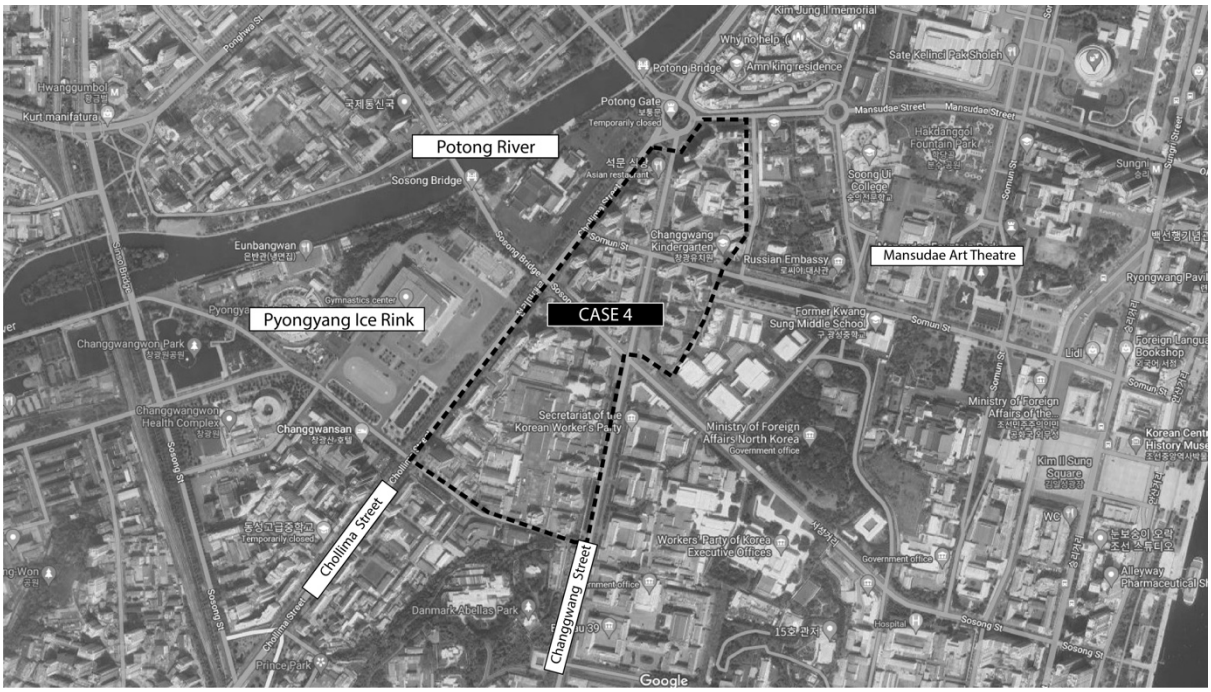

Figure 72 Location of Changgwang Street Development

Located in Chung-guyuk, the Changgwang Street Development is in the Pyongyang-seong area, which it is considered the central zone of Pyongyang. When the city was developing a major boulevard in the 1980s starting at the Botong Gate, the only remaining traditional piece of architecture of Pyongyang-seong from the Korean War, to the Pyongyang Train Station, the microdistrict complexes were built along the boulevard as part of urban development. Originally, two- to three-story Soviet-style residential buildings were developed along the boulevard, and the Changgwang Street Development replaced them as part of the city's redevelopment plan. The first phase of the development was completed in 1980 with 1,730 units, and the second phase was completed in 1985. Because it was a representative project that replaced the post-war reconstructions, North Korea intended to create a modern boulevard there by providing 20- to 30-story high-rise buildings.

Figure 73. Changgwang Street Development Model [240]

Figure 74. Changgwang Street Development retrieved from Pyongyang 3D image by Visicom

[240] Ibid.

Figure 75 Layout of Changgwang Street Development[241]

Two identical plans were laid out on either side of the core. The "transition room" was introduced; previously, a living room was used instead, and three bedrooms were located around it. In traditional Korean architecture, *maru*, translated as "living room," is a common space and is the most important central space in a house. Rooms are laid out around the *maru*, and family activities, including dining, occur there. However, the *maru* disappeared when Russian and Eastern European architects introduced their modern-style apartments to North Korea during the reconstruction period, and it was replaced by a living room, which was more of a "room" than a space that connected other rooms. In the Changgwang Street Development, there is a hint of the *maru*'s reemergence. The *Chunsil*, which means "transition room," was introduced not as part of a room but as a small space before entering the rooms.

[241] Original source from Calvin Chua and Chosun Exchange, redrawn by author

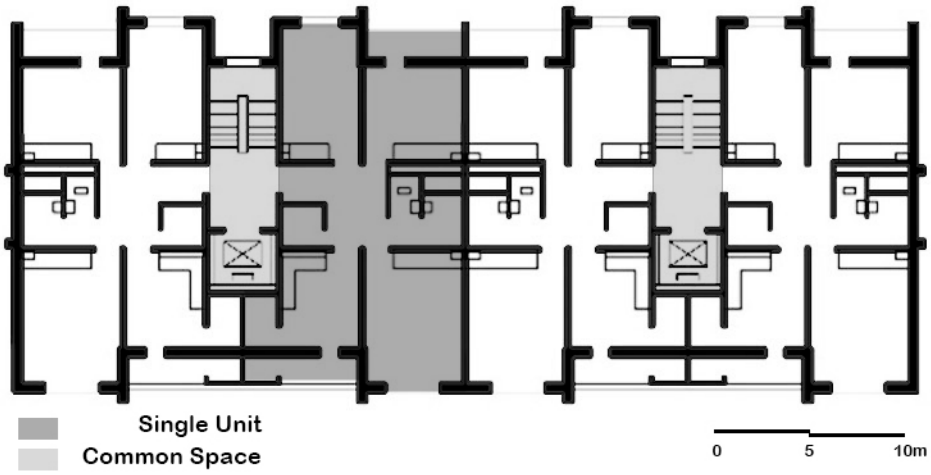

Figure 76. Unit Plan of High-rise Sallimjip[242]

2.3.5 The Gwangbok Street Development

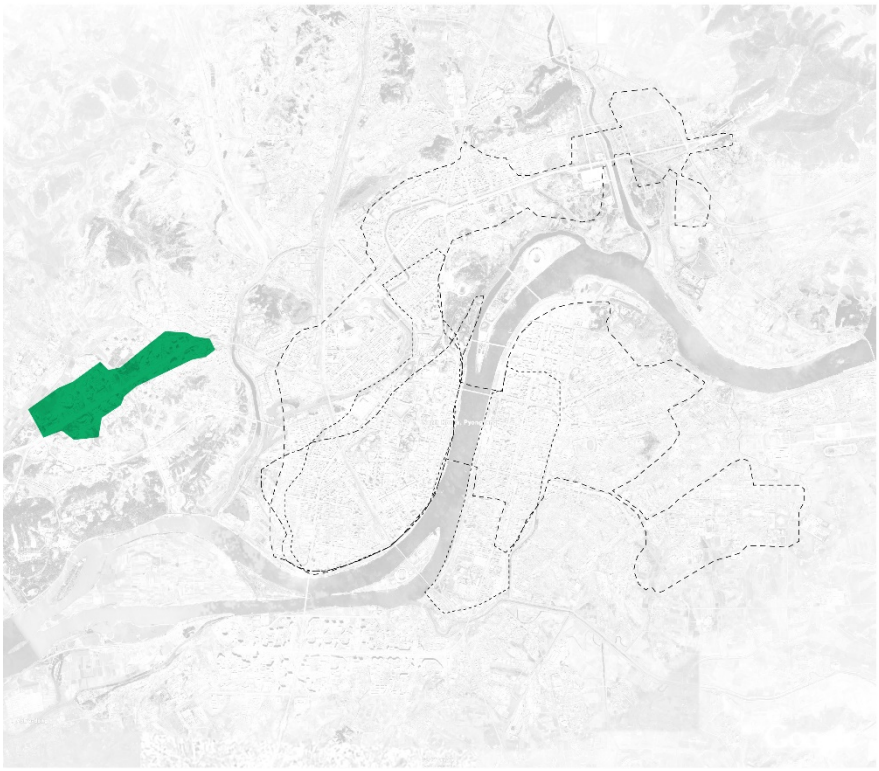

Figure 77. Gwangbok Street Development in relation to historic traces, drawn by author

[242] Source from 조선건축(Jo-seon-geon-chug) redrawn by the author.

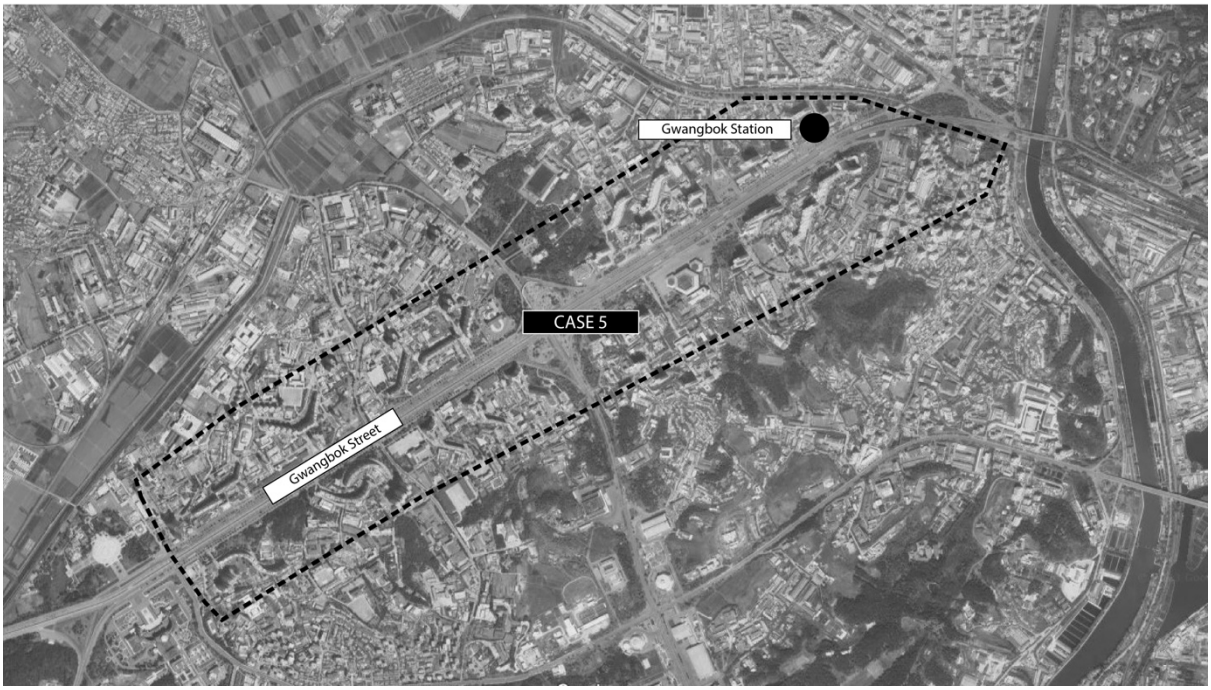

Figure 78 Location of Gwangbok Street Development

The Gwangbok Street Development remains one of the largest residential developments in North Korean history with an overall site area of 200 hectares It is composed of nine microdistricts that vary from 20 ha to 84 hectares Only one microdistrict (No. 3) follows the area recommendations in the North Korean microdistrict guidelines, while the others exceed the size. This is mostly because the height of residential buildings grew dramatically during its development. The tallest buildings are 40-stories high, and it increased the distance between buildings required for ancient lights. This means that the site area for each microdistrict had to increase to accommodate the high-rise residential buildings.

Figure 79. Gwangbok Street Development retrieved from Pyongyang 3D image by Visicom

The original microdistrict guidelines suggested a size of 20 ha and 5,000 inhabitants as the proper microdistrict scale in Pyongyang, resulting in a density of 250 ppl/ha. However, in the Gwangbok Street Development, microdistrict density increased dramatically. Although some microdistricts, such as Nos. 4, 5, and 9, have lower density than the guidelines suggest, all others are much higher, including Microdistrict No. 3, which has 1,185 ppl/ha. The overall average density of the development is 400 ppl/ha, even after excluding the two extreme values of microdistricts No. 5 and No. 3.

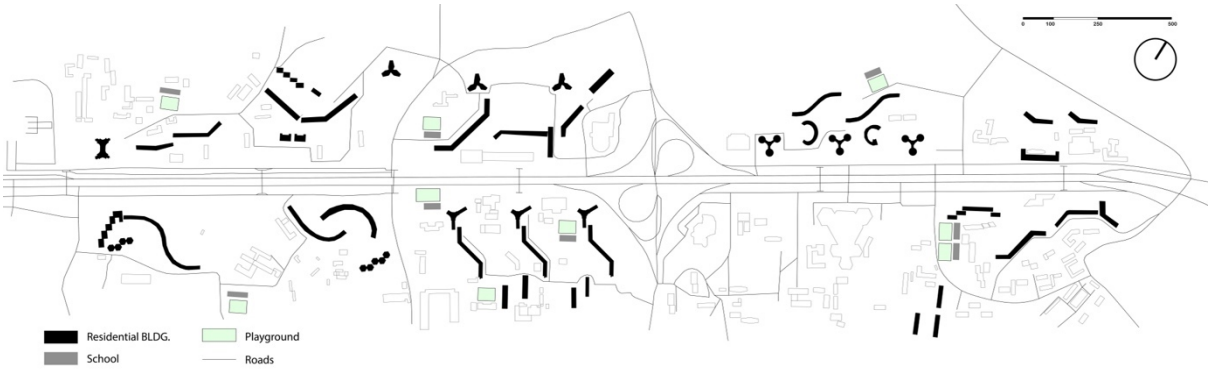

Figure 80 Layout of Gwangbok Street Development[243]

The development area is to the west of the city center. It was never part of the reconstruction master plan in the 1950s, which was drawn with a set population of one

[243] Original source from Calvin Chua and Chosun Exchange, redrawn by author

million. However, as the city grew radically after the war, Pyongyang needed to expand its boundaries beyond the planned area. Gwangbok Street was one of the first areas developed as "suburban" development. A new street was constructed to connect the area to the central part of the city, and the microdistrict developments emerged along Gwangbok Street.

These microdistricts use the free-layout type. In the guidelines, this layout is suggested for areas with varied topography. The Gwangbok Street development uses this design even though most areas are relatively flat. This is primarily because the forms of buildings were no longer linear. Other layout types, such as the parallel-, periphery-, or mixed-layout types, were suggested with the assumption that major residential buildings would be more rectangular and linear. However, starting with the Gwangbok Street Development, these buildings had a freer form, and there is less chance to follow other layouts than free-layout.

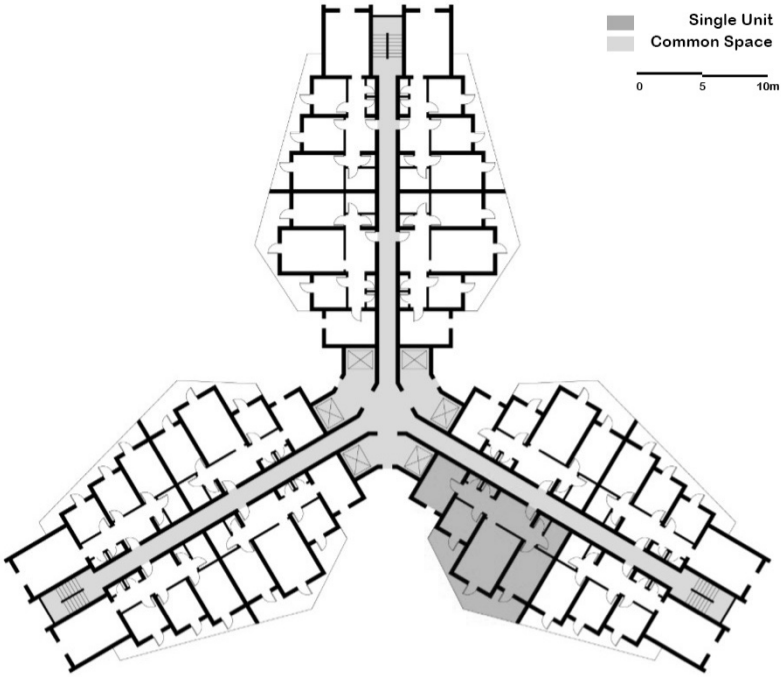

Figure 81. Gwangbok Street Development Tower Type[244]

[244] Source from 조선건축(Jo-seon-geon-chug) redrawn by the author.

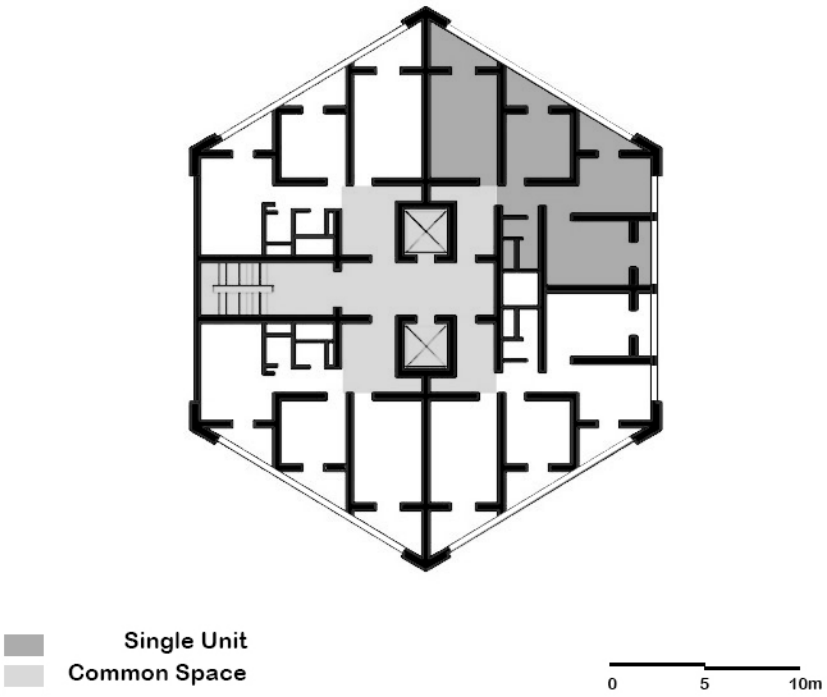

Figure 82. Gwangbok Street Development Sallimjip Plans[245]

The *sektzia* plan was used in both linear- and tower-type residential buildings. Each *sektzia* consists of four individual units facing either side. Therefore, regardless of the building's orientation, at least half of the units do not have adequate sun orientation. Along with the linear type, there are tower-type buildings with more formal features. This type can be up to 40 stories and has a mixed corridor and *sektzia* plan. A central heating system with underfloor heating pipes was used. Unlike the previous *ondol* system, which required an individual furnace in the kitchen, a modern floor-heating system was applied. Liquid screeds were installed underneath the floors as the heating system, which was centrally controlled.

[245] Source from 조선건축(Jo-seon-geon-chug) redrawn by the author.

This was possible because more stable thermal power plants were developed. In the 1960s, the Pyongyang Thermal Power Plant was built, and it had major expansion in the 1980s. As the main power plant serving the city, the Pyongyang Thermal Power Plant was located only 3 km from the Gwangbok Street Development and allowed it to have a more stable central heating system.

Structural span was between 3,000 and 3,600. The slip-form system was used for tower-type buildings. A masonry structure was used for buildings up to six or seven stories, while a modular prefab system was used for buildings with up to 19 stories. Even taller buildings had to use slip-form RC systems. Since the slip-form system was introduced for high-rise residential buildings, precast construction methods gradually disappeared, and as they did so, new residential buildings were designed based on the slip-form method, and mid- and low-rise buildings that previously used precast methods also diminished.

Figure 83. Gwangbok Street During Construction in the late 1980s [246]

[246] 력사의 증인을 찾아서. Lyeog-sa-ui jeung-in-eul chaj-a-seo (Finding Witness in History) (n.d.). Retrieved November 6, 2022, from http://kancc.org/data/cheditor4/1812/2891621531_1543963450.796.jpg

2.3.6 The Mirae Scientist Street Development

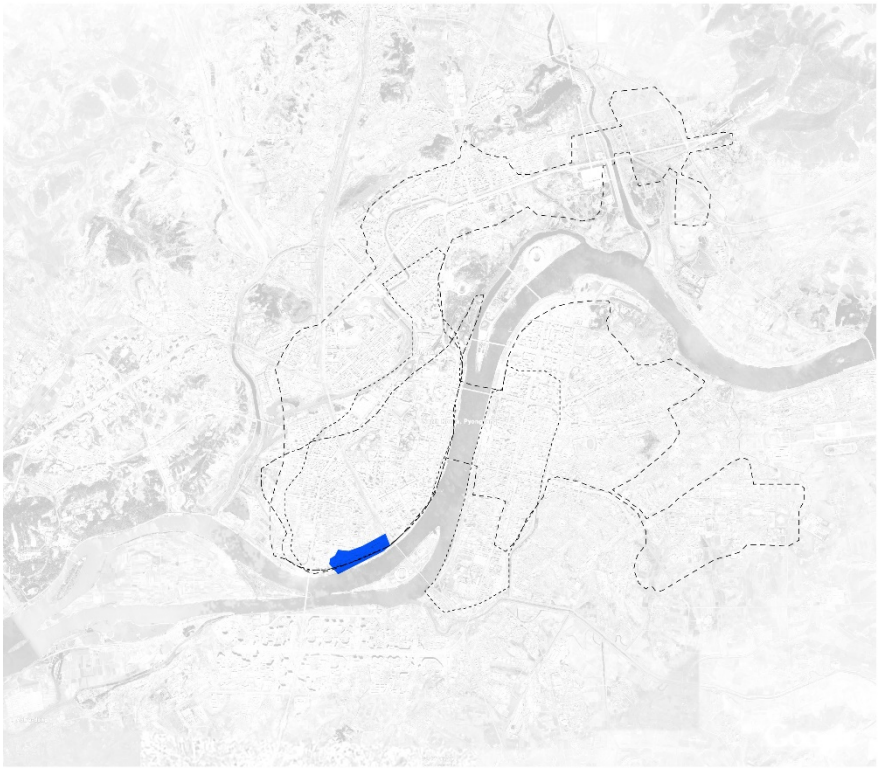

Figure 84. Mirae Street Development in relation to historic traces, drawn by author

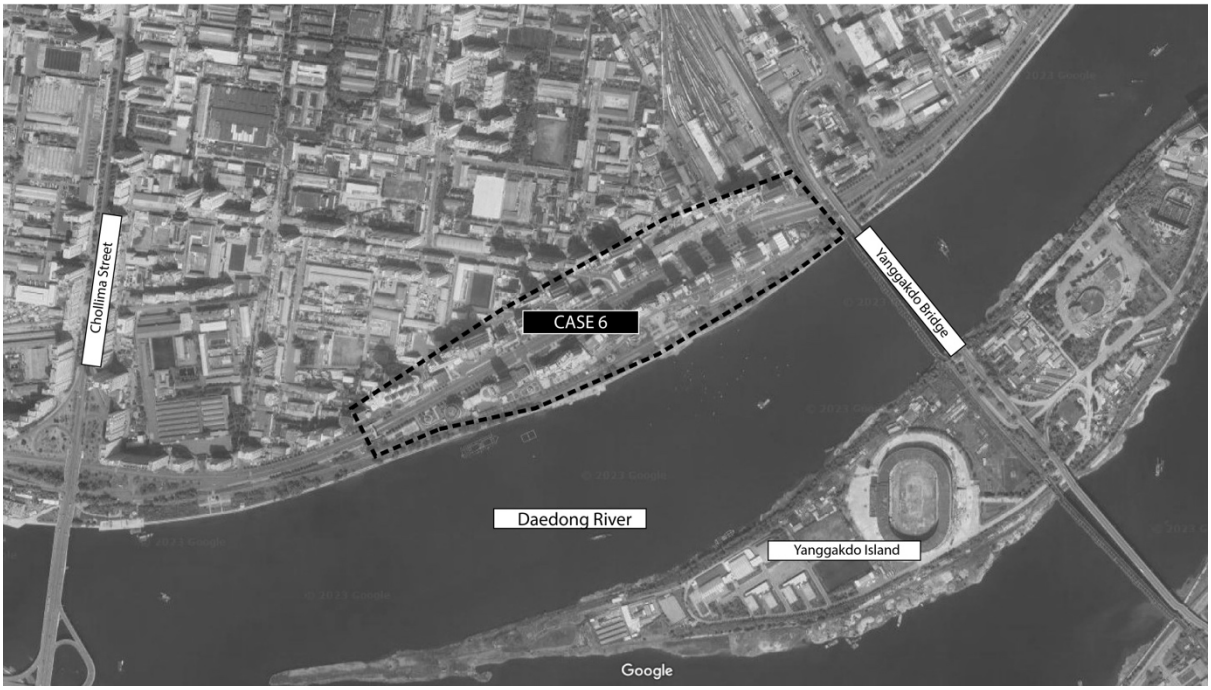

Figure 85 Location of Mirae Street Development

The Mirae Scientist Street Development shows the perspective of the new leader, Kim Jong Un, on the city's housing development. As the first major residential development project under Kim Jong Un's regime, in terms of location, the development does not follow those of in the 1990s, which were the most recent major developments at that time. Its

location is closer to the city center, and it was the first major waterfront development in Pyongyang. Even though the Daedong and Botong Rivers were always important elements in urban planning in the city, the Mirae Scientist Street Development was the first to focus on providing views of the river from any dwelling units.

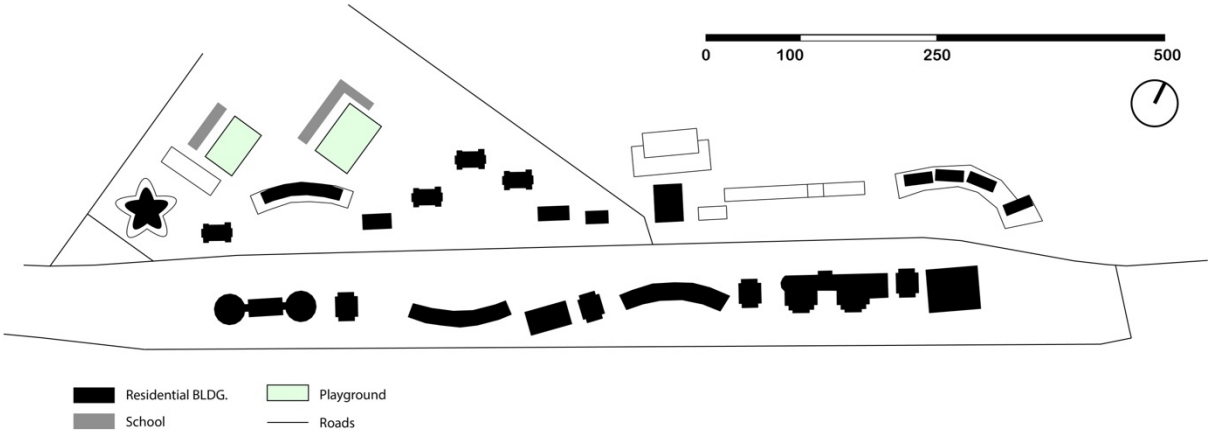

Figure 86 Layout of Mirae Scientist. Street Development[247]

The area of the development again declined to 40 hectares. Major developments in the late 1980s and early 1990s, the last major residential developments before the Mirae Scientist Street Development, had overall site areas of hundreds of hectares. However, since the start of the Kim Jung Un regime, microdistrict development became much denser and tighter. In addition, the scale of the development grew considerably. In the development, buildings with more than 50 stores were constructed, and different building designs were applied instead of repeating a limited set of residential typologies.

Figure 87. Mirae Street Development [248]

[247] Original source from Calvin Chua and Chosun Exchange, redrawn by author
[248] Photo by and source from Calvin Chua

As the development does not exist as a compound form, layout of it has become meaningless. Stand-alone, individual residential towers atop a base of service amenities were placed along Mirae Scientist Street, which originally was called Ansan Street. Unlike all other previous major boulevard developments, this development truly focused on densifying the area along the street, and it thus did not follow any layout suggestions from the 1963 North Korean Microdistrict guidelines.

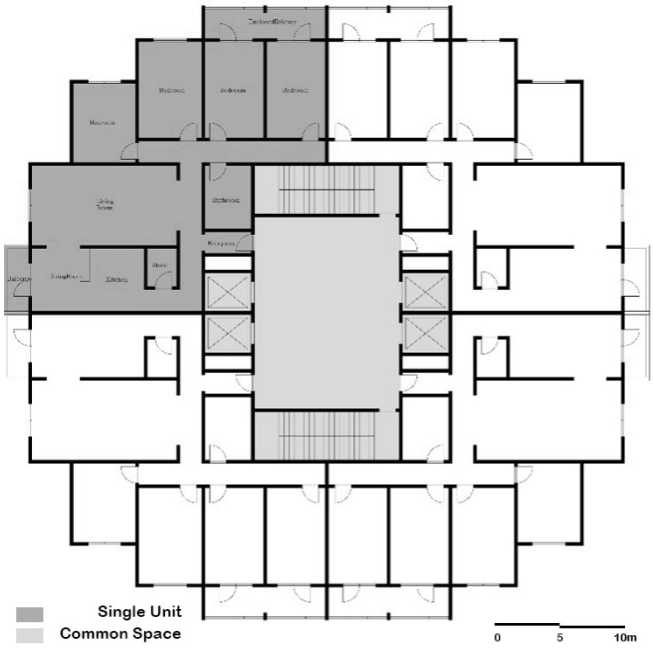

Figure 88. Mirae Street Development Unit Plan [249]

In North Korea, balconies emerged in the 1970s, when tower-type housing began to appear. However, in this period, these balconies were totally enclosed by windows and became interior spaces. Balconies were often used as decorative spaces for flowers or flags so that they would look attractive from the street. This was part of leaders' efforts to beautify the city. However, these balconies became fully private, as they were interior; therefore, few rooms could be used for decorative purposes.

[249] Drawn by Calvin Chua.

Figure 89. Reusable Energy Systems Used in Recent Developments [250]

The basic heating system was still central heating from the Pyongyang Power Plant. However, from the development, the solar system is systematically used for extra electricity. In addition, the North Korean media promoted the fact that these new developments adopted passive design features to reduce heating loads. For instance, the sunroom was located on the southern side, a light shelf was used, and geothermal heat was used for floor heating.

[250] 정다민. “평양의 친환경기술 전시장, 려명거리.” NK News – North Korea News, August 23, 2017. Jeong Da-min. “Pyeong-yang-ui chin-hwan-gyeong-gi-sul jeon-si-jang, Lyeo-myeong-geo-li.” NK News, August 23, 2017. https://kr.nknews.org/%ED%8F%89%EC%96%91%EC%9D%98-%EC%A0%84%EC%8B%9C%EC%9E%A5-%EB%A0%A4%EB%AA%85%EA%B1%B0%EB%A6%AC/.

Figure 90. Mirae Street Development During Construction[251]

The slip-form system was used in the Mirae Scientist District development; in essence, it is a form work that covers floor to ceiling. North Koreans began using this system in the 1990s for high-rise apartments, and this new construction method influenced the design of microdistricts, significantly reducing the number of horizontal buildings microdistricts contained.

2.4 Evolution of Microdistricts in Pyongyang

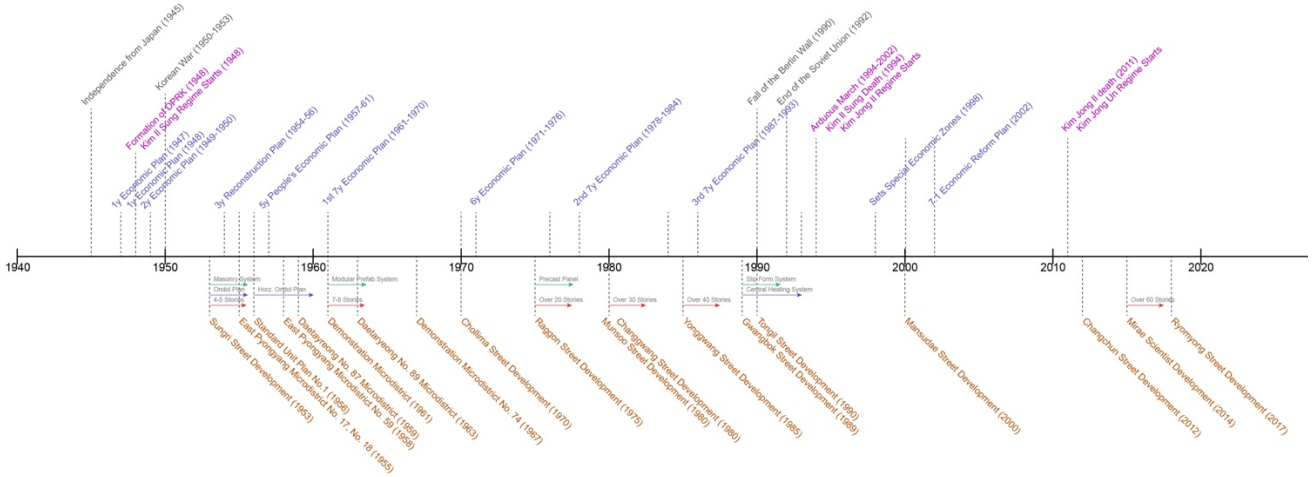

Figure 91. Evolution of Microdistrict in History drawn by author

[251] "북한 18 일 만에 15 층 골조공사 완료와 위험한 미래! ." KBS 통일방송연구, June 3, 2016. https://office.kbs.co.kr/tongil/archives/29700. "Bug-han 18il man-e 15cheung gol-jo-gong-sa wan-lyo-wa wi-heom-han mi-lae!." KBS tong-il-bang-song-yeon-gu, June 3, 2016

In theory, the government allocates salimjip to each household in North Korea, and people do not have freedom of selling and buying the given property. In the Sallimjip Law of North Korea, chapter three indicates that the nation is responsible on providing salimjip for its people, and section one in the chapter thirty-five states they can only exchange sallimjip with others when necessary but not allowed to trade.[252] In the 1960s, the Central Committee of North Korea's Labor Party announced that all the properties are owned by the government and its citizens get the rights to occupy units provided by the government. This was legitimized in 1972, and in the 1992 amendment, it clearly states that government provided sallimjip are the properties of socialism and should never be sold or bought.[253]

However, since early 2000, when the economic reform happened, real estate sales have increased along with rise of people with money due to new preferences on sallimjip. For example, as individual vendors were emerging, people started to prefer sallimjip that have storages to store goods and better locations for trades.[254] Although the government tried to control the emerging real estate market by stating illegalization of real estate sales in the criminal law in 2004, the market did not disappear but increased even. Thus, North Korea changed its stance on real estate market and wrote a new sallimjip law and real estate management law in 2009 that allowed real estate trades officially.[255]

This official transition affected microdistrict development as well. As real estate became one of income sources for the government, new sallimjip developments naturally responded the market demands. As the table 4 shows, even the sallimjip types are different depending on the income level. Higher class people in North Korea tend to live in apartment types rather than other types, whereas only 14% of low income class people can afford apartment type sallimjip.

[252] Park, Hee Jin. "The Current Status of Housing Construction and Residential Environment in North Korea," Health and Welfare Policy Forum 2021.8 No.298, pp.37-49, 2021.
[253] Moon, Heung-Ahn, Changes in North Korea's Real Estate Market reflected on North Korea Housing Act and its Implications on Unification, The Korean Association Of Comparative Private Law, 2015
[254] Park, Hee Jin. "The Current Status of Housing Construction and Residential Environment in North Korea," Health and Welfare Policy Forum 2021.8 No.298, pp.37-49, 2021.
[255] Moon, Heung-Ahn, Changes in North Korea's Real Estate Market reflected on North Korea Housing Act and its Implications on Unification, The Korean Association Of Comparative Private Law, 2015

Table 4 Sallimjip types by income level (2019)[256]

	High Class	Middle Class	Low Class
Apartment type	35.3	32.9	14.3
Row-housing	29.4	35.7	64.3
Detached housing	23.5	27.1	14.3
Etc.	11.8	4.3	7.2
Total	100	100	100

2.4.1 Boulevards

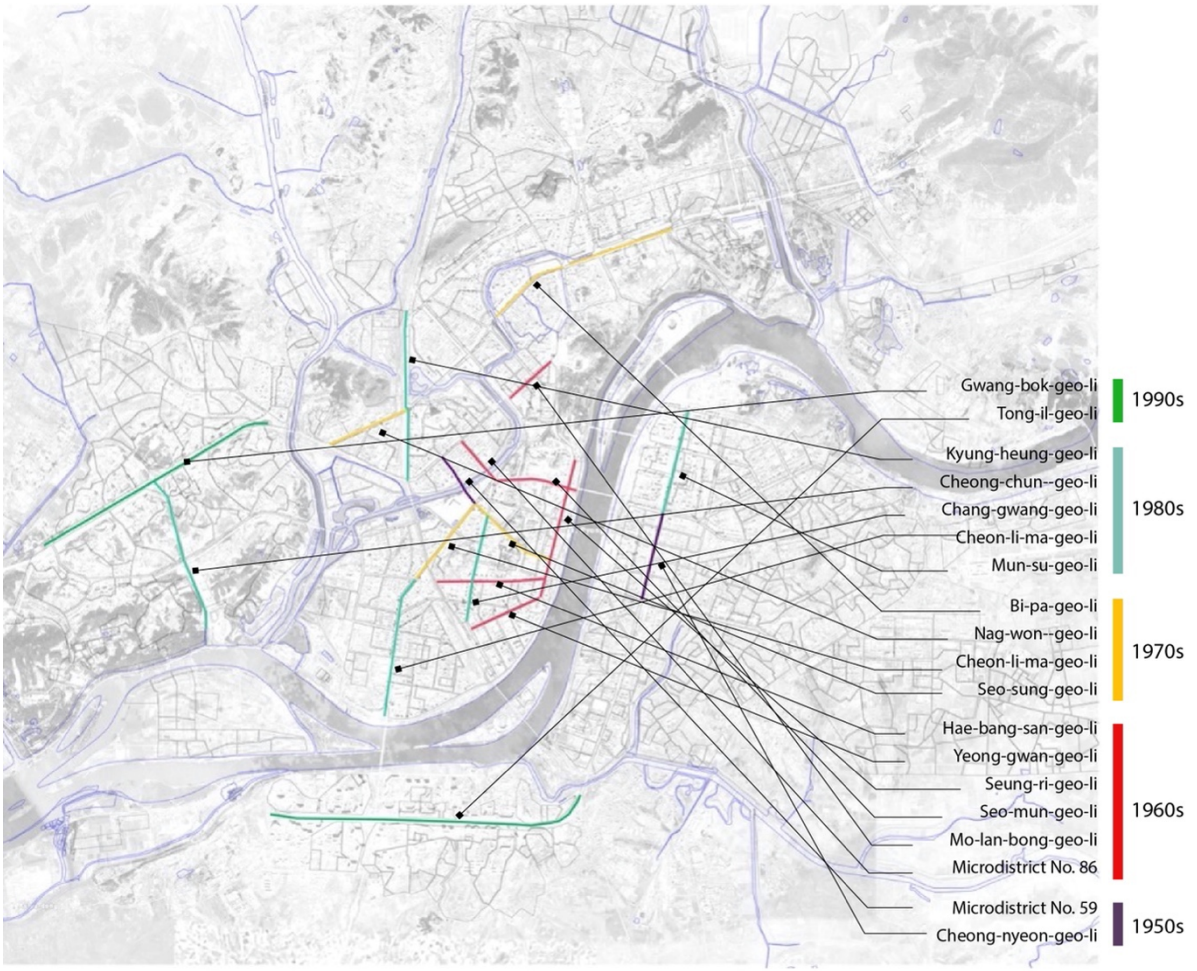

Figure 92. Evolution of Boulevard Developments drawn by author

A unique features of North Korean microdistrict developments is that they are based on a boulevard axis rather than areas. Until the 1950s, when the socialist bloc directly

[256] 천경효, 강채연, 박상민, 이혜원, 정은미, 임경훈, 조용신. (2020). 북한사회변동 2019: 시장화, 사회문화, 보건. 서울대 통일평화연구원 Cheon, Gyeong-hyo, Gang, Chae-yeon, Bak Sang-min, Lee, Hye-won, Jeong Eun-mi, Im Gyeong-hun, Jo Yong-sin. (2020). Bukansahoebyeondong 2019: sijanghwa, sahoemunhwa, bogeon. Institute for Peace and Unification Studies (IPUS) at Seoul National University. 2020.

supported Pyongyang with engineers and planners, boulevard-type development was not widely used; instead, the focus was on block-scale development. Most microdistrict proposals were also based on block-scale development. However, starting in the 1960s, microdistrict developments tended to be used to highlight a perspectival effect along the boulevards. In late 1980s and early 1990s, these boulevards and microdistrict developments were used as tools to expand the city boundaries, and the developments' names were also based on those of boulevards.

This unique aspect of North Korean microdistrict development impacted the microdistricts' physical form. First, the boundary of each microdistrict was not clearly defined. When a microdistrict was developed based on a block structure, its boundary was defined by the streets that formed the microdistrict. However, as microdistrict development began focusing on the boulevards, it was difficult to organize the city with a grid structure; therefore, microdistricts did not have clear boundaries except on the boulevard side. Second, for the same reason, distribution of microdistrict programs was broken. Originally, the microdistrict guidelines suggested that daily use service amenities should be evenly distributed within the district. The guidelines assumed that there was no clear hierarchy between the streets the microdistrict faced. However, as one boulevard had become the major access point for a microdistrict, many microdistrict programs, especially stores, were located along the boulevards, which made the microdistrict unique.

2.4.2 Scale, Height, and Density

As the city grew, starting in the 1950s, the scale of microdistrict developments also grew, while the distance from Kim Il Sung Square increased. The early microdistrict developments, such as Microdistricts Nos. 17 and 18, were about 20 ha, which influenced the North Korean microdistrict guidelines published in the 1960s. However, as the population grew, development sizes had increased, while the locations moved further from the city center. In the 1980s, microdistrict developments such as the Munsoo and Kyunghung Street Developments grew much larger than in the previous decades, and these trends lasted until the Arduous March in the mid-1990s. Even though the actual size of a microdistrict remained similar to the guidelines' recommendations, the scale of developments increased dramatically, and the zoning between each microdistrict was less clear.

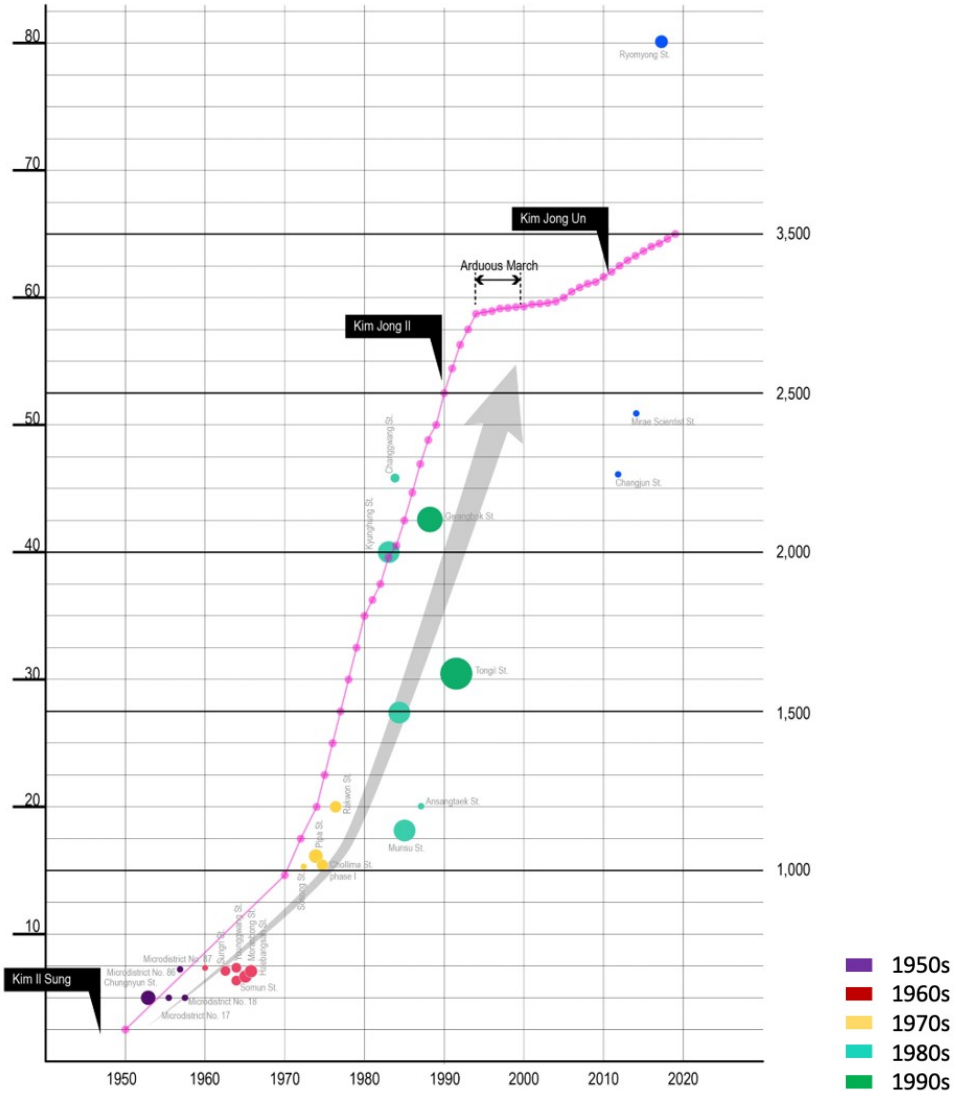

Figure 93. Height Evolution in Microdistrict History drawn by author

This was mostly due to the increased population of the city. As the city grew beyond the level that the 1953 Master Plan suggested, it had to find a faster, larger-scale way of providing dwellings. Therefore, larger developments with multiple microdistricts were added. Another reason was the increasing height of the buildings; residential building height in the microdistricts had dramatically increased since the 1970s. The city had to accommodate the growing population, which surpassed one million in 1970. In the late 1970s, residential buildings were already close to 30 stories. This was a significant achievement compared to Seoul, where the highest residential building was then 15 stories. In its neighbor to the north, the maximum height of about 50 stories was achieved in the 1990s, after which it changed little, especially during the period when the city's population grew only slowly.

It is ironic that the height increase influenced the scale of microdistrict development. However, the distance between buildings had to be increased as the building height increased

to maintain the quality of the open space and to avoid having buildings cast shadows over others. Thus, the scale of microdistricts had to increase as the height of the buildings did.

Two of the largest residential developments in North Korean history, the Gwangbok and Tongil Street Developments, were extreme versions of the above trends. The scale of the development was more than 10 times the size of a regular microdistrict in the 1950s and 1960s, and the buildings were up to 40 stories tall. However, this trend drastically reversed during the Arduous March between 1994 and 2002. Currently, during Kim Jong Un's regime, the scale of developments has become much tighter than in the 1980s and 1990s. However, the building heights have grown beyond the developments in Tongil Street or Gwangbok Street. Thus, the density of the developments in Kim Jong Un's regime is much higher than in the previous era. They are between 2 and 2.5, which is a typical residential development density in South Korea.

2.4.3 Location

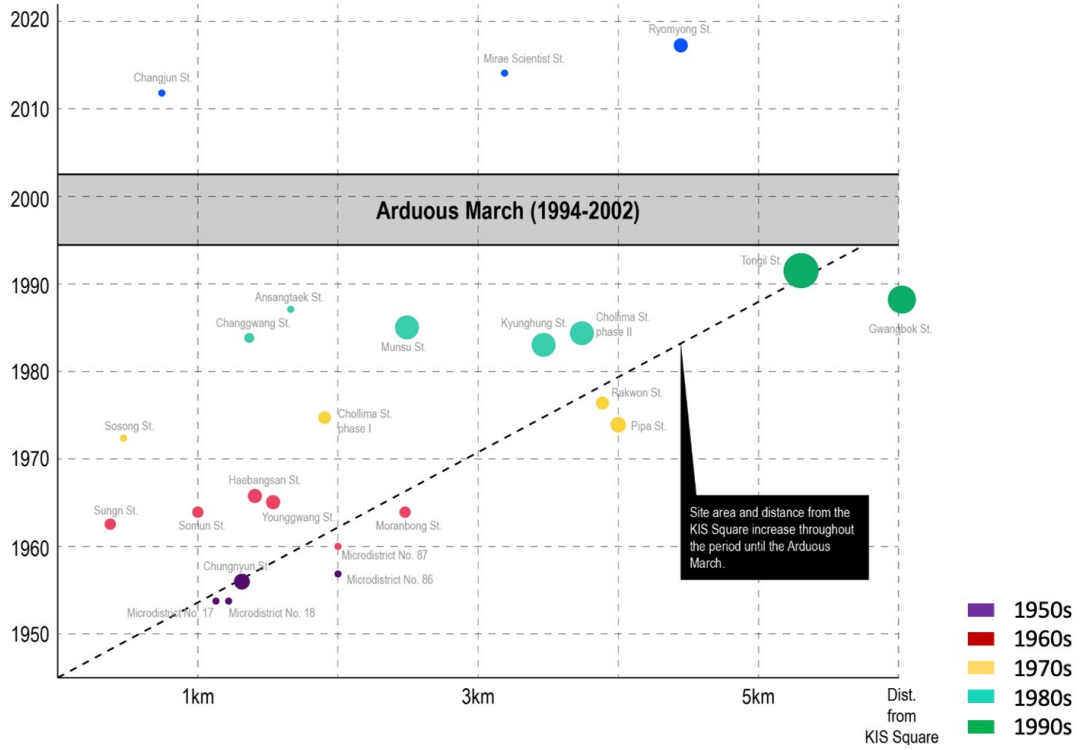

Figure 94. Development Trend of Microdistricts in Pyongyang drawn by author

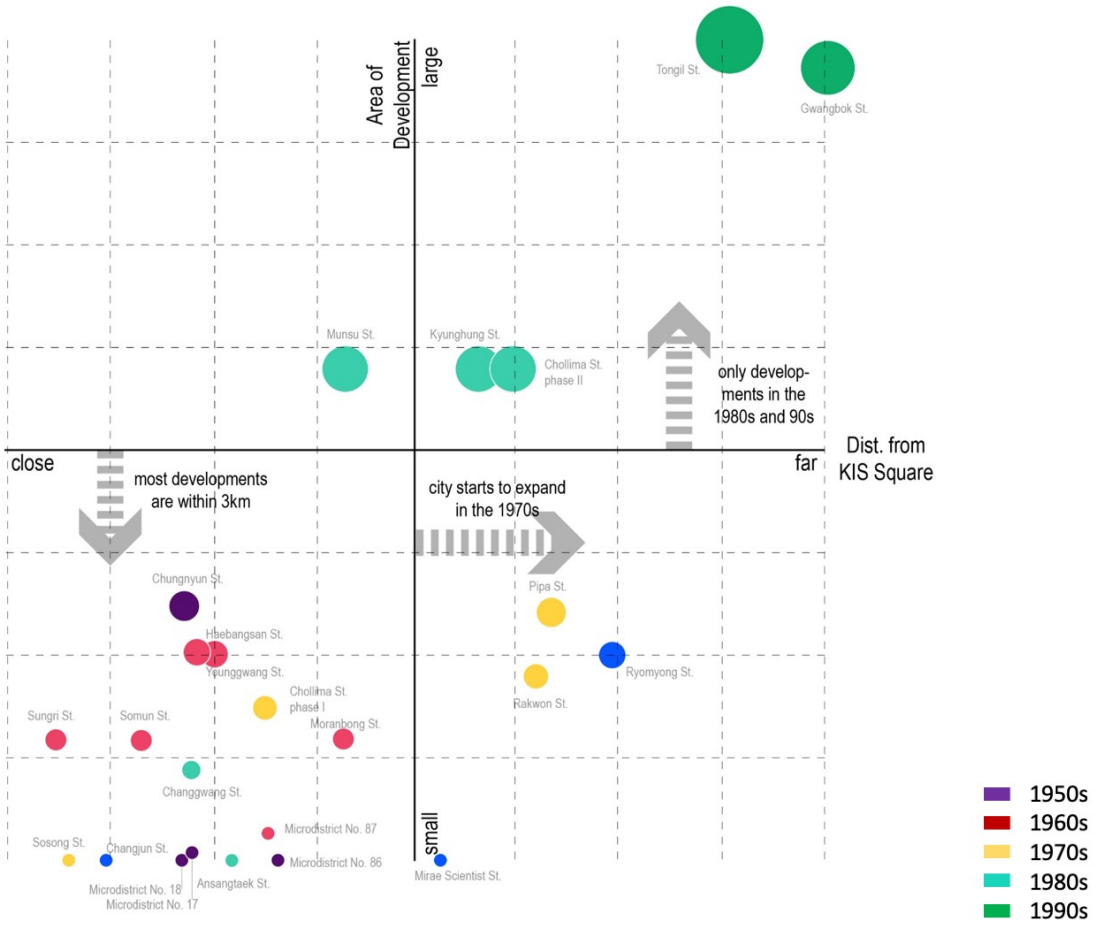

Figure 95. Distances from Kim Il Sung Square drawn by author

The increase in size naturally affected the location of microdistrict development. Most microdistrict developments were close to Kim Il Sung Square with a relatively appropriate scale for the site area. They were mostly located within the Pyongyang-seong, and the areas were developed during the Japanese colonial period. Most developments were within a three-kilometer radius from the current Kim Il Sung Square, which is considered the city's center. However, starting in the 1970s, the city began expanding beyond these boundaries and eventually occupied zones the 1953 master plan identified as the city limit. This was of course because central Pyongyang did not have sufficient land for a large-scale microdistrict development.

In the 1980s and 1990s, the microdistrict developments went even further beyond the 1953 master plan area. As the population grew more to than two million people, beyond the size that the master plan suggested, it was inevitable that the city would exceed the plan's boundaries. However, this trend has also changed during Kim Jong Un's regime. New developments again emerged in the city center, which was possible because they were denser and tighter developments, which allowed them to fit into the existing city structure. These

developments were all redevelopments of obsolete microdistricts built between the 1950s and 1970s. Without a strategy of building more densely and building higher, there would not have been room for a new development to replace the old one.

2.4.4 Unit Plan

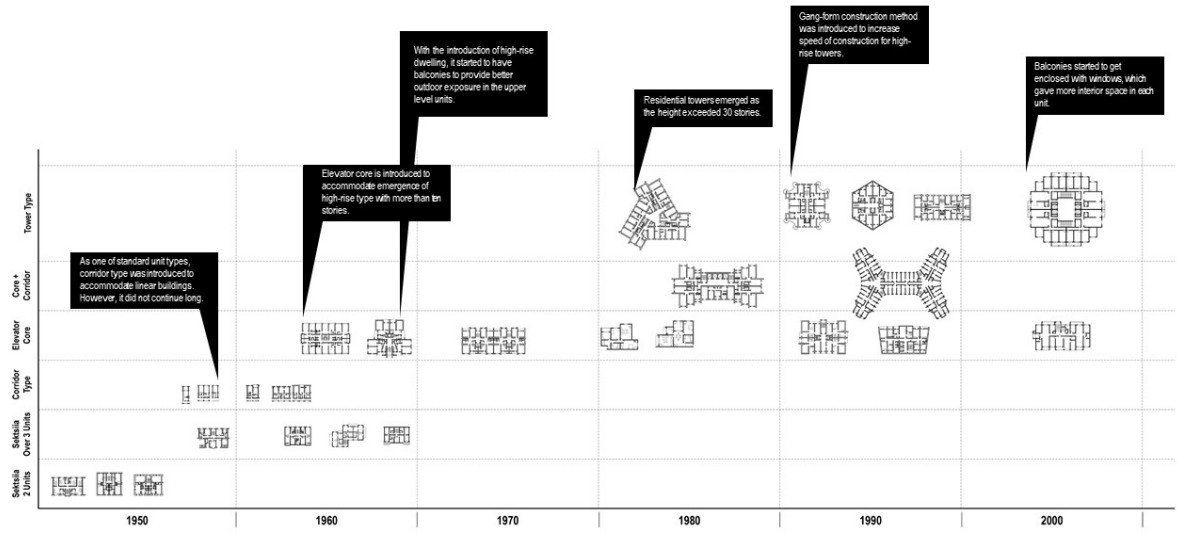

Figure 96. Evolution of Unit Plans drawn by author

As the North Korean microdistricts were first developed with the influence of other socialist bloc architects, the residential unit plans followed European or Russian plans rather than Korean ones. In the early stages of microdistrict development, the *sektzia* plan, with a staircase in the middle to access two or more units, was introduced, and each unit was composed of individual rooms. Kitchens and bathrooms were next to each other to have an efficient plumbing system. In addition, the master bedroom was also located next to the kitchen because a traditional floor heating system, *ondol*, was used, and it required steam from the kitchen to heat the floor of the room. This meant that only some rooms had a heated floor, which limited the number of rooms. In addition, there was little space to develop a traditional Korean-style living room, the *maru*. Unlike the western-style living "room," the *maru* is more of a common area where all family activities, such as dining, resting, or hosting guests, happen rather than being confined to a specific a room. However, because of the influence of other socialist bloc architects and the lack of modern heating systems, the *maru* could not be developed in the early era of microdistricts.

In the 1960s, the standard plan of a *sallimjip*, which was not a *sektzia*-type but a corridor-type layout, was introduced. These were two-bay units so that one could be used as a heated area, while the other had no floor heating. Although this corridor type was introduced

as the standard plan, it did not last long and was soon replaced by the *sektzia*-type in linear buildings, because, in the corridor type, the common space ratio to the net unit area was higher than in the *sektzia* type.

With the introduction of high-rise buildings and central heating systems, balconies started to emerge in residential units. As access to the ground floor was compromised in high-rise buildings, balconies were introduced to allow access to fresh air outside of the unit. Subsequently, the balcony was an essential element in high-rise buildings. However, in recent developments during the Kim Jong Un regime, these balconies have become part of the interior space. Even though the new units still have designated spaces for balconies, they are not necessarily open-air space; instead, they are enclosed.

2.4.5 Construction Method and Building System

During the reconstruction period, the concrete masonry unit (CMU) system was widely used as the major material for construction. As no systems or large facilities could produce precast concrete panels, the CMU was the only method the nation could afford in the 1950s. However, starting in the late 1950s, when factories went into production, precast units were widely produced, and construction systems changed to adopt these materials and methods. Unit sizes and modules were defined by the panel sizes. This allowed the development of construction industries so that workers could work at the factories on a regular basis rather than working an irregular schedule at the construction site, and because the precast construction method was also the fastest way to build housing, it was a dominant method for a decade until the gang-form method was introduced for high-rise buildings.

2.5 Institutions in North Korea

Not only because North Korea has communist system that does not allow private land ownership, but also because North Korean architecture has started with national effort to reconstruct the country from the Korean War in the 1950s, architectural institutions in North Korea have been developed as public entity from the beginning. There are about 80 architectural and urban planning institutions in Pyongyang.[257] Amongst them, a couple of institutions, such as 백두산건축연구원 (baeg-du-san-geon-chug-yeon-gu-won) and 평양도시설계연구소 (pyeong-yang-do-si-seol-gye-yeon-gu-so), have taken major roles since the reconstruction.

[257] North Korean Architecture Watch, 1. Architectural Design in North Korea

평양도시설계연구소 (pyeong-yang-do-si-seol-gye-yeon-gu-so, Pyongyang Urban Design Institution) was established in 1947 right after the nation was founded, and it was the first institution that played an active role during the reconstruction of the city. It is located in Dongdaewon Guyeok, across the Daedong River from Kim Il Sung Square where it had major reconstruction process in the 1950s and the 1960s. Currently, there are six major departments in the organization; Master Planning Department (총계획설계실), Intimate Planning Department (세부계획설계실), Architecture Planning Department (명시설계실), Civil Engineering Department (토목설계실), Water & Sewage Planning Department (상하수도설계실), and Electricity Line Department (열 및 전기설계실).[258] The Master Planning Department draws the overall plan for Pyongyang and its satellite areas, while the Intimate Planning Department sets the phasing strategies.[259]

It has more than 400 staff in the institution, and until 백두산건축연구원 (baeg-du-san-geon-chug-yeon-gu-won) was established in the 1980s, it led the most significant architectural projects, such as People's Cultural Palace, Kim Il Sung Stadium, and Pyongyang Ice Link, as well as microdistrict planning including Cheollima Street.[260] In the Kim Jong Un regime, it is still actively involved in national representative projects, and recently, it planned Mirae Scientist Street and Ryomyong Street.[261]

백두산건축연구원 (baeg-du-san-geon-chug-yeon-gu-won, Paek-tu-san Architectural Studio) is the most active architectural institutions in North Korea located in Pyongyang. It was first founded in 1982 as part of Kim Jong Il's order who was very much interested in architecture, especially aesthetics of it.[262] If the 평양도시설계연구소 (pyeong-yang-do-si-seol-gye-yeon-gu-so, Pyongyang Urban Design Institution) is more focusing on urban scale projects, 백두산건축연구원 (baeg-du-san-geon-chug-yeon-gu-won, Paek-tu-san Architectural Studio) focuses more on architectural level. It is an organization with 200 staffs in a 10,000 sqm floor area building. It not only runs architectural design labs but also runs

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[258] "평양도시설계사업소 ." NK 조선, October 25, 2013. http://nk.chosun.com/bbs/list.html?table=bbs_24&%3Bidxno=2806&%3Bpage=14&%3Btotal=282&%3Bsc_area=&%3Bsc_word=. "pyeong-yang-do-si-seol-gye-sa-eob-so." NK Joseon, October, 25, 2013

[259] Ibid.

[260] North Korean Architecture Watch, 1. Architectural Design in North Korea

[261] 서울평양뉴스편집팀. "70 년 동안 470 여개의 중요대상설계." SPN 서울평양뉴스, July 6, 2020. www.spnews.co.kr/news/articleView.html?idxno=5863. Seoul-Pyongyang-nyu-seu-pyeon-jib-tim. "70 nyeon dong-an 470yeo-gae-ui jung-yo-dae-sang-seol-gye." SPN Seoul-Pyongyang News, July 6, 2020. (Designing around 470 significant projects in the past 70 years)

[262] 변상욱. "북한건축워치 01_북한의 건축설계." 건축사, March 2021. Byun Sang wook. "Bug-han-geon-chug-wo-chi-01_bug-han-ui geon-chug-seol-gye." Geon-chug-sa, March 2021

many other supporting labs in the house such as, architecture material research lab, architecture technology and theory lab, architectural design research lab, architectural engineering lab, and architectural information lab.[263]

Since its establishment in the 1980s, it has designed significant architectures in Pyongyang, such as Labor Party's Memorial Tower, Ryanggakdo International Hotel, and Grand People's House among many others. Also, it has planned many microdistrict developments, including Changjeon Street, which was the first residential development project in the Kim Jong Un regime, Eunha Scientist Street, and the most recent Songhwa Street. It collaborated with 평양도시설계연구소 (pyeong-yang-do-si-seol-gye-yeon-gu-so) on large scale residential development projects such as Mirae Scientist Street and Ryongmyong Street.[264]

As North Korea has a controlled economic system, any type of architectural project needs to report construction plan to the government so that it can be reflected to the national construction plan.[265] Although officially the client sides are always the government of public organizations or corporations, development projects follow similar process as many other free economy countries. Construction plan drawings are prepared by institutions such as 백두산건축연구원 (baeg-du-san-geon-chug-yeon-gu-won) or 평양도시설계연구소 (pyeong-yang-do-si-seol-gye-yeon-gu-so), and they need to be approved by municipal committee to start the architectural project. Once the construction announcement is released, contract is made between the client and the architectural institution.[266] Most of these architectural institutions cover all processes that are needed to finish a single architectural project. Instead of working with separate consultants for each professional field, these institutions have architectural design labs under the oranization that cover structure, civil, electric, mechanical, landscape, estimate, etc.[267] It is because, in theory, North Korea does not allow individual businesses, and therefore, it is more efficient and common to run a large

[263] 김정윤. "건설 부진에도 김정은式 설계는 지속?…백두산건축연구원 배급 '이상무.'" DailyNK, January 10, 2022. https://www.dailynk.com/20200713-2/ Kim Jeong-yun. "Geon-seol bu-jin-e-do gim-jeong-eun-sik seol-gye-neun ji-sog?...baeg-du-san-geon-chug-yeon-gu-won bae-geub i-sang-mu."Daily NK, January 10, 2022.
[264] 안윤석. "백두산건축연구원 창립 40 주년...'주요 건축물 설계 산실.'" SPN 서울평양뉴스, July 21, 2022. https://www.spnews.co.kr/news/articleView.html?idxno=54350. An Yun-seog. "Baeg-du-san-geon-chug-yeon-gu-won chang-lib 40ju-nyeon...ju-yo geon-chug-mul seol-gye san-sil." SPN Seoul-Pyongyang News, July 21, 2022
[265] 변상욱. "북한건축워치 01_북한의 건축설계." 건축사, March 2021. Byun Sang wook. "Bug-han-geon-chug-wo-chi-01_bug-han-ui geon-chug-seol-gye." Geon-chug-sa, March 2021.
[266] Ibid.
[267] 변상욱. "북한건축워치 02_북한의 건축설계." 건축사, April 2021. Byun Sang wook. "Bug-han-geon-chug-wo-chi-02_bug-han-ui geon-chug-seol-gye." Geon-chug-sa, March 2021.

public institution that covers all fields rather than working with different individual consultants.

Asides from architectural design lab, these institutions also have standard design lab that standardize unit plans, sizes of components, and dimensions of elements. Especially, North Korea has standard designs for schools, daycare facilities, residential buildings, and rural houses offered by the central government. Therefore, when they are adopted to certain municipal area, the standard design lab needs to amend those standard designs to fit new conditions such as, climate, geography, or topography.[268] For example, North Korea announced a linear corridor type residential apartment as a standard residential building in the 1960s. Therefore, this type was frequently used to form microdistricts in many different cities then.

There are other labs that are conventionally considered outside of architectural field, such as infrastructure engineering lab, which designs roads, bridges, and railways, geography lab, which covers most of geo-tests, and survey lab. Some institutions house revolution heritage design lab in the organization, which designs revolution history museums and monuments.[269]

[268] Ibid.
[269] Ibid.

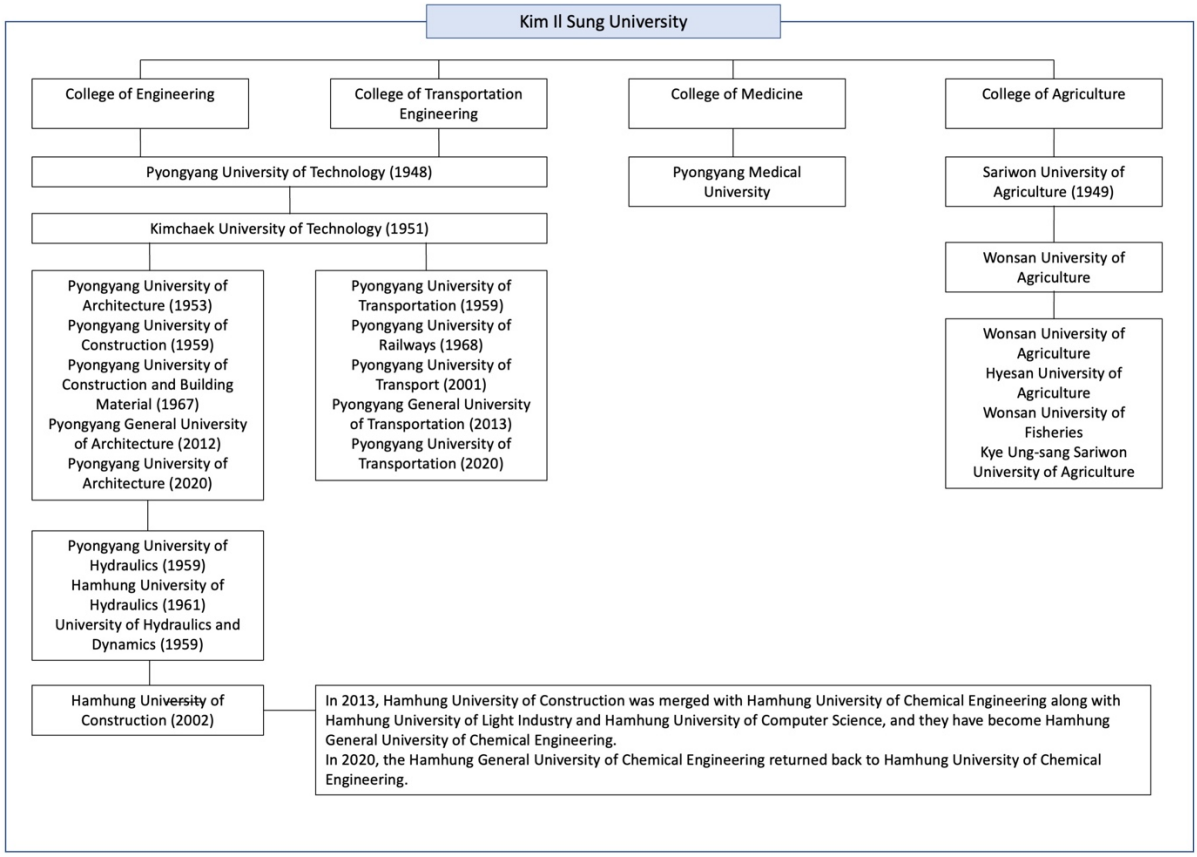

Figure 97History of Major Architecture Schools in North Korea[270]

Another institution that is taking an important role in North Korean architecture is architectural schools. Especially, Architecture Department in Pyongyang Engineering College that was established in 1948 along with the foundation of North Korea has been the most influential institute in and around Pyongyang. Before the school was officially established, North Korea decided to send a group student to other socialist countries to let them learn advanced education so that they could be the leading group when the institute is formed. 김정희 (Kim-jung-hui), 남상진 (Nam-sang-jin), 신순경 (Sin-sun-kyong), and 리형(Li-hyong) went to study in the Soviet Union, while 림준섭 (Lim-jun-seop) went to Slovakia. 김영성 (Kim-young-seong) went to Prague and 신동삼 (Sin-tong-sam) went to East Germany.[271] This young group later became the leading member of North Korean architectural institutions and institutes. Especially, 김정희 (Kim-jung-hui), who was studying

[270] 변상욱. "북한건축워치 10_북한의 건축교육." 건축사, December 2021. Byun Sang wook. "Bug-han-geon-chug-wo-chi-01_bug-han-ui geon-chug-seol-gye." Geon-chug-sa, March 2021.
[271] Park, Dongmin. "North Korean Architect Lee Hyeong: An Elite Architect's Partnership with Autocratic Rule, 1953-2000." Journal of the Architectural Institute of Korea 36, no. 7 (July 30, 2020): 69–80.

in Moscow then, was asked by Kim Il Sung during the Korean War to draft the reconstruction plan of Pyongyang. After the war, he was deeply involved in master planning of Pyongyang. 신동삼 (Sin-tong-sam) was the one who was involved in DAG, Deutsche Arbeitsgruppe, and came to Hamhung for its reconstruction after the war.[272]

After the war, in 1953, the architecture department was restructured as 평양건축대학 (pyeong-yang-geon-chug-dae-hag, Pyongyang University of Architecture) at 김책공업대학 (gim-chaeg-gong-eob-dae-hag, Kim Chaek University of Technology). As the post-war reconstruction was one of the first tasks of the nation, it was necessary to train architectural experts. The school included total six majors in three different departments. The Architecture Department offered architecture and urban management, the Construction Department had construction major, and Infrastructure Department offered hydro-construction, tunnel construction, and city building and survey engineering.[273] The school changed its name to 평양건설대학 (pyeong-yang-geon-seol-dae-hag, Pyongyang University of Construction) in 1959 to emphasize importance of construction in the nation, and once again in 1967 as 평양건설건재대학 (pyeong-yang-geon-seol-geon-jae-dae-hag, Pyongyang University of Construction & Building Material).[274]

Since the beginning Kim Jong Un regime, major architectural projects have been pursued, especially in Pyongyang, and the status of 평양건설건재대학 (pyeong-yang-geon-seol-geon-jae-dae-hag, Pyongyang University of Construction & Building Material) has been elevated as 평양건축종합대학 (pyeong-yang-geon-chug-jong-hab-dae-hag, Pyongyang General University of Architecture) along with these new projects.[275] 조선중앙방송 (jo-seon-jung-ang-bang-song, North Korea Central Broad Cast) reported that 평양건축종합대학 (pyeong-yang-geon-chug-jong-hab-dae-hag, Pyongyang General University of Architecture) is the control tower of major architecture projects in the regime based on the fact Kim Jong Un held the 7th Congress of the Workers' Party of Korea, the ruling party of North Korea at the school. [276] In fact, faculties and students at the college are highly involved in designing

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[272] Yim, Dongwoo, Prokopljević Jelena, and Rafael Luna. Unprecedented Pyongyang. New York: Actar Publishers, 2016.
[273] 변상욱. "북한건축워치 10_북한의 건축교육." 건축사, December 2021. Byun Sang wook. "Bug-han-geon-chug-wo-chi-01_bug-han-ui geon-chug-seol-gye." Geon-chug-sa, March 2021.
[274] Ibid.
[275] "평양건축종합대학." Wikipedia. Wikimedia Foundation, March 7, 2022. https://ko.wikipedia.org/wiki/%ED%8F%89%EC%96%91%EA%B1%B4%EC%B6%95%EC%A2%85%ED%95%A9%EB%8C%80%ED%95%99.
[276] 문관현. "평양건축종합대학, 北 건축설계 '컨트롤타워' 역할." 연합뉴스, December 27, 2016. https://www.yna.co.kr/view/AKR20161227145000014. Mun Gwan-hyeon. "Pyeong-yang-geon-chug-jong-

major architecture projects during Kim Jong Un regime, including major microdistrict projects.[277]

hab-dae-hag, Bug geon-chug-seol-gye keon-teu-lol-ta-wo yeog-hal." Yeon-hab-nyu-seu, December 27, 2016 (Pyongyang General University of Architecture takes the control tower role in North Korean Architecture)

[277] "동영상: 평양건축종합대학의 전도유망한 건축인재들." 동영상 | 평양건축종합대학의 전도유망한 건축인재들. Accessed March 18, 2023. https://dprktoday.com/videos/5444. dong-yeong-sang: pyeong-yang-geon-chug-jong-hab-dae-hag-ui jeon-do-yu-mang-han geon-chug-in-jae-deul. l

Chapter 3: Daily Lives in North Korean Microdistrict

In the Socialist Bloc, the microdistrict was suggested as a communal living complex that would reflect the ideology of socialism. As socialism arose to resolve the extreme living and working conditions of the working classes during the industrial revolution, it was a crucial aspect of the microdistrict to equally provide basic amenities for these populations. Large open spaces were planned to provide sufficient leisure and resting space for workers, while daycares and schools were located within the compound.

In this chapter, the daily lives of residents in North Korean microdistricts are analyzed alongside interviews of four North Korean defectors. Interviews were taken in 2019, and interviewees were chosen from defectors who lived in and left Pyongyang after 2010, because they had experienced transitions of the city that emerged since 2000s.

Table 5 List of Interviewees

Defector	Gender	Age	Defected Year	Interview Date (DD/MM/YY)	Location
A	M	40s	2011	30.09.19	Personal Office
B	F	20s	2017	04.10.19	Personal Office
C	F	40s	2019	16.12.19	Personal Office
D	F	50s	2013	16.12.19	Personal Office

Although microdistricts are implemented in North Korean cities to resolve issues that other socialist cities failed to address, there are discrepancies between the ideal concept of the microdistrict and everyday realities. Some amenities, such as groceries, that were supposed to be distributed equally among microdistricts have instead been dispersed irregularly throughout the city. The small stores that were supposed to supply microdistricts have also disappeared, while some large markets have emerged in certain locations. Similar issues have occurred for schools. Although all schools, especially elementary schools, are still well distributed among microdistricts, some semi-private schools have emerged. Thus, the school-based microdistrict system has been broken to some degree.

According to the Central Bureau of Statics, DPR Korea 2009, approximately 21% of people live in a sallimjip-type apartment in Pyongyang.[278] This statistic goes higher, and all four interviewees lived in a sallimjip-type apartment. Each mentioned that this type is currently more popular than others in Pyongyang, and that people tend to move to newer and bigger apartments if possible. (Defector A, interview, September 30, 2019) He mentioned that the old apartment was a corridor type, which he assumed was built in the 1970s or early 1980s, near the Arch of Triumph. It only had two bedrooms and one bathroom, which was too small for his family of four, a couple with two children. Thus, when he had the opportunity, his family moved to a new apartment built in 2008. This apartment, which was a core type, had four bedrooms and two bathrooms in a 180 sqm unit.

The core type was a new trend in the 2000s. Until the 1990s, high-rise apartments still had corridors on each floor. As the number of stories grew significantly, apartments could no longer be a linear type or a sektzia type, which has two units per staircase. Elevator halls became more important factors as the height of buildings increased, and corridors were mixed with elevator halls so that more units could fit on each floor. However, along with interiorized balconies, core-type apartments with no corridors became one of the trends in 2000s apartments.

Defector A said that there were four types of units per floor in his new apartment and that this shift from a corridor type to a core type was a significant change for him. (Defector A, interview, September 30, 2019) In the first corridor-type apartment his behaviors were always seen by others, and there was more class diversity. Consequently, when he received more rations as a public government official his neighbors watched them being delivered to his unit and gossiped about it. However, in the new core-type apartment there were fewer units per floor and fewer chances to observe the actions of neighbors. Also, as most neighbors in the new apartment were of a similar class, there was less discussion between residents about relative living conditions .

Defector A's new apartment, as a core-type building, did not have an exposed balcony. (Defector A, interview, September 30, 2019) This was a typical apartment typology in Pyongyang in the 2000s. At this time, balconies started to become interiorized and were used as extensions of the living room. In South Korea, the phenomenon of interiorized balconies occurred because of code issues: the balcony space was not counted as net area,

[278] Central Bureau of Statics, DPR Korea 2009. National report <DPR KOREA 2008 Population Census>.

resulting in a tax advantage. However, in North Korea, where there is no tax issue, interiorized balconies emerged as a trend in the 2000s in both private and public developments.

While sallimjip apartments were initially constructed in response to contemporary demands, more recently obsolete sallimjip residents had to contend with some issues. One of the issues were number of toilets because it is the costliest part to build in an apartment. (Defector B, interview, October 4, 2019) She mentioned that having one bathroom was the most annoying thing in her unit, especially because she, as a young teenager, was required to share it with her parents and grandparents. Multiple bathroom units in sallimjip apartments did not emerge until the 2010s in North Korea. While the number of bedrooms increased from one to two in the 1950s and from three to four in the 2000s, the number of bathrooms did not change at all.

The kitchen was another feature that obsolete sallimjip residents complained about. (Defector B, interview, October 4, 2019) She stated that her unit had an old-style kitchen that was lower than the other floors and did not have any kitchen cabinets. There was a stokehole for cooking, and the floors were heated by this source. (Defector C, interview, December 16, 2019) This feature existed until the early 1960s when a new type of ondol system was introduced. The traditional ondol system used the heat from the stokehole and let it run through a funnel underneath floors. Therefore, for the sake of heat movement, the stokehole had to be at the lowest point of the unit, which required the whole kitchen to be on a lower level. This presented few issues in traditional single-story houses, but when applied to a system for multiple-story apartments, constructing a lower floor, funnels, and individual vents became exceedingly inefficient to build. Thus, there was a continuous effort in North Korea to adopt a new heating system in sallimjip development.

3.1 Grocery Shopping in Microdistrict

The North Korean microdistrict guidelines suggest three different levels of stores: 전문상점 (jeon-mun-sang-jeom, a specialized market) serving a larger area in guyeok level, a general market located in the center of residential districts and microdistricts, and a general market branch and stores distributed throughout a microdistrict.[279] Mostly, groceries are to be supplied through stores in microdistricts, and industrial goods are to be supplied through

[279] 김현수. Rep. 서울과 평양의 도시계획이념 및 공간구조 비교연구 , 2004. Kim Hyun Soo. Rep. seo-ul-gwa pyeong-yang-ui do-si-gye-hoeg-i-nyeom mich gong-gan-gu-jo bi-gyo-yeon-gu, 2004. (Comparison Study of Urban Planning Theory and Spatial Structure between Seoul and Pyongyang)

stores and markets in guyeok level. Additionally, in order to decrease commuting traffic, small work units that produce and supply goods are to be located in the microdistrict. North Korea emphasizes that daily items need to be provided so that consumer habits will increase quality of life.[280] Under a controlled economy system, the government designated 261 items—206 basic food items and 55 daily products—as necessities and provided them through public markets.[281] North Korean law dictates that only 상업관리소 (sang-eob-gwan-li-so, the commerce management center) control the supply of items produced by public enterprises.[282] Thus, in theory, when productivity grows sufficiently, a controlled economy system would effectively improve people's quality of life.

However, the controlled economy system began to fail during the 1990s when the Socialist Bloc started to collapse, and the Arduous March was underway in North Korea. Before the economic crisis, the commerce management center functioned as a middleman between supply and demand. It comprehended the needs of the market, both yearly and quarterly, and managed to acquire the requested items from public enterprises.[283] However, when productivity diminished in the 1990s, the supply chain failed, and the commerce management center started to bring in goods from traders who obtained them illegally from foreign countries. Since the 7.1 policy for 'Economic Management Improvement' in 2002, this trade with foreign enterprises has become officialized, and new big box-type markets have emerged. These markets, called jang-ma-dang, replaced the specialized markets that had served guyeok level and mostly sell goods imported from across the border. In jang-ma-dang, small traders, who largely conduct business with China, rent out each section and sell their items.

Currently, jang-ma-dang are the most viable kind of market in North Korea and have drastically grown in scale. For instance, Joong Guyeok Market has 3,000 vendors in a single

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[280] *조선백과사전편찬위원회. In 광명백과사전, 210. 평양: 백과사전출판사, 2004.* Jo-seon-baeg-gwa-sa-jeon-pyeon-chan-wi-won-hoe. In gwang-myeong-baeg-gwa-sa-jeon, 210. pyeong-yang: baeg-gwa-sa-jeon-chul-pan-sa, 2004.

[281] 김영희, and 김병옥. "북한의 상업활동 변화와 2000 년 이후 상업법 개정." 통일정책연구 24, no. 2 (2015): 117–41. Kim Young Hee, and Kim Byung Ok. "Bug-han-ui sang-eob-hwal-dong byeon-hwa-wa 2000nyeon i-hu sang-eob-beob gae-jeong." tong-il-jeong-chaeg-yeon-gu 24, no. 2(2015):117-41 (Changes in North Korean Commercial Activities and Commercial Law since 2000)

[282] 장명봉. 북한법령집: 북한법연구 자료집. 서울: 북한법연구회, 2005. Jang Myeong-bong. Bug-han-beob-lyeong-jib: bug-han-beob-yeon-gu ja-lyo-jib. seo-ul: bug-han-beob-yeon-gu-hoe, 2005. (North Korean Statue Book)

[283] 김영희, and 김병옥. "북한의 상업활동 변화와 2000 년 이후 상업법 개정." 통일정책연구 24, no. 2 (2015): 120. Kim Young Hee, and Kim Byung Ok. "Bug-han-ui sang-eob-hwal-dong byeon-hwa-wa 2000nyeon i-hu sang-eob-beob gae-jeong." tong-il-jeong-chaeg-yeon-gu 24, no. 2(2015):117-41 (Changes in North Korean Commercial Activities and Commercial Law since 2000)

two-story big box market. These types of jang-ma-dang mostly sell items imported from China, such as electronics, brand shoes, and brand clothing. Along with these expensive items, small items, such as daily necessities and imported snacks, are also sold. As these markets are generally not located adjacent to the microdistricts, there are delivery services from the market to buyers' places as well.

In Pyongyang, people often used jang-ma-dang in guyeok level. There is one jang-ma-dang in each guyeok, but that does not necessarily mean that only guyeok residents can use them. (Defector A, interview, September 30, 2019) For example, the jang-ma-dang in Tongil Street is the largest in Pyongyang, and anyone can buy items there. However, defector A mostly used the one located near his home, Inheung Market, which serves Moranbong Guyeok and was a 15 minute walk from his apartment. He argued that this was the case for most people in Pyongyang. They use small stores in or nearby their microdistrict for daily necessities and groceries, but visit jang-ma-dang once or twice a month for better quality items.

Defector B described how she mostly frequented stores near her residence because they were more affordable. (Defector B, interview, October 4, 2019) Jang-ma-dang are much nicer and have more expensive products, so she went there with friends just for fun. She argued that there are a greater number of choices and items at these markets, unlike the neighborhood stores that have almost no options. Defector D used guyeok markets more often than the others. (Defector D, interview, December 16, 2019) She mentioned that she lived very close to the guyeok market Seosung Market, which was an approximately 20 minute walk from her home, so she used it on a daily basis. Although there is at least one guyeok market in each guyeok, all of them are different sizes. As such, she sometimes took the tram to Tongil Market, the biggest market in Pyongyang, for certain items. She said that while she had not seen many street vendors in her district, she could locate many along large boulevards and near jang-ma-dang where large groups of people gather.

These street vendors are called "grasshopper vendors." Even after some foreign trade was officialized, sellers were still required to pay rent to the government if they wanted to do business in jang-ma-dang. Thus, there are an increasing number of grasshopping vendors who flee when security police arrive to enforce payment then return when they leave. They can exist because of the market need. As they do not pay any fee, street vendors may provide the same item for cheaper price, and buyers inevitably seek more affordable options. These vendors do not emerge often in microdistricts not only because there are typically officers

linked to security guards but also because the street vendors prefer high pedestrian traffic. (Defector D, interview, December 16, 2019)

Although such commercial activities do not appear dramatically in microdistricts, there have nonetheless been changes in small stores and markets in these areas. Until recently, before the economic reform of the 2000s, markets and stores in North Korea did not make active gestures towards selling products. As part of the ration system, these markets and stores were mostly used to distribute daily necessities and groceries to the people. As such, there was little reason for them to display items more actively. Unlike many stores in capitalist cities, those in North Korea did not have large display windows or visible signs that attracted potential buyers. However, as the ration system dissolved and these stores and markets could sell things of their own, they started to use more assertive display windows and signs.

This trend is reflected in new sallimjip developments as well. Unlike the one- or two-story service buildings in previous microdistricts, new developments have four- to five-story service buildings filled with commercial stores and signs to attract customers. Also, new department stores have emerged in existing microdistricts. Such stores are no longer service amenities for microdistrict residents but are instead commercial stores for anybody in the city. They are not used to distribute daily necessities but rather to sell high-end imported items. Consequently, items that were once only sold in jang-ma-dang are now available in these microdistrict stores, that are more adjacent to the living.

3.2 Daycares and Schools

In many cases, elementary schools are the benchmarks for planning a microdistrict. Perry's neighborhood unit theory, which was the reference for socialist microdistrict theory, also defines the scale of population based on the number that supports one elementary school. The size of the neighborhood should also be walking distance to the school.[284] Likewise, in North Korean microdistrict guidelines, the scale of a microdistrict is defined by walking distance from the elementary school, which is maximum of 750 m, and by size of the school, which is about 800 to 1,200 students in cities.[285] Meanwhile, daycare centers and kindergartens have a 300 m to 500 m service radius with a smaller student body of 150 to 200 per facility. Thus, they are located in microdistricts more frequently than elementary schools.

[284] Meenakshi, Singhal. "Neighborhood Unit and Its Conceptualization in the Contemporary Urban Context." Institute of Town Planners India 8, no. 3 (September 2011).

[285] 김현수. Rep. 서울과 평양의 도시계획이념 및 공간구조 비교연구 , 2004. Kim Hyun Soo. Rep. seo-ul-gwa pyeong-yang-ui do-si-gye-hoeg-i-nyeom mich gong-gan-gu-jo bi-gyo-yeon-gu, 2004. (Comparison Study of Urban Planning Theory and Spatial Structure between Seoul and Pyongyang)

Also, microdistrict guidelines indicate that the walking paths to these institutions, such as elementary schools, kindergartens, and daycare centers, should not be interrupted by vehicle traffic. Therefore, it is common for microdistrict residents to send their children to the institutions in imminent distance. As most elementary schools are in the microdistrict compound, students tend to gather at certain locations and go to school together. Mostly, they meet around seven in the morning and get out of school around four in the afternoon.

Table 6 History of North Korean educational structure [286]

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age</th><th colspan="2">1946 reform</th><th colspan="2">1953 reform</th><th colspan="2">1959 reform</th><th colspan="2">1966 reform</th><th colspan="2">1973 reform</th><th colspan="3">2012 reform</th></tr>
<tr><td>17</td><td rowspan="2">Advanced Middle School</td><td rowspan="2">Polytechnical Secondary School</td><td colspan="2"></td><td colspan="2">Technical High School</td><td>High School</td><td>Technical High School</td><td colspan="2"></td><td colspan="3"></td></tr>
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<tr><td>15</td><td rowspan="2">Elementary Middle School</td><td rowspan="2">Polytechnical Elementary School</td><td rowspan="3">Elementary Middle School</td><td rowspan="3">7 Years of Compulsory Education of Secondary School (1958)</td><td rowspan="2">Middle School</td><td rowspan="2">Elementary Middle School</td></tr>
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Since the Kim Jong Un regime, the educational system of North Korea has changed to better match global standards. Most countries have 12 years of education from elementary to high school, including five to six years of mandatory elementary school. Before the system change, North Korea had only four years of elementary school with a total of 11 years of school education. Changes to this program are based on Kim's declaration that the North Korean educational system should reflect global standards and experiences. Especially as the new 12-year education system is mandatory, the official working age may be increased to 17 years old. This could be quite critical for the North Korean system as it emphasizes the

[286] 김지수. Rep. 김정은 시대 북한 유·초·중등 교육 연구. 진천: 한국교육개발원, 2019. Kim Ji-soo. Rep. gim-jeong-eun si-dae bug-han yu-cho-jung-deung gyo-yug yeon-gu. Jin-cheon: Korean Educational Development Institute, 2019. (Research on education system of kindergarten, elementary school, and mid-high school in the Kim Jong Un regime)

productivity of society and requires every individual to take a role in production. However, as Kim insisted, this is part of an effort to change the system to match the global standard. The change also reflects new societal demands. As the economic reform of the Kim Jong Un regime allowed differentials of payment for employment depending on education, more citizens are preferring to pursue higher education.[287] Defector B insisted that her parents sent her to a prestigious school because they did not want her to work on farms or have labor-intensive jobs. (Defector B, interview, October 4, 2019) If she went to a college, there was a greater possibility that she would become a white-collar worker with a higher income. Thus, the new 12-year system has been generally welcomed, particularly by emerging middle-class people in North Korea, as it focuses on encouraging students to attain higher education rather than simply finding jobs upon graduation.

There are also after-school programs in North Korea for kindergarten, elementary school, and middle school students. Although after-school programs are supposed to be voluntary, most students participate in them not only because both of their parents work but also because the school forces them to.[288] In his research, Chun argues that while after-school programs in North Korea are intended to provide various opportunities for students to develop their talents, in reality they are used as tools to force mobilization for national events or labor works.[289] There are four main areas in these after-school programs: organizational, arts and sports, extracurricular, and labor. Organizational activities are conceptually like Boy Scouts in the West, but all students in North Korea are forced to participate in the youth organization. Conversely, students are not required to participate in arts and sports activities. In most cases, it is talented students or those from wealthier backgrounds who take part, because the activities require a significant amount of time and money. Even though extracurricular activities are not enforced by the government, schools typically organize many small student groups to ensure better results in competitions in various curricula, such as math, physics, or computing. Meanwhile, labor activities mostly involve forced participation. As there is a lack of laborers in rural areas, especially during the farming seasons, students are forced to provide labor, and some students need to take almost a month to do so. The research argues that because some students who are actively participating in arts, sports, or extracurricular

[287] Ibid.

[288] 전일구. “A Research on after-School Activities of North Korea : Focusing on the Analysis of Extra - Curricular & Sojo Activities in the Education Newspaper since Kim Jong-Un's Regime (2012-2017) -.” Journal of Peace and Unification Studies 10, no. 2 (2018): 241–88. https://doi.org/10.35369/jpus.10.2.201812.241.

[289] Ibid.

activities can get a waiver for the labor requirements, there are some distinctions between students. Today, some students pay a fee to the school to become exempt from labor requirements.[290]

Among the many features of microdistricts, schools, daycare centers, and kindergartens are the amenities that have realized the guidelines relatively well. Most elementary schools, kindergartens, and daycare centers are located within an approximately ten minute walking distance. (Defector A, interview, September 30, 2019) Defector A mentioned his child's own school was only 3 min away. Defector D also mentioned that her child went to school close by and argued that until they go to college, most schools are close to residences. (Defector D, interview, December 19, 2019) Defector C said that her older child went to a middle school that was a 10 min walking distance, and the younger one went to an elementary school that was a 15 min walk. However, she mentioned that even her younger child did not have to cross any large streets on the way to the elementary school. (Defector C, interview, September 30, 2019)

However, when it comes to special schools children need to go beyond their own compound. (Defector B, interview, October 4, 2019) From kindergarten through elementary school, defector B went to a special school located in Joong Guyeok, which is across the Daedong River from where she lived. According to B, Joong Guyeok is considered the most well-developed area in Pyongyang, and there are many prestigious schools there including the school she attended. In order to become a white-collar worker in North Korea, one needs to go to a good college, and in order to do so one must first attend a school that demonstrates a high rate of students sent to such institutions. (Defector B, interview, October 4, 2019) Thus, her father, who was a doctor, wanted to send defector B to a school located at a significant distance from their home. Consequently, she was required to take a shuttle bus across the Okryu Bridge daily.

This may seem to be an unusual case when considering microdistrict guidelines and the basic ideology of the regime. However, defector C mentioned that her older daughter also went to a prestigious school in Joong Guyeok, Kim Sung Joon Elementary School, and needed to take a bus to get there. (Defector C, interview, December 19, 2019) Neither defector B nor C's daughter could afford to attend their prestigious schools until high school, so they both went to middle schools in their compounds. Defector B describes finding it difficult to make many friends when she came back to her compound, because most of the

[290] Ibid.

children were already friends with each other from their kindergarten or elementary schools. (Defector B, interview, October 4, 2019)

3.3 Open Spaces in Microdistricts

North Korean microdistrict guidelines state that the building footprint should not be more than 25% of the district area, which means the majority of a microdistrict could be used for open public spaces. Indeed, there are a variety of open space criteria in the guidelines that describe residential gardens, residential group gardens, microdistrict gardens, playgrounds, and fields. These all have different roles in a district. For example, smaller scale residential gardens build a buffer between residential buildings and public streets, while microdistrict gardens provide resting and leisure space for residents. Especially as private ownership of vehicles is mostly prohibited, there is little chance that surface parking would encroach upon open spaces in a North Korean microdistrict.

The emphasis on the importance of open space derives from socialist urban planners who believed that providing enough open space would increase both immunity and productivity. People can take rests from work in these open spaces, while fresh air and sunlight improve their immune system. Therefore, it is important to ensure these spaces are in good condition, and North Korea has set a law that indicates the responsibility of microdistrict residents to maintain them. In the North Korean city management law, people are responsible for planting flowers and trees in designated areas and sustaining them every season. The law also indicates that they must build and maintain amenities for playgrounds and public sanitation facilities in playfields and public spaces.

There is a people's leader in each neighborhood who manages buildings and distributes management work to each household. (Defector A, interview, September 30, 2019) There is no public or private cleaning service that is responsible for cleaning the neighborhood. Instead, it must be managed by tenants themselves, and the leader informs each household when and where they must participate. Many times, this charge extends beyond their district and covers a larger area in the city. Sometimes, the tenants are required to clean and plant flowers along designated boulevards. This responsibility is also indicated in the city management law.

Nonetheless, these open spaces in microdistricts are not fully utilized by the residents in practice, while other public spaces are better used. All interviewees mentioned that there is limited social interaction between neighbors, so they did not find sufficient reason to spend time there. Instead, people use parks outside of their compounds, because there are only few

facilities at playgrounds in a compound, and thus, most residents prefer to visit surrounding parks. (Defector A, interview, September 30, 2019) There is typically a park in each "dong," the smallest administrative neighborhood boundary, with some exercising facilities and resting places. Consequently, even though they are not very large, many elders use these parks because they are close and have good amenities.

Children use the open spaces of a compound more than adults, because there are play facilities installed there. However, when they become teenagers they tend to spend more time in other areas. For example, defector B describes how even though she did not have enough money to buy things, she used to go to department stores with her friends to window shop. (Defector B, interview, October 4, 2019) There are many nice playgrounds and leisure parks in Pyongyang, many children prefer to go to those places instead of spending time with their friends in the open space of their compounds. (Defector A, interview, September 30, 2019)

Recently, open spaces in microdistricts are being reduced due to infill developments. Currently, new housing is being built in Pyongyang without necessarily expanding the city boundaries. Thus, many new developments occur in open spaces of existing microdistricts, as they are less dense and have existing infrastructure.

3.4 Work Unit Factories

Work unit factories are one of the unique features of microdistricts. Improving the living environment of the working class was the most crucial aspect of microdistricts for the early socialists, it was inevitable that factories be adjacent to housing. Thus, instead of locating large factories at the outskirts of a city, socialist cities embraced them as part of a city. As a result, commuting time could be reduced and factory workers could remain in the city. Danwei, a Chinese model that combines factories and housing, similarly reflects the idea of adjacency between work and home. In keeping with such concepts, there were small factories in microdistricts as well. From the beginning, North Korean microdistricts planned to have factories designated to serving their compounds.

These small work unit factories had become widely functional when Kim Jong Il emphasized the importance of using of recycled materials to make daily necessities in 1984. As the order was made on August 3, such provisions were called "8.3 Daily Necessities," and 8.3 Daily Necessities Stores emerged as well. This catalyzed the function of work unit factories in microdistricts.

Within a year, there were more than 16,400 work unit factories running in North Korea, and these had three main categories. First, there were convenient processing units that

produced daily necessities with recyclable materials. Second, there were repair shops for small daily items. Third, there were hygienic services, such as laundries.[291] Originally, these work unit factories did not get any support from the government and were required to sustain themselves. However, although they saw no major investments, the factories ultimately functioned as supplements for the government-controlled economy. Each work unit factory received an allocated quota from the government, and factory workers had to pay a 25% fee to the factory but received the remaining funds.[292] This was a decent income in the 1970s and 1980s, so working at these factories in microdistricts was popular. However, the system started to fail during the Arduous March in the 1990s and the economic reform of the 2000s.

Consequently, people started their own businesses either trading with foreign countries or selling small items, and they preferred doing so because they could earn more money than at work unit factories. As interviewee A mentioned, work unit factory workers remain in the system, so are still required to pay certain fees to the factories. However, if the fee is paid they are free to run their own businesses. Originally, the government controlled what needed to be produced in work unit factories, but that is no longer the case. People produce items, either in the factories or elsewhere, that they believe are more marketable and sell them in Jangmadang.

Younger generations in Pyongyang think work unit factories produce useless things. (Defector B, interview, October 4, 2019) Having seen what they make, she believes that no one would buy such products. As most items could be made with simple sewing machines, they are not as good as those found in big markets. In the big markets, it is possible to purchase items made in large factories in China, and most are of much higher quality than those produced in work unit factories.

Defector C observes that work unit factories in the compounds have around thirty people working in them, and most of them are female and elders. (Defector C, interview, December 19, 2019) She attested that these factories are separate from apartment buildings but within the compounds. These days, many people sell small items, such as candies or ice cream, in the lower level of apartment buildings and pay a certain fee to the work unit

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[291] 전숙영. "가내편의서비스의 본질적 특성." 경제연구 69 (1990): 12–13. 3 Jeon Sook-young. "Ga-nae-pyeon-ui-seo-bi-seu-ui bon-jil-jeog teug-seong." Economic Research 69 (1990) (Fundamental Features of Work Unit Services)

[292] 김귀옥. "1980 년대 북한 사회의 발전과 좌절의 기로." 현대북한연구 7, no. 1 (2004): 109. Kim Gwi-ok. "1980 nyeon-dae bug-han sa-hoe-ui bal-jeon-gwa jwa-jeol-ui gi-lo." Hyeon-dae-bug-han-yeon-gu 7, no.1 (2004) (Crossroads of Development of North Korean Society in the 1980s)

factories. These items are primarily bought from wholesalers. Therefore, the productive function of microdistricts has largely disappeared.

3.5 Realities of Daily Lives in Microdistricts

Although living in Pyongyang is considered one of the privileges that North Korean people most admire, defectors from Pyongyang still witnessed a lack of public supply in the city, and therefore, in Pyongyang, the royal floor is not the penthouse at the top but rather fifth or sixth floor units where you still can use stairs in case. (Defector A, interview, September 30, 2019) Therefore, the prices of higher units are often cheaper than the ones in lower floors because of these elevator issues. Especially in winter, when people make kimchi with cabbages, residents of higher floor units need to hire people to carry their cabbages for them, as elevators rarely work during that season.

In fact, defector C worked as an elevator manager who shot down the elevator when needed. She observed that the elevators experienced so many breakdowns because of an unstable supply of electricity. (Defector C, interview, December 19, 2019) The electricity for elevators and homes has a different supply line from the one for decorative lighting in apartment buildings. (Defector A, interview, September 30, 2019) As a result, decorative lights will remain on even when elevators are not operational, because that is an important form of propaganda for the government. Although there are areas where people prefer to live, the electricity shortage affects the whole city, even the most popular areas and apartments.

Lack of electricity is not just a matter of elevator use but also of heating units. Interviewee A testified that he had his own self-generator at home to run the heater. He used a steam pot for heating but said some others used oil boilers. Because the self-generator was very noisy, he had to share some of the electricity with his neighbor below. Recently, people have been using PV panels. However, these can be used for small amounts of electricity, such as lights, but not for heating. Furthermore, the heating issue is not a matter of how old the apartment is. In fact, heating issues were not fully resolved even in the Changjun Street Development, which is one of the most recent developments in the city. (Defector A, interview, September 30, 2019)

The electricity shortage also caused issues in commuting. Many people in Pyongyang use trams for their commute. However, because of the unstable supply of electricity, people's commuting time, which is supposed to be a half an hour, often becomes much longer. (Defector C, interview, December 19, 2019) Although moving from one city to another, or from one place to the other, is restricted in North Korea, people move around quite often

when necessary. Defector D, for example, used to live in Pyongyang but moved to Chungjin when she married a man from that city, but when she got divorced she moved back to Pyongyang with her kids. (Defector D, interview, December 19, 2019) Perhaps moving between cities occurs less occasionally than moving between sallimjip. Although housing is provided in North Korea, people may move for a variety of reasons. One main reason is to have a larger unit and greater number of rooms as a family grows. At the same time, people move because of location, such as proximity to subway stations or schools. Defector C used to live in the Tongil Street Development, which was constructed in the late 1980s and early 1990s, but moved to an apartment in Seongyo-Guyeok near Juche Tower in 2006. Although the new apartment was much older— she assumed it was built in the 1960s or 1970s—and had fewer bedrooms, her family decided to move to Seongyo-Guyeok because it had better access to public transportation. As an elevator technician, whose role is to control running the elevator due to lack of electricity, she had lived on a semi-basement floor in Tongil Street. Consequently, her family moved to another apartment that was on the first floor of a five-story building. (Defector C, interview, December 19, 2019)

Defector A also moved from their previous sallimjip to a new one for locational reasons. He mentioned that the new sallimjip had more rooms and was close to a subway station. (Defector A, interview, September 30, 2019) In terms of proximity to the subway, he argued that the previous building was about a fifteen minute walk to the Kaeson Station subway, whereas the new one was only 5 min away. While he had used his own car for commuting, this proximity to a station mattered to his wife because she always commuted via subway. Also, the new apartment had a market and other amenities close by, was in a quiet neighborhood, and was near schools. Thus, he chose to move to the new sallimjip because of its closer proximity to all amenities. (Defector A, interview, September 30, 2019)

3. 6 Sub-Conclusion

Daily lives in North Korean microdistricts are influenced both by the physical structure of the microdistricts and by the needs of the people. There are aspects of microdistricts that function well based on theoretical guidelines. For example, the distribution of elementary schools, which are fundamental features required to form a microdistrict, allows families to send their children to schools within a 10–15 min walking distance. This has created an interesting culture where children congregate in the mornings and walk to school. It is possible because the distances to schools are close and districts are considered safe, so children can walk there without any parental supervision.

Meanwhile, other aspects of microdistricts, such as open spaces or grocery stores, do not function as well as the guidelines anticipated. The building coverage ratio is low in most microdistricts, which means that there are technically enough open spaces. However, while this is true as a ratio, these open spaces are practically abandoned and have no amenities or facilities for leisure activities. Also, based on the microdistrict guidelines, there should be enough trees and plantings in open spaces to offer a buffer zone between buildings. However, such trees rarely exist in any microdistrict. As a result, there are not many people, either adults or children, who use the open spaces of these districts.

Nevertheless, the discrepancy between the microdistrict guidelines and reality is not caused only by the quality of microdistrict spaces. New socio-economic conditions, which differ from the period when the guidelines were written, have also caused unexpected changes in microdistricts. In the past, small grocery stores were well supplied in each microdistrict so that residents could acquire or purchase their daily necessities. The idea behind these stores was that the controlled economy could measure people's needs, and the government-controlled production could supply the required amount to each microdistrict. However, this need could not be measured accurately, as people often desired better quality products. These new conditions forced the North Korean government to create a big-box market where people have more choices and buy imported products. Due to such socio-economic changes, small grocery stores lost their intended function as a crucial aspect of microdistricts.

Although theoretically microdistricts are meant to be self-sustaining units that provide daily necessities to their residents, in reality the overall structure of cities do not fully support the idea. For instance, some microdistricts have better access to public transportation. This discrepancy has shaped preferences for living in certain microdistricts and not others.

Chapter 4: Prospects of North Korean Microdistrict

4.1 Socioeconomic Transformations in North Korea

With the end of the Cold War, North Korea lost substantial aid from Moscow and Beijing. The funds had propped up the economy, as did trade with other communist countries, and the loss of revenue sparked a financial collapse and bouts of starvation during the 1990s, which were estimated to have killed as many as two million people. Bankrupt and desperate, the secretive Pyongyang government launched an experiment with the free market in July 2002, deregulating prices and hiking salaries.[293]

Despite continuous political tensions and economic sanctions, major socio-economic changes have occurred in North Korea, and Pyongyang is the most radical case. More shops and markets have opened in North Korean cities, and the number of foreign tourists has increased dramatically. It is not surprising to see North Korean people on the streets using smartphones and wearing a greater variety of clothing than ever before. A promotional and representative showcase of the nation's changes is the 2012 completion of the facade of the Ryugyong hotel using foreign investment; the 101-story hotel's construction had been suspended for more than two decades starting in 1989. The country's political stance and relations with foreign countries have changed little, but continuous socioeconomic changes have taken place in North Korea over the past two decades.

Especially since the Kim Jong Un regime started in 2012, economic growth has been considered the main objective of the state, even more than political propaganda.[294] Obviously, there was already an initial economic drive for the Militarily Strong and Economically Prosperous State Building of the nation since the Kim Jong Il period by 2012 to celebrate the 100th anniversary of Kim Il Sung's birth.[295] After the infamous Arduous March in the mid-1990s, the North Korean economy finally began growing in 1999.[296] For almost a decade, since the fall of the Berlin Wall, North Korea, which was part of the larger Communist Bloc that supported the North Korean economy, fell into a dark economic era because of its

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[293] Faiola, A. (2004, May 23). New capitalist symbol rises in N. Korea's dust. Retrieved November 12, 2022, from https://www.washingtonpost.com/archive/politics/2004/05/23/new-capitalist-symbol-rises-in-n-koreas-dust/c15cdada-cb10-42f3-b78a-378bb4ef29ec/

[294] Although Kim Jon Un's official regime stared in 2012, Kim Jong Il announced him as the successor of the regime in 2009 and Kim Jong Un officially appeared in 2010 at the North Korean Labor's Party Conference.

[295] 김중호. (2010). 북한의 강성대국 건설 전망 : 북미협상 구도를 중심으로. 한국수출입은행. Kim Joong-ho. (2010). Bug-han-ui gang-seong-dae-gug geon-seol jeon-mang : bug-mi-hyeob-sang gu-do-leul jung-sim-eu-lo. (Prospect on North Korean Economy Focusing on the Negotiation between North Korea and the United States) Export–Import Bank of Korea.

[296] Ibid.

reliance on the Soviet Union. However, with the growth of Chinese economy, after almost a decade, North Korea started to recover from the great famine and tried to identify a strategy for economic reform. In 2000, for the first time, a presidential summit was conducted between South and North Korea, and economic cooperation between the two countries was agreed upon. As a result, the Kaesong Industrial Region (KIR), a joint venture between South and North Korea, was constructed on North Korean soil. Regardless of the KIR's economic impact on the overall economy of North Korea, it shows the nation's efforts to partly adopt a market-oriented economic system, much like other socialist countries have.

North Korea legitimized the "7.1 Improvement Strategy for Economic Management" in 2002; it is considered a turning point in the North Korean economy's transformation into a market-oriented system. The improvement strategy highlights four major points. First, it allows for gradual payment based on the efficiency of labor or difficulty of work. It reduces the disadvantage of "equality" and generates motivation for labor. Second, it abolishes a controlled price system in the market and encourages the market to use prices based on supply and demand logic. Third, the strategy allows for more independence and freedom for enterprises to generate more efficient and better products. Although, broadly speaking, the state still controls the economy, individual enterprises are allowed to set their own outputs and prices. Finally, it encourages direct dealing instead of controlled distribution. People have to buy what they need, whereas previously, these products were distributed for free directly from national retailers.[297]

The "7.1 Improvement Strategy for Economic Management" also influenced small-scale commercial activities. Since the strategy allowed for graduated salary and encouraged the freedom of direct dealing, new forms of retail have emerged in Pyongyang. The increasing number of mobile vendors on major streets and squares in Pyongyang is another sign of economic transition. As Axenov has noted, mobile trade forms and kiosks emerged first in the earliest transition stages to the market-oriented economic system.[298] This is because these typologies are highly flexible and can fill the gap between people's actual needs and the capacity of controlled distribution. In the beginning, these street markets and vendors—the

[297] 조명철, and 이종운. Rep. 7.1 경제관리개선조치 현황평가와 과제: 북한 경제개혁의 전망. 세종: 대외경제정책연구원, 2003. Cho Myong-chul, and Lee Jong-un. Rep. 7.1 gyeong-je-gwan-li-gae-seon-jo-chi hyeon-hwang-pyeong-ga-wa gwa-je: bug-han gyeong-je-gae-hyeog-ui jeon-mang. Se-jong: Korea Institute for International Economic Policy, 2003 (Analysis of 7.1 Improvement Strategy and Prospect on North Korean Economic Reform)

[298] Axenov, Konstantin, Isolde Brade, and Evgenij Bondarchuk. The Transformation of Urban Space in Post-Soviet Russia. London: Routledge, 2009.

so-called *jangmadang*, which means "field market"—were considered illegal. However, as more daily purchases relied on them, North Korea started to legalize local jangmadang so that, while people could still use them for their daily needs, the government could tax them.

Unlike unofficial ones, they instead have large-scale markets. For instance, in Hamhung, the second-largest city in North Korea, there are 11 official jangmadang registered by the government, and among them, Sapo Market has over 9,000 vendors in an area of about 12,000 square meters, while Pyongsoo Market has nearly 12,000 vendors in an area of about 16,000 square meters.[299] These outdoor markets began in early 2000 alongside the economic reform, and they are more loosely distributed, while the new markets, such as Guemsa Market, are indoors, sometimes in two-story buildings. Each market focuses on specific items, and the items are often locally produced. Sapo Market is famous for its wholesale clothing made locally in Hamhung, while Pyongsoo Market sells local agricultural products.

The major issue is the Chinese strategy of preoccupancy. It is no longer a secret that 10,000 Chinese businessmen visited Pyongyang to explore future investments and that more than 3,000 businessmen reside there. There were more than ten times of investment fair for Chinese enterprises in 2004. The increase in Chinese investment from precious year is strongly related to the "7.1 Improvement Strategy for Economic Management," which generated individual enterprise establishments and businesses. Low tax regulation, an improved investment environment, and a low cost of production led Chinese businessmen to determine that Pyongyang will become a highly profitable market within 10 years. They say that the current situation of Pyongyang can be compared to the late 1970s or early 1980s in China. Opening an undeveloped market will generate large investment in light industries and social overhead capital (SOC), and it is clear that the preoccupancy strategy will focus on long-term plans instead of short-term profits.[300]

Along with this economic reform by the government, the growth of the Chinese economy had a major impact on the North Korean economy. As the Pressian reported, increasing numbers of businesses have traveled between China and North Korea since the economic reform. The growth of the Chinese economy and its market gave North Korea a

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[299] 이성희. "시장(장마당)을 키워드로 본 함흥." MK 뉴스, August 13, 2020. https://www.mk.co.kr/premium/behind-story/view/2020/08/28822. Lee Sung-hee. "si-jang(jang-ma-dang)eul ki-wo-deu-lo bon Hamhung." MK News, August 13, 2020. (Reading Hamhung with the keyword of market)

[300] 남성욱. "평양시장 선점하는 중국자본." 프레시안, April 7, 2005. http://m.pressian.com/m/pages/articles/46319?no=46319#0DKW. Nam Sung-wook. "Pyeong-yang-si-jang seon-jeom-ha-neun jung-gug-ja-bon." Pressian, April 7, 2005. (Chinese Capital Pre-dominates Pyongyang Market)

unique chance to enhance trade between the two countries. China is the only country that is connected to North Korea active railway, while other transportation for trade, such as ships or air cargo, is limited due to enduring sanctions. In the early 2000s, North Korean trade with China was less than 20% of the overall trade, while it was nearly 30% with Japan and 10% with Korea.[301] However, trade with China has continuously increased, and in 2018, China became the dominant trader, taking more than 90% of North Korean trades.

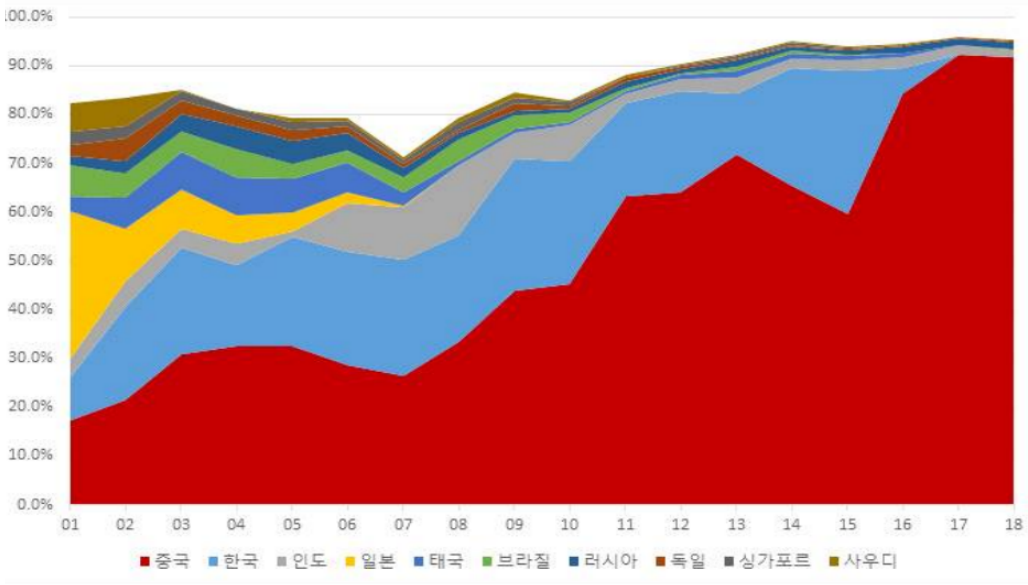

Figure 98. North Korea's Major Trading Nations from 2001-2018[302]

Increased trade with China and the economic reform strategy allowed the growth of a new class called *donju*. *Donju*, which means "king of money," first emerged during the Arduous March in the 1990s in order to fill the gap between public needs and the failed nation-controlled economy. In the beginning, peddlers who carried trade items between China and North Korea emerged as *donju*, and later, when the capital grew in size, these donju expanded their businesses to finance, construction development, and commerce. As these *donju* mostly conduct business with China, which takes place via land, they could grow more, despite a series of sanctions. With their growth in other fields in finance, the government began legitimizing *donju*, as they did with *jangmadang*, and used them as private financial institutions to bridge the gap between the controlled economy and the market-oriented economy.[303]

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[301] n/a. 통계로 분석한 북한무역 특징과 추이 (Rep.). (n.d.). doi:https://kosis.kr/index/index.do
국가통계포털. Tong-gye-lo bun-seog-han bug-han-mu-yeog teug-jing-gwa chu-i (Rep.). Korean Statistical Information Service (Analysis of North Korean Trades)

[302] Ibid.

[303] Chung, Youngchul. "Changes in the North Korean Economy : Market, Donju and Resurgence of State." Critical Review of History 126 (2019): 134–59. https://doi.org/10.38080/crh.2019.02.126.134.

The North Korean *donju* are often compared to Russian oligarchs, who accumulated private wealth during the transition from the controlled economy to the market-oriented economy in the Soviet Union. They also started with limited trade, or sometimes smuggling, of industrial goods from the West.[304] However, they became the most powerful corporations in the nation. As these oligarchs' capital grew dramatically, they started buying out state-owned enterprises, and gradually they became incorporated businessmen. Regardless of whether their contributions to the nation's economy were positive or negative, the emergence of oligarchs in Russia was a major sign of the transition from its nation-controlled economy to a market-oriented economy.

North Korea is currently in the early stages of this transition. *Donju*, who started with small trading businesses, are expanding their territories and becoming corporations and major economic agents in North Korea. It is reported that the *donju* use 270 of a total of 300 rail-transportation trains in the nation for private logistics.[305] There is already a symbiosis between the North Korean government as public and private *donju*. The government began charging fees or taxes on *donju* businesses. For instance, the government charges a toll to use the inter-city highways, which *donju* mainly use to travel between cities for trading.[306] Instead of suppressing *donju's* activities, then, the government instead takes advantage of their growth without directly running a market-oriented economic system directly.

There are three levels of *donju*; *so-donju* (small donju), *joong-donju* (medium donju), and *dae-donju* (big donju). They are categorized based on their capital. Someone with one million USD in capital is *so-donju*, while a *joong-donju* has about ten million USD. *So-donju* mostly invest in small businesses and real estate developments, while *joon-donju* run trading corporations that export mines or seafood and import cars, clothes, or electronics. One report states that there are about 100 *dae-donju* in Pyongyang who have more than 100 million USD in capital. These *donju* basically own and run multiple businesses, from real estate developments to manufacturing factories and logistics companies.[307] Pyongyang might seem an extreme case, but it is also a leading, representative one that shows how quickly the nation

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[304] Weiss, Andrew S. "Russia's Oligarchy, Alive and Well." The New York Times. The New York Times, December 30, 2013. https://www.nytimes.com/2013/12/31/opinion/russias-oligarchy-alive-and-well.html?_r=0.
[305] 김신. "북한체제시장화와 불가역적 체제변화 가능성 분석." 통일과 평화 12, no. 1 (2020): 49–52. Kim Sin. "bug-han-che-je-si-jang-hwa-wa bul-ga-yeog-jeog che-je-byeon-hwa ga-neung-seong bun-seog." Tong-il-gwa pyeong-hwa 12, no. 1 (2020). (Possibility of Facing Inevitable Marketization of North Korea)
[306] "Donju Are Princes of North Korean Economy." Korea joongAng Daily, October 9, 2018. https://koreajoongangdaily.joins.com/news/article/article.aspx?aid=3054069.
[307] 곽인옥, and 임을출. "세계북한학 학술 대회 ." In 평양 시장경제 실태와 특징에 대한 연구 3, Vol. 3. 서울, 2016. Kwak In-ok, and Im Eul-chul. "The world conference on North Korean studies." In Pyeong-yang si-jang-gyeong-je sil-tae-wa teug-jing-e dae-han yeon-gu 3, Vol. 3. Seoul, 2016 (Analysis of North Korean Market)

is changing in terms of adopting a market-oriented economy that allows private capital and investments. This socioeconomic change obviously affects the physical morphology of cities.

4.2 Urban Transformation

Recent socioeconomic changes in North Korea are the result of a new influx of real estate concepts in the nation's controlled economy. As a result, it is changing the social and economic structure of the nation and also transforming the physical form of the cities. With the rise of *donju*, the nation-controlled housing development system has been broken, or at least modified. Not only has a new real estate market emerged to sell property to *donju*, but *donju* themselves have also had the ability to develop their own private real estate developments. As *donju* have become a player in the housing development sector, there have been two major changes in North Korea cities. First, public housing developments began responding to the preferences of *donju* because even the public *sallimjip* are ostensibly sold to people with money, and this has become one of the government's main sources of income, as it does not run an official taxing system. Second, *donju* have become the actual developer in the housing market. As mentioned above, real estate developments are one of the first industries in which middle-scale *donju* engage when they gain enough capital from small trading businesses. Aside from many other physical transformations, these two are the main forces that have recently affected housing developments in North Korean cities.

Figure 99. Changchun Street Development [308]

[308] "[사진] 노동신문, 평양 창전거리 조명 '위민헌신의 자국.'" Accessed March 18, 2023. https://news.mt.co.kr/mtview.php?no=2021053006348216954. "[photo] Rodong Newspaper, Pyeong-yang chang-jeon-geo-li jo-myeong 'wi-min-heon-sin-ui ja-gug.'" Accessed March 18, 2023. (Lights in Chang-jeon-geo-li)

For this reason, there have been many recent waterfront developments in the recent years of the Kim Jong Un regime. Starting with the Changchun Street Development—which in fact was originally planned during the Kim Jong Il era—in 2012, the Mirae Scientist Street Development was completed in 2014. These developments changed the whole skyline of the Daedong River. Originally, North Korea did not have the concept of waterfront development. Public housing was given to people, and in theory, there was no discrepancy between locations. In a way, this is why developing microdistricts was important: they provided all the amenities and spaces necessary for daily life, and thus, regardless of a microdistrict's location, residents in each microdistrict had similar living conditions. However, as *donju* entered the arena, their demands are reflected in the selection of development sites. In cities with rivers, waterfront development is a quite promising development, especially when the river is located close to the city center.

The Changchun and Mirae Scientist Street Developments are both waterfront developments in the city center that could be compared to typical waterfront developments in the capitalist cities. In fact, in North Korea, rivers and the parks along rivers are considered amenities for everyone. As Kim Il Sung once announced, they should be located so that they serve not only for leisure and rest, but also for students to learn how to love their motherland. Nonetheless, the influence of *donju* in real estate development has encouraged the government to develop the waterfront, and as a result, units in these developments have been sold for more than $100,000 USD.[309] Of course, the waterfront itself was not fully privatized, but these developments provide additional value—through the view and easy access to the river—that other microdistricts cannot provide. Thus, inequality in microdistrict locations has emerged.

[309] The average salary in North Korea was 4 USD a month in 2018.

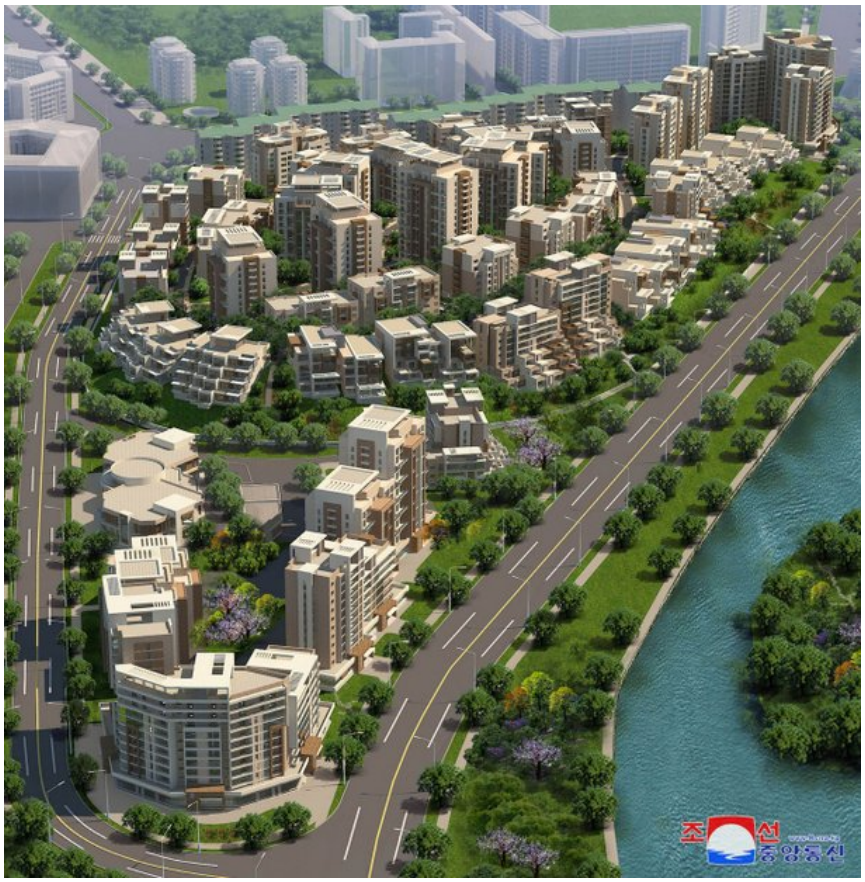

Figure 100. Botong River Terrace Housing [310]

The recent announcement of the Botong River Terrace Housing Development plan indicates that this waterfront development has become the trend in North Korea. This 800-unit development is located by the Botong River and is already known as a luxurious *sallimjip*. It is part of the master plan to provide 50,000 new housing units by 2025 to celebrate the 80th anniversary of the foundation of the communist party.[311] However, as the number of units shows, the Botong River Terrace Housing is not a large-scale development. Although it accounts for only 1.6% of the supply plan over the next several years, Kim Jong Un visited the construction site twice in 2021 to announce, or to promote, the importance of this development; moreover, it is not yet even a construction site because the construction has not begun.

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[310] 이승현. "북, 보통강 테라스 주택단지 '경루동' 명칭 확정." 통일뉴스, September 11, 2021. https://www.tongilnews.com/news/articleView.html?idxno=203121. Lee Seung-hyun. "Bug, bo-tong-gang te-la-seu ju-taeg-dan-ji 'gyeong-lu-dong' myeong-ching hwag-jeong."Tong-il News, September 11, 2021. (North Korea Names the Terraced Housing Complex along Botong River as 'Gyeong-lu-dong')

[311] 이제훈. "김정은 '보통강 계단식 주택단지' 또 방문...어떤 곳이기에?" 한겨레, April 1, 2021. https://www.hani.co.kr/arti/politics/defense/989138.html. Lee Je-hoon. "Kim Jong Un 'bo-tong-gang gye-dan-sig ju-taeg-dan-ji' tto bang-mun...eo-tteon gos-i-gi-e?" Hangyeore, April 1, 2021. (Kim Jong Un Visits Terraced Housing Complex along Botong River)

This trend is not limited to Pyongyang. As the central government has allowed each municipal government to create a master plan for its own development plan to attract foreign investments, cities such as Shinuiju or Rasun, which are outstanding North Korean border cities to China and Russia, have created visions of their future, including market-oriented housing developments on waterfronts to attract foreign investment.

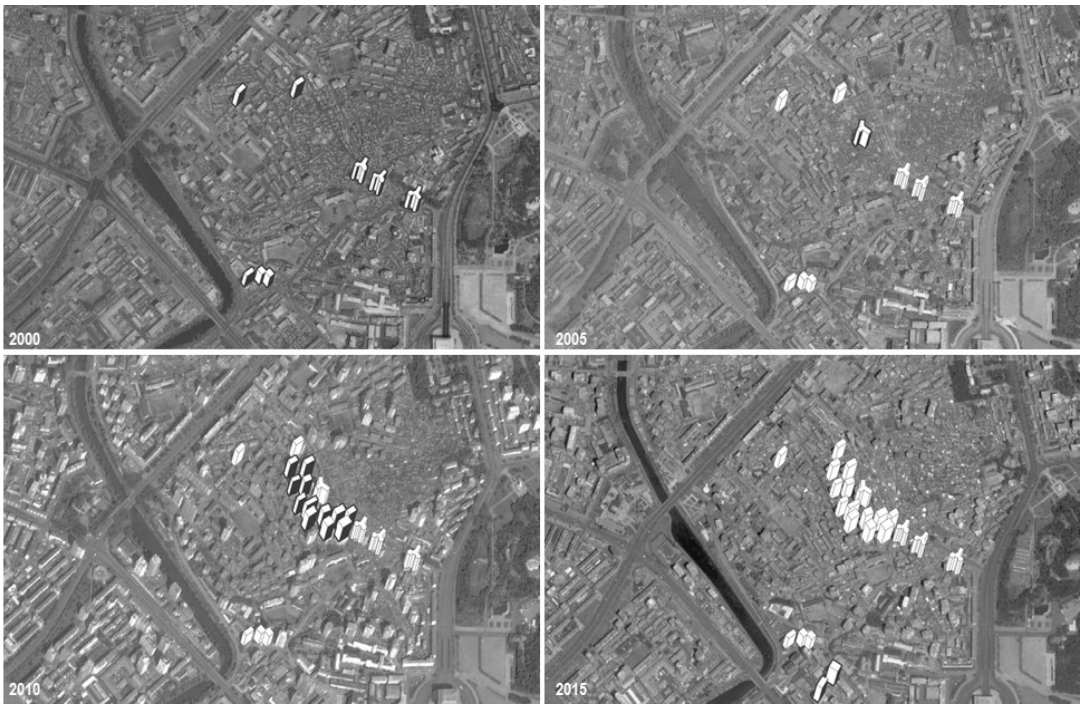

Figure 101. Private Developments in Bipadong (Yim, 2016)

Another major physical transformation is occurring due to the emergence of private developers. The new trend of private investment in the real estate market has changed the geography of North Korean cities. Just like many parts of a controlled economy, there is a significant gap between people's actual demand and what the government provides them. Even though, in theory, all microdistricts should provide living conditions of equal quality, in reality, they differ. Therefore, in the early 2000s, people began selling and buying the right of use of public housing. Private development has come into play to fill this gap. For instance, in Bipa-dong, Pyongyang, private developments—such as the development of a 10- to 15-story sallimjip building in an obsolete area—emerged in the early 2000s, and today, a large portion of the area is occupied by these high-rise sallimjip. The reason for this infiltration of private developments in Bipa-dong is not only because it has many obsolete, low-rise sallimjip in the area, but also because its locational in the city is valuable. As can easily be imagined, private real estate developments are sensitive to market needs, and as in many other post-socialist

cities in the 1990s—or in fact, in most cities generally—the city centers that have better urban infrastructure are in higher more demand.

Outside Pyongyang, where there is more scope for private commerce because state scrutiny is less intense, the property market has also created a new class of businessmen who employ workers outside the broken state system and raise funds to buy building materials, defectors and experts said.[312]

Housing developments driven by the private sector are not limited to the city center, as in Bipa-dong. Sometimes, more active private developments exist on the city's periphery because the government places fewer restrictions on these areas. Despite recent, radical changes, the city center, especially the center of Pyongyang, is thought to be a space where national propagation should be reflected. Therefore, even in the Bipa-dong case, the many private developments are hidden within the blocks so that they cannot be seen clearly from the major boulevards. However, the periphery of the city has different conditions. Similar to cities far away from Pyongyang, these areas cause less concern for the government because they are not considered the public face of the city or country. Even though government control is still in effect, the government leaves some room for private developers to pursue their own profits.

[312] Park, Ju-min. "Asia's Hottest Property Market Is Also Its Most Unlikely: North Korea." Reuters. Thomson Reuters, March 25, 2014. https://www.reuters.com/article/us-korea-north-housing-insight/asias-hottest-property-market-is-also-its-most-unlikely-north-korea-idUSBREA2O1UP20140325.5

Figure 102. Advertisement of a Private Development Sallimjip[313]

The private market has changed the scene on the streets, as well. It is not uncommon to see advertisements selling privately developed *sallimjip*. In the era when all housing units were given to the people by the public, there was no need to promote developments for sale. Rather, the public *sallimjjp* were often published in newspapers and magazines to promote the government's housing policies. However, for private developers, the situation is different. They have to compete not only with the public housing, but also with other private developers. In addition, because many of these private market housing developments are for presale units, renderings and floor plans are actively advertised on large billboards. Perhaps the most radical example of this presale market is the emergence of a model house. Recently, a fully set-up apartment unit was spotted at a construction site in Pyongyang that attracted "flat hunters" in the city.[314] This is a reflection of how much private housing development should respond to the market demand, and this new demand obviously affects the existing microdistrict and new microdistrict developments.

[313] Ahn, JH. "북한 최고급 아파트 브로슈어 단독 입수." NK News - North Korea News, December 29, 2016. https://kr.nknews.org/북한-최고급-아파트-브로슈어-단독-입수. Ahn, JH. "bug-han choe-go-geub a-pa-teu beu-lo-syu-eo dan-dog ib-su." NK News, December 29, 2016. (Brochure of the most luxurious Apartment in North Korea)

[314] Hotham, Oliver. "Under-Construction Pyongyang Tower Block Seen Fitted with Model Apartment: NK News." NK News - North Korea News, January 3, 2020. https://www.nknews.org/2019/11/under-construction-pyongyang-tower-block-seen-fitted-with-model-apartment.

4.3 The Transformation in Microdistricts

Even though microdistricts, unlike private housing developments, are still controlled and provided only by the government, many changes, both physical and socioeconomic, have happened in the districts. Of course, new *sallimjip* developments in recent years already lost many aspects of microdistrict theory because they have been responsive to new demand and the real estate market. Fewer open spaces are planned in the new developments, such as in the Ryomyong and Mirae Scientist Street Developments, while commercial spaces are plentiful. The idea to make a microdistrict a car-free, walkable compound has disappeared, as those developments occur along both sides of large boulevards. Thus, to go to school, children must cross the boulevards.

This loss of microdistrict aspects is apparent in the new developments and in existing microdistricts that originally closely followed the original guidelines. These transformations occur in various ways. Some microdistrict aspects disappeared naturally due to socioeconomic changes, while others are manipulated by individuals or sometimes public officials. For example, 가내작업반 (ga-nae-jag-eob-ban, work-units), which are a unique feature of microdistricts, have already lost their function. Originally, they were planned as part of the districts to provide a production space where residents, mostly female, could work and produce daily necessities. They had a certain quota, controlled by the government, to produce such products. However, as the nation-controlled economy started to falter, those women began to manage their own businesses, such as street vending, cottage-industries, or trading. Instead of meeting the quota by producing actual daily necessities, they pay a fee to work-unit managers with the income they make from their own businesses. These socioeconomic changes also changed programs in the microdistricts. Some small buildings and spaces in the microdistrict that were originally for storage or social space have been transformed into commercial stores run by individual residents.

Further, as in the new housing developments, an increase in demand for commercial activity in North Korea has led to the emergence of street vendors and small stores in the existing microdistricts; in addition, it has changed their design. In the original microdistricts, commercial programs were distributed in the compound based on the frequency of use. For instance, daily-use programs, such as small restaurants, were dispersed equally throughout the compound, while mid-size markets for weekly use were located on the periphery. However, in the new microdistrict developments, since the Kim Jong Un regime, commercial programs have been concentrated in multi-level department stores whose clear purpose is to serve not just the microdistrict residents, but also citizens in general. Additionally, as commercial

activity grew and the existing microdistrict stores could not handle the capacity, the government began adding more commercial spaces to existing microdistricts. For example, in the Tongil Street Development, a massive department store was developed to serve all the microdistricts along the street, while some smaller-scale buildings—which are still larger than the original microdistrict stores—were added to the existing microdistrict. It also provides some indoor sports facilities, which did not exist in the original microdistrict guidelines, in response to new demands from the residents.

Figure 103. Shopping Center in Pyongyang [315]

Another physical change in the new microdistrict developments in North Korea is the ratio of open space. As microdistrict guidelines were suggested to provide a better living environment for workers, planning sufficient open space was one of the most important points in the microdistrict guidelines to improve residents' hygiene and health. Therefore, microdistricts had a relatively low density with enough open spaces; even in the developments built to address the housing shortage, such as the Tongil and Gwangbok Street Developments in the 1990s, the ratio of open space remained high. However, this ratio has declined dramatically in recent years. As mentioned above, the new *sallimjip* developments do not provide enough open space, which is quite understandable if they are viewed as market-driven

[315] 이계환. "새로 문 연 평양 대성백화점.. 세계적 수준 지향." 통일뉴스, May 17, 2019. https://www.tongilnews.com/news/articleView.html?idxno=128746. Lee Gye-hwan. "sae-lo mun yeon pyeong-yang dae-seong-baeg-hwa-jeom.. se-gye-jeog su-jun ji-hyang." Tong-il News, May 17, 2019 (Dae-Seong Department Store Newly Opened and it Dreams to be a World-class Store)

developments. However, it is not only the new developments that have lost the preferred ratio of open space. Even in the existing microdistricts, the new developments reduce the open space; this could be called infill development and includes, for example, other *sallimjip* or commercial buildings. The economic transition and the lack of housing and commercial space forced these infill developments into the existing microdistricts.

Figure 104. Department Store Development in Tongil Street, (Above) 2000 (Below) 2015 [316]

[316] Yim, Dongwoo, Prokopljević Jelena, and Rafael Luna. Unprecedented Pyongyang. New York: Actar Publishers, 2016.

Figure 105. Open Space and Built Area Ratio [317]

As there is no concept of individual parcels in North Korea, especially in urban areas, there are few restrictions on infill developments within microdistricts. For residents of the microdistricts, those open spaces are not considered part of their property because the government only grants them the right to occupy their units. This also happens to the new

[317] Chua, Calvin. "Productive Pyongyang." Productive Pyongyang - Spatial Anatomy. Accessed March 18, 2023. https://anatomy.sg/Productive-Pyongyang.

residents living in those infill developments. Essentially, this unclear lot division and the lack of a concept of property ownership facilitates the addition of infill developments to microdistrict compounds; as a result, it is likely that the open spaces in the existing microdistricts will be understood not as a space for resting and leisure, but as a potential development site. Further, as has happened in other post-socialist cities, it is expected that parking lots will occupy these open spaces as private car ownership increases.

In short, in North Korea today, transitions happen along multiple dimensions. With the increasing capital power of *donju*, the socioeconomic structure is changing dramatically, which results in morphological changes in the country's built environment. It is no longer strange to see viable street vendors in public spaces or large shop windows filled with items for sale in commercial stores. They certainly contrast with circumstances just a decade ago, when the concept of display windows did not exist, and street vendors were prohibited in public spaces. As in other post-socialist cities, these transitions are never irreversible. Regardless of the public policies the nation adopts, socioeconomic changes in North Korea indeed follow paths that resemble those of other post-socialist cities in the 1990s. Therefore, it is also expected that microdistricts in the country will face transformations that are similar to those of microdistricts in other post-socialist cities. Although many cases demonstrate the changes to microdistricts, there are three main types of transformations: infill developments within a microdistrict, the complete replacement of existing microdistricts, and individual adaptations of existing units in the microdistrict.

In fact, infill developments, as part of microdistrict transitions, have already emerged in North Korean microdistricts. This is a typical development strategy for microdistricts in many post-socialist cities because microdistricts provide ample open space that can be developed, and the compound already provides basic infrastructure, such as sewage, water, and electricity.[318] As noted above, more residential units and commercial buildings fill the open spaces in microdistricts, and as a result, conflicts between the existing residents and new developers arise due to the lack of infrastructure that they must share.

[318] Izvin, D., V. Lez'er, and Anna Kopytova. "The Issues of Infill Development in Cities of the Tyumen Region." MATEC Web of Conferences 170 (2018): 01065. https://doi.org/10.1051/matecconf/201817001065.

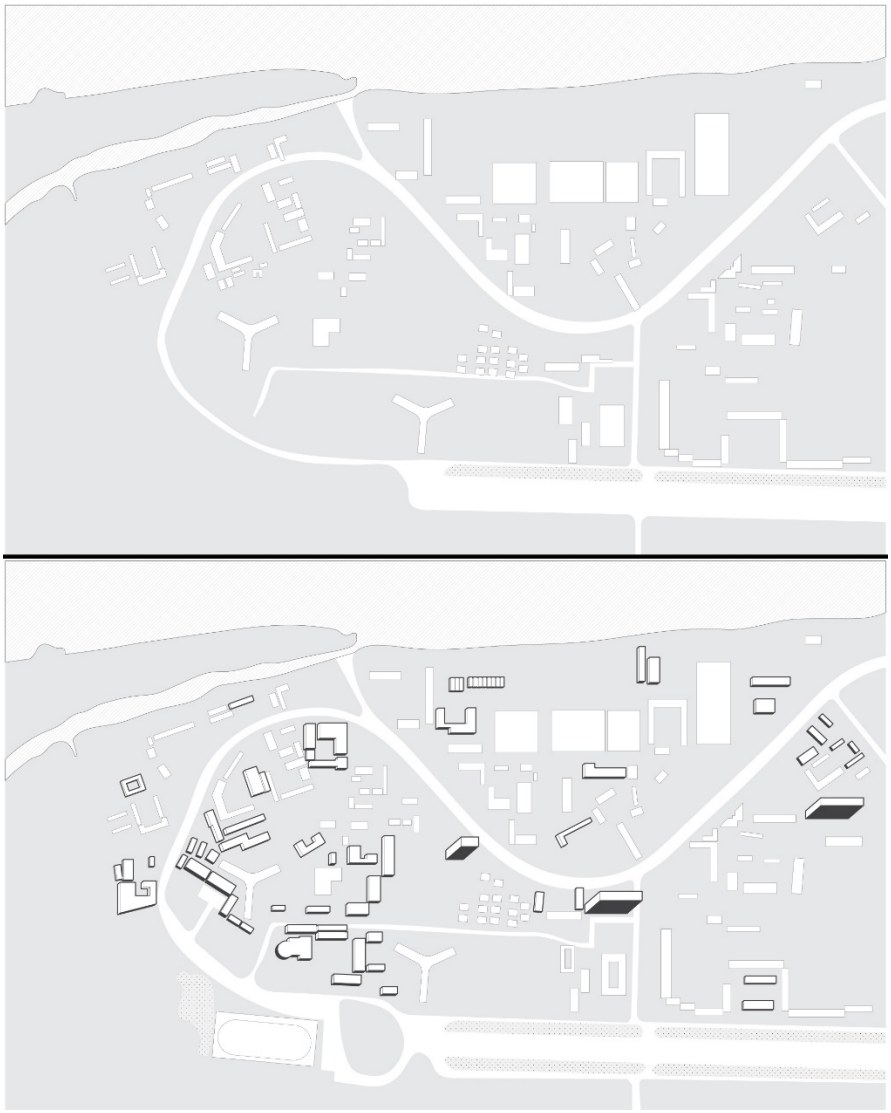

Figure 106. Infill Developments in Tongil Street, (Above) 2000 (Below) 2015 [319]

Obviously, to avoid this type of conflict, more radical actions, such as ad-hoc development, are often employed. Thus, instead of responding to market demand little by little, these ad-hoc type redevelopments build completely new housing complexes with new infrastructure and higher density. In a way, this is what has been done in North Korea recently. All recent developments in the city center, such as the Changchun, Mirae Scientist, or Ryomyong Street Developments, removed obsolete housing blocks to develop these new residential complexes. In fact, they did not replace existing microdistricts but partially demolished them because all the new developments are along the major boulevards rather than the actual microdistrict compounds. Thus, some parts of existing microdistricts were

[319] Yim, Dongwoo, Prokopljević Jelena, and Rafael Luna. Unprecedented Pyongyang. New York: Actar Publishers, 2016.

replaced with the new *sallimjip* developments, and as a result, even the social structure of the existing microdistrict was lost.

What has not yet happened in North Korean microdistricts is the individual adaptation of microdistrict units. In many other post-socialist cities, individual residents began revealing their own identities and preferences in their units, and sometimes, these were visible from outside. This is in some sense a response to the paternalistic aspects of the microdistrict, which did not allow individuality and instead imposed totalitarianism.

4.4 Valid Features of Microdistricts

Recent cases of housing developments in North Korea show that the microdistrict guidelines are no longer closely followed. First, housing developments are not necessarily constructed by the public sector; they are also driven by private developers, *donju*, who mostly focus on developing individual units rather than collective housing compounds. This means that, by nature, these developments cannot adhere to microdistrict guidelines, which concern the creation of a sustainable community by providing housing and other amenities, such as schools, daycares, and work units, including open spaces. These developments do meet the current housing quality standards of the class who can afford them, but they do not necessarily follow any microdistrict guidelines.

Second, even the government-driven housing projects, such as the Mirae Science Street, Ryomyong Street, or Botong River Developments, do not physically resemble the original microdistrict guidelines. They have tighter open spaces, are much denser, and have a lower variety of amenities than the guidelines recommend. For example, the Botong River Development, whose development plan was unveiled in March 2021, does not include any schools in its 800-unit development. Of course, the open space ratio of the development is much lower than the guidelines suggest. The terrace-type apartments provide a better view of the Botong River, which is indirect evidence that this is a development for a specific class rather than for the people.

Finally, the existing microdistricts are also being transformed at the same time that they lose the original microdistrict identities. The original microdistrict theory proposed that 75%-80% of the microdistrict area should be designated as open space so that inhabitants could have a better quality of life and better hygienic conditions. However, recent transformations show that these generous open spaces are filled with residential and commercial developments. Of course, these are the reflection of the current needs of the market. The Tongil and Gwangbok Street Developments are an apt comparison. For instance,

although they were developed in a similar period in the early 1990s and led by Kim Jong Il, Tongil Street has been more popular than Gwangbok Street. As a result, when the market-oriented transformations occurred in the 2010s, more active transformations happened in the Tongil Street Developments. A large-scale department store was developed, while many new *sallimjip* buildings and some commercial and leisure amenities filled the open spaces. Even though these developments did not really run counter to the logic of prior microdistrict guidelines, their tendencies nevertheless show that there is a strong possibility that the Tongil Street Development will lose a balanced ratio between programs and built and open spaces.

Although none of these recent developments in North Korea bears a strong resemblance to the original microdistrict, it is arguable that the concepts of the microdistrict guidelines are still valid. This is because the above tendencies are mainly driven by the real estate market, which does not necessarily address how a better living environment should be provided. Before judging the microdistrict concept based on the economic failure of the socialist countries, it is important to consider whether the concept is more relevant now than before.

During the post-socialist period, after the fall of the Berlin Wall, many socialist cities were transformed as they adopted new systems, especially market-oriented ones. Socialist features were considered obsolete and were removed from the cities. Even when they were not considered obsolete, they were taken over by the overwhelming forces of market-oriented systems. Parks and recreational spaces that were strongly emphasized in socialist urban planning were sold to developers, and they became shopping malls or luxury condos. The public squares, also known as socialist urban features, became pseudo-public space, as they were occupied by commercial stores. Microdistricts are at risk, as well. Russia recently announced that it will demolish around 8,000 housing units from its socialist period,[320] while China has already destroyed many of its *xiaqu* and *danwei* blocks from the socialist era.

After several decades of massive transformations, however, some post-socialist cities realized that some socialist urban features were valid in the current era. For example, parks and recreational areas that were transformed into profitable land cannot be acquired again. More voices are being raised to maintain the social aspects of socialist urban spaces. There are efforts to preserve socialist microdistricts, as well, by identifying and emphasizing their

[320] Snopek, Kuba. "Why Moscow's Massacre of Mass Housing Is a Huge Mistake." ArchDaily. ArchDaily, April 12, 2017. https://www.archdaily.com/868981/why-moscows-massacre-of-mass-housing-is-a-huge-mistake.

advantages while addressing the disadvantages and obsolete features. Valerri Kozlov, for instance, has argued that upgrading microdistricts in order to develop a sustainable urban environment is the responsibility of the entire community due to changes in social, economic, functional, and technical conditions.[321] He emphasizes that, even as new density and demands must be met, the microdistrict's organizational structure, such as the open-space layout and a variety of service amenities, must be kept to create a new profile for the microdistrict neighborhood. Of course, the units' age and decay should be addressed, but addressing these issues does not necessarily mean that they need to be taken down, according to Tinatin Gurgenidze, who established Tbilisi Architecture Biennial.

These efforts to determine the social aspects of microdistricts are not limited to preserving them. Recent collective housing developments in "Western" cities have also adopted the social aspects of the microdistrict. Perhaps the strongest aspect is accommodating urban production in collective housing. For instance, a recent European Europe competition, a theme-based bi-annual competition that is one of the most significant public housing competitions in Europe, explored how new housing developments could build "productive cities."[322] The theme concerned the post-industrial era, when the mismatch between white and blue collar became more severe. Thus, it suggested that housing should accommodate small urban manufacturing and recycling industries so that those units could be a social generator that promoted social mixing to build a better, more sustainable community. In addition, a number of private developments have emerged that accommodate aspects of the live-work environment as well as daycare and schools to enhance social mixing in communities. For instance, the King's Cross Development, one of the largest mixed-use developments in London in the 21st century, strategically embraced King's Cross Academy, a primary and nursery school,[323] so that the development could promote new social intermixing.
Even though these recent movements are not direct reflections of microdistricts, they have some similarities with microdistrict theory. Microdistricts also provided daycares and schools within the compound, both because they were necessary to allow all people to work and for children to have safe walking environments to travel to the schools. Though many criticisms of the paternalistic qualities of microdistricts have been made, providing those amenities is

[321] V Kozlov 2021 IOP Conf. Ser.: Earth Environ. Sci. 751 012026.
[322] E14 TOPIC: PRODUCTIVE CITIES. (n.d.). Retrieved November 12, 2022, from https://www.europan-europe.eu/en/session/europan-13/topic/next
[323] "King's Cross Academy - Primary & Nursery School Camden." Accessed March 18, 2023. https://www.kingscross.co.uk/kings-cross-academy.

relevant for the current situation. In fact, accommodating production amenities is more closely linked to the microdistrict theory. In socialism, as all people had to be part of some kind of production rather than consumption, cities sought to embrace the production function rather than expel it. Therefore, in both cities and microdistricts, accommodating production facilities was not uncommon. Although these production facilities, such as the 가내작업반 (ga-nae-jag-eob-ban, work-units) in North Korea, became dysfunctional during the transition to a market-oriented economy, the idea of having them within a city and in close proximity to housing remains valid.

This validity is largely due to the new perspective on the circular economy. After a massive wave of capitalism—in other words, the mass production era—another idea to make a city more sustainable has emerged from the economic point of view. As part of strategies to build a sustainable city or community, the circular economy is often suggested to create regional jobs, promote local industries, and enhance local community.[324] As an alternative model to the global economy, which overwhelmed the world in the twentieth century, this circular economy model tries to circulate capital within the city or community. Thus, instead of feeding a large, global corporation, the circular economy promotes local industries. This is exactly why accommodating small production programs in housing compounds is now being addressed again. The idea might have not worked in the twentieth century, when mass production dominated the system, but many people argue that it is needed in the new housing model in the circular economy era.

Of course, it can be argued that the work-unit model has already failed. As many defectors claim, currently, work-units do not function as they should. Even though the physical spaces remain, no actual manufacturing processes take place in them. Workers who are supposed to work in those work-units instead pay a fee to the work-unit managers and pursue their own small businesses rather than being bound to a controlled economy because, obviously, this is a better way to make money in a transitional society. Thus, although the work-units used to produce daily necessities well and functioned as a sustainable community model to some degree, they are now considered an obsolete socialist model.

However, it is just the government controlled work-unit system that is being ignored by the residents. In fact, within the microdistricts, many small cottage-industries continue to function privately as part of the socio-economic transformation. Mitsuhiro Mimura, an

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[324] Geissdoerfer, Martin, Paulo Savaget, Nancy M.P. Bocken, and Erik Jan Hultink. "The Circular Economy – a New Sustainability Paradigm?" Journal of Cleaner Production 143 (2017): 757–68. https://doi.org/10.1016/j.jclepro.2016.12.048.8

economic specialist in the North Korean economy, once argued that the network of a local economy is how the nation survived even during the decades of sanctions:

> *Ten different families have ten different ways of making money. For example, a wife has a talent for making clothes. Or cookies. Or cakes. She starts providing those services and products to people in her neighborhood. That household business starts at a very small scale, just selling to her neighbors individually. But through word of mouth, she gets more customers. So, her business grows. She needs help. Officially, she can't hire the help she needs. Officially, that's forbidden. But … if she works together with a group of wives in her building … that's acceptable. If one wife hires nine others, that's illegal exploitation. But if ten wives work together, that's socialist cooperation.*[325]

This socialist cooperation could be built in the microdistrict structure. Regardless of whether the products are made in 가내작업반 (ga-nae-jag-eob-ban, work-units) or in individual homes, this local micro production creates jobs and a looped economy within the microdistrict. It also indicates how the concept of the microdistrict could be readdressed as part of circular economy strategies for a sustainable city. Even though this micro production system obviously failed in the 20th century, when the mass production system overwhelmed the world's economy, it can be readdressed in the 21st century.

4.5 New Guidelines for Microdistrict as a New Urban Housing Model

Although recent transformations in microdistricts in North Korea reflect new demands of the market and society, this does not mean that the essential concepts of the microdistrict must be abolished to accommodate new trends. For example, the open space ratio in a microdistrict is reduced to accommodate a city's new density. However, if the density could be met without compromising the open space ratio, there is little reason to reduce the open space, which was meant for rest, leisure, and play for residents in the original microdistrict guideline. In addition, if the increased demand for commercial activities is considered, there is less reason to affirm that multi-story department is the only typology that reflects the new demand. As the above analysis shows, microdistrict guidelines were created not only to

[325] Carlin, Robert, and Rachel Minyoung Lee. "What If Sanctions Brought North Korea to the Brink? 'Well, in 1941..." - 38 North: Informed Analysis of North Korea." 38 North, September 13, 2017. https://www.38north.org/2017/09/jbaron090717/.

promote a political agenda, but also to provide better living conditions for workers. In fact, many of their spatial aspects are still valid in planning new residential developments.

As noted above, the microdistrict was not just a socialist housing model, but a housing model that tried to provide quality living conditions in the industrial era. As cities became denser, and as more unsatisfactory sanitary and hygiene conditions emerged, humane residential space was not limited to the individual unit; outdoor public space had to be taken into account (Fedchenko, 2015). Providing public gardens and playgrounds became an essential part of residential development. In addition, the concept of "socialization" promoted the idea of co-raising children; therefore, daycare centers and schools were also embedded in the microdistrict, which increased the quality of life for working-class people. These aspects are considered "commune." Public spaces were shared with other community members, while children were cared for with other children in the community. By nature, therefore, the microdistrict also shares much common ground with collective housing in the "West," which emphasized building sustainable communities. The new microdistrict guidelines will naturally be proposed as a new housing model for North Korea, which is in the midst of transitioning from a socialist society to a market-oriented economic system. However, they must still be valid as a new urban housing model, just as the original microdistrict guidelines intended when they were first proposed.

Two key factors should be addressed to propose new microdistrict guidelines. The first, naturally, is the market economy. As mentioned in the previous chapter, dramatic socio-economic change has happened in North Korea, and, whether the model is Chinese, Vietnamese, or unprecedented, it seems inevitable that North Korean society will adopt a market-oriented system; it is only a question of time. However, as the current housing developments in North Korea show, the original microdistrict concept in some ways conflicts with the market-oriented economy. Few original microdistrict guidelines remain in the recent developments, and more real estate-driven features have emerged. This is why previous microdistrict developments in North Korea are now being transformed. Several existing microdistricts have been replaced by new housing developments both because they were obsolete and because they did not meet the new demand driven by a market-oriented economy. During the socialist era, people were "passive consumers," according to Irina G. Fedchenko's expression, and the government gave them housing (Fedchenko, 2015). People's demands or preferences were not considered. However, with the capitalist wave, the people became "active consumers" and had consumption power. To meet the new demands, new housing and amenities have been developed within microdistricts as infill developments,

while other microdistricts have been totally replaced by new housing complexes that resemble market housing more than socialist microdistricts. The new microdistrict should, therefore, accommodate the new market demands, such as the increasing demand for commercial spaces, permitting private car ownership, and the request for open spaces of decent quality, along with the most up-to-date housing units.

The second factor concerns accommodating production facilities. As mentioned above, even though the current 가내작업반 (ga-nae-jag-eob-ban, work-units) system has failed during the transition to a market-oriented economy, the idea remains valid to enhance a local circular economy within the microdistrict. The goal is not to return to the outdated socialist microdistrict model. Instead, it is to address changes in the modern economy that allow micro-local production and consumption. If the socialist model aimed to empower controlled economies at the micro level, the new microdistrict model that includes production facilities promotes the small-scale businesses of individual owners. As Nina Rappaport notes, the neo-cottage industry is emerging as Industry 4.0, along with new technologies in manufacturing and new cultures in consumption.[326] Urban micro manufacturing is no longer considered undesirable. With clean, automated technology, it can be accommodated along with housing, and it can create new opportunities for residents rather than unpleasantness. It could enhance the social chain between producer and consumer by promoting micro-local production. Just as tofu is produced by local residents and consumed in the existing microdistricts in North Korea, the new microdistrict could allow a micro circular economy within the district.

The new microdistrict guidelines have a clear objective of creating a sustainable community based on the idea of a circular economy. Unlike the original socialist idea of creating a commune in the microdistrict, an idea that overlooked the economic chain in the district, this new microdistrict understands market demands and the flow of the economy. Although the new microdistrict guidelines are not meant to mimic the original North Korean microdistrict guidelines proposed in 1963, the Standard Microdistrict No. 87 proposal, one of the clearest models of an ideal microdistrict, should be used as the standard of comparison with the new proposal so that it can also be compared with the diagrams shown in Chapter 1.

[326] Lane, Robert, and Nina Rappaport. “Production Spaces for Industry 4.0.” Essay. In The Design of Urban Manufacturing. New York, NY: Routlegde, 2020.

The new guidelines suggest six key points, just as the original microdistrict guidelines did: scale, density, layout, vehicle circulation, open space structure, and service programs. As mentioned above, some of these aspects are still valid in the current circumstances, while others need to be reconsidered to accommodate new demands and circumstances. For instance, various scales and characteristics of open spaces and a service radius based on walking distance are still relevant for the new guidelines. Meanwhile, the new guidelines should also respond to new demand pressures, such as higher density, private car ownership, and increasing commercial activity. These demands may conflict with the original microdistricts in some ways, which is why the current ones are being transformed, losing their social values. However, the new microdistrict guidelines suggest a coexistence between the social value of the original microdistricts and the new economic value of the market in the transition from a socialist system to a market-oriented economic system.

4.5.1 Scale

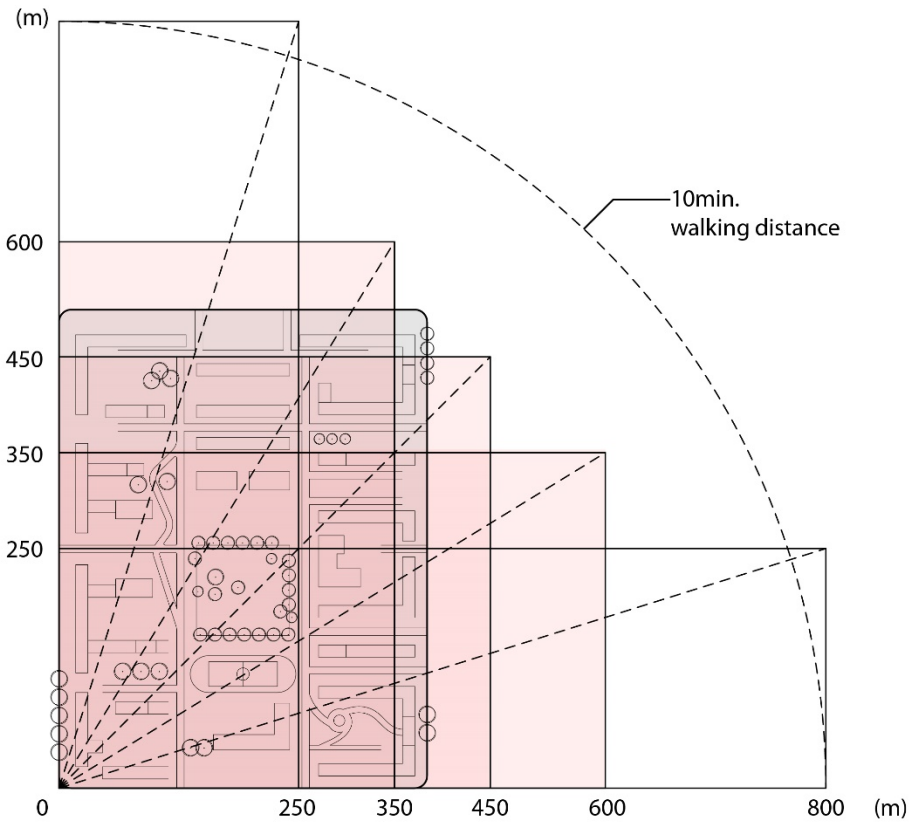

Figure 107. Scale of New Microdistrict drawn by author

The first aspect is the scale of the new microdistrict. As the original guidelines were based on walking distance, there is little reason for the new microdistricts to suggest another scale for their area. The original guidelines suggest 20 hectares as the standard microdistrict

size, which means that, for a square shape, each side is about 450 meters long, and the longest distance between two points is about 630 meters. In short, any two points in this scale can be reached by a seven- to eight-minute walk. Even though many personal modes of transport have been introduced recently, the walking distance rule is still the fundamental way of defining the scale of a residential district. Recently, the so-called 15-minute city concept, popularized when Mayor Anne Hidalgo of Paris announced it as her election promise, has spread widely around the globe as a strategy to improve local urban life.[327] In fact, this political campaign promise is not totally a new concept. It is based on historic ideas such as Clarence Perry's neighborhood unit theory, which affected the microdistrict theory, or Jane Jacob's emphasis on walkability and proximity in urban life. The concept basically suggests that six essential functions—living, working, commerce, healthcare, education, and entertainment—should be within a 15-minute walk or bike ride from dwellings.[328] This scale is comparable to a residential area consisting of three to four microdistricts. Indeed, the socialist microdistrict and residential area contain all the essential functions, noted above, and it implies that the scale of microdistricts and their composition remain highly relevant to today's suggestions for new urban housing models. Therefore, the new microdistrict guidelines also suggest 20 hectares as the baseline of the scale for a microdistrict, as this scale guarantees the walkability and proximity of the residential compound.

However, at the same time, residential groups receive more emphasis than in the original microdistrict guidelines. As the microdistrict was considered the basic unit that of the city in general, often, residential groups are overlooked as segments of the microdistrict. A single residential group cannot provide all the social amenities within its boundaries, but this does not necessarily mean that there should be no division between the groups. To develop a more sustainable and flexible residential complex, it is necessary to scale down the microdistrict. Therefore, instead of reducing the size of a microdistrict, which is quite restricted by the walking distance and service amenities, plots of residential groups are drawn so that each residential group can be developed independently of others.

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[327] O'Sullivan, Feargus, and Laura Bliss. "Paris's 15-Minute City Could Be Coming to an Urban Area near You." Bloomberg.com. Bloomberg, November 12, 2020. https://www.bloomberg.com/news/features/2020-11-12/paris-s-15-minute-city-could-be-coming-to-an-urban-area-near-you.

[328] Moreno, Carlos, Zaheer Allam, Didier Chabaud, Catherine Gall, and Florent Pratlong. "Introducing the '15-Minute City': Sustainability, Resilience and Place Identity in Future Post-Pandemic Cities." MDPI. Multidisciplinary Digital Publishing Institute, January 8, 2021. https://www.mdpi.com/2624-6511/4/1/6.

4.5.2 Density

However, unlike the scale of microdistricts, their density should be reconsidered. Currently, even in the recent developments in Pyongyang, such as the Mirae Scientist and Ryomyong Street Developments, densities are as low as 62.5 units/ha and 53 units/ha, which is still lower than 300 ppl/ha. However, as the new infill developments in some microdistricts indicate, densification is inevitable when market-oriented values are adopted.

The original guidelines suggest about 1,000 to 1,500 units and 3,000 to 5,000 inhabitants in a 20-hectare microdistrict, which makes the density 50 to 75 units/ha and about 150 to 250 people per hectare. This is a quite low density compared to those in South Korean cities. The average density in Seoul for 309 developments from 1957 to 2001 was 237 units/ha, with about 1,300 units in a 6.6 hectare area.[329] This development is three times denser than what is suggested in the North Korean microdistrict guidelines. One of the most recent developments in Seoul, the Heliocity, accommodates 9,500 units for 30,000 residents in a 40-hectare area, which is about 235 units/ha and 750 ppl/ha. Of course, this is not to argue that the residential developments in Seoul should be the goal of the new microdistricts in North Korean cities. However, this statistic tells us that the capital drive real estate market will exert strong pressure on the existing microdistricts' density.

Instead, other urban development models may provide a better bench mark. As with the 15-minute city model mentioned above, the compact city model argues that the right density and proximity to urban amenities are required for a more sustainable city. It suggests about 100 units/ha and 400 ppl/ha.[330] This number, in fact, is similar to the Eixample in Barcelona. The current Eixample has about 360 ppl/ha and was introduced to resolve Barcelona's extreme density problem in the mid-19th century, when it hit more than 850 ppl/ha. In his book *How the Other Half Lives*, Jacob Riis investigates overcrowded New York City housing, which had more than 700 ppl/ha. In short, the proper density might be between 350 and 500 ppl/ha rather than 700 to 800 ppl/ha.[331] In terms of FAR, this is in between FAR 2 and FAR 3, and the diagram shows how a 450m by 450m microdistrict could be filled with either low-rise type or high-rise type with the density.

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[329] 박환용, 김수암, and 서붕교. "주거단지 개발의 계획지표와 주거밀도." 주택연구 6, no. 1 (1998). Park Hwan-yong, Kim Soo-am, and Seo Boong-gyo. "ju-geo-dan-ji gae-bal-ui gye-hoeg-ji-pyo-wa ju-geo-mil-do." Housing Research 6, no. 1 (1998) (Planning Guideline and Housing Density in Residential Complex Development)

[330] "Compact City." Wikipedia. Wikimedia Foundation, November 30, 2022. https://en.wikipedia.org/wiki/Compact_city.

[331] Riis, Jacob A. How the Other Half Lives Studies among the Tenements of New York. S.l.: OTBEBOOKPUBLISHING, 2022.

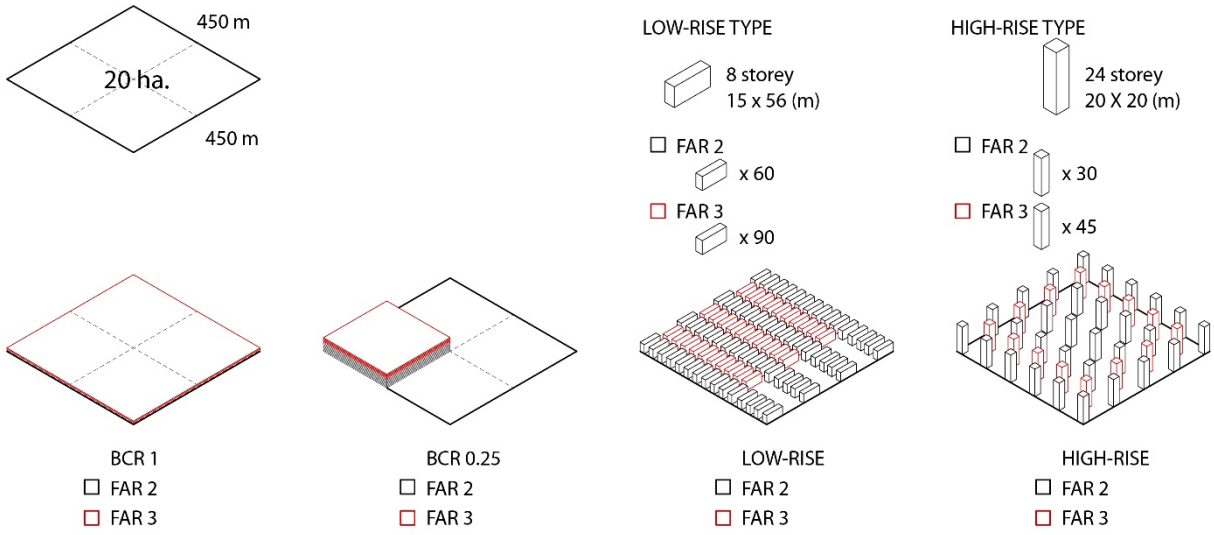

Figure 108. Density of New Microdistrict drawn by author

4.5.3 Layouts

The third key factor is the layout. The original guidelines suggested four different layouts for microdistricts: the parallel type, perimeter type, mixed-type, and free-type layouts. In fact, these types cover almost all layout options, and each has advantages and disadvantages. For example, the parallel-type layout can provide better orientation towards the sun for most units, while perimeter-type layout has a better approach to structuring the microdistrict and surrounding boulevards. Although, in theory, these four types could are likely sufficient regarding most options, they are limited to low-rise *sallimjip* and buildings with fewer than seven stories. As the original microdistrict and the North Korean microdistrict guidelines both emerged when construction methods were limited and elevators were not widely available for residential buildings, the above layouts only addressed low-rise buildings, and either the corridor or *sektzia* type was the principal building format. However, with the introduction of elevators in residential buildings in the 1970s, the layouts of microdistricts deviated from the above four types, and by the 1990s and 2000s, those layout types were no longer found in tall residential blocks. This is mostly because those layouts did not account for tower-type buildings when they were first suggested.

However, the new guidelines should take the tower type into consideration. As discussed above, the densification of the microdistrict is inevitable, while its overall scale is limited due to the constraints of walkability and proximity; thus, high-rise tower types should also be considered in the layouts.

Therefore, the new layouts should include tower-type *sallimjip*, especially the core-type tower *sallimjip*, which is the main typology in recent housing developments in North Korea. This tower-type must be mixed with low-rise, linear-type buildings because, while the tower types allow denser development, the low-rise linear types could comprise the ground-level environment with better human scale. A microdistrict consists of four to six residential groups, and each group could be composed of combinations of high- and low-rise buildings that provide intimate open space. Josep Lluis Sert's Peabody Terrace is an exemplary precedent of this combination. In a 2.4 hectare area, the project provides 500 units and houses approximately 1,500 tenants in three 22-story towers along with low-rise buildings that range from three to seven stories. This project is a benchmark not only because its scale is similar to that of the residential group, but also because its density is similar to the target density that the new microdistrict guidelines suggest. It also provides the scale of open space that the original microdistrict guidelines suggest for a "residential group garden." Thus, the new microdistrict layout should focus on densifying the microdistrict by introducing tower-type buildings while keeping the open-space structure rather than relying solely on towers.

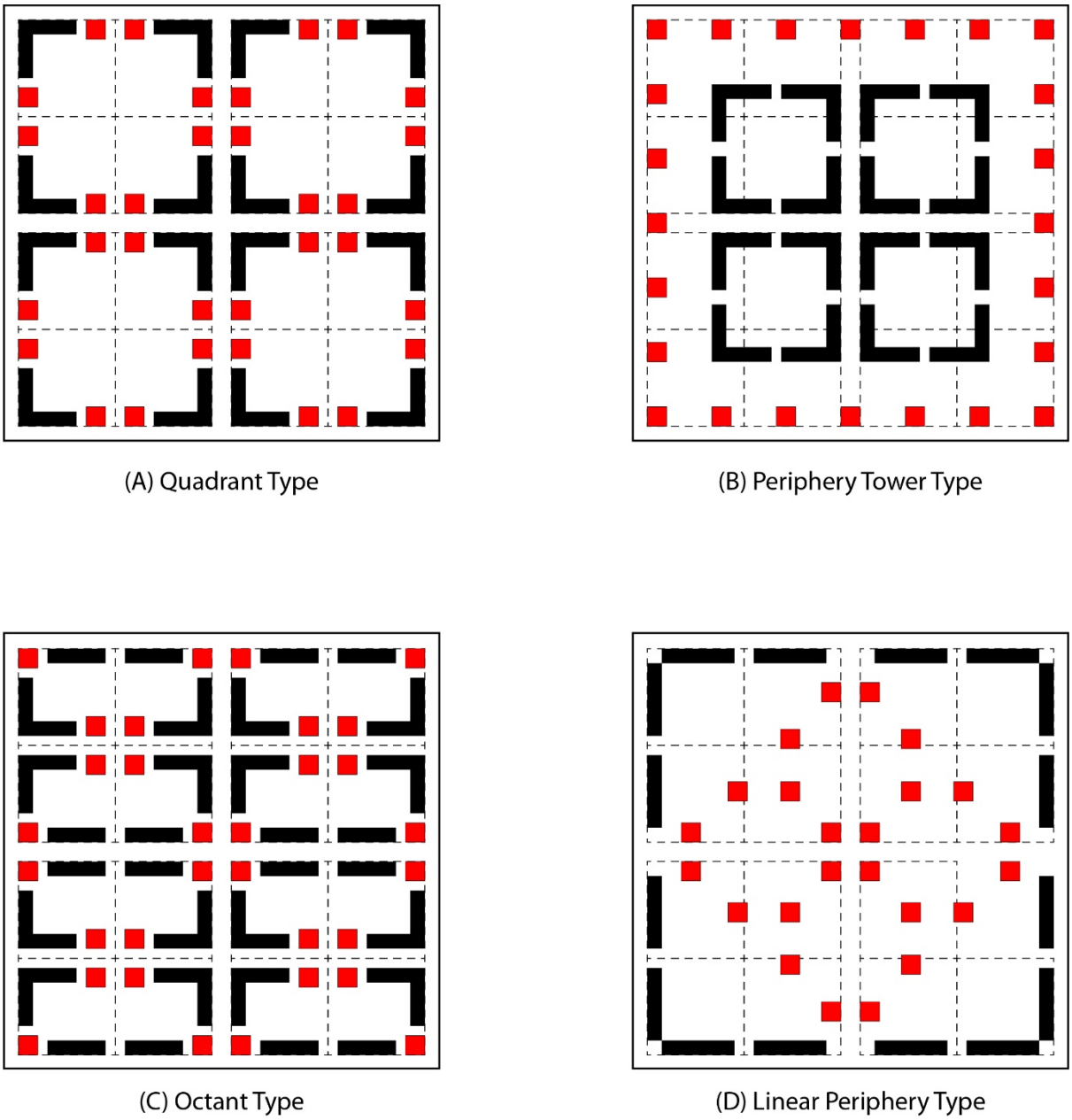

Figure 109. New microdistrict Layout Proposals drawn by author

As suggested, the density of the new microdistrict is in between FAR 2 and FAR 3. With the combination of high-rise and low-rise residential building types, there are four different layout types proposed as a new microdistrict model. First is the Quadrant Type that divides a 450m by 450m microdistrict into four sub-blocks. Each block is composed with high-rise and low-rise buildings, and this type provides the largest open space within the microdistrict block. The secon type is Periphery Tower Type that all twenty-four high-rise types are located along the periphery of the microdistrict, while low-rise types form four blocks in the middle. This type gives better porosity of the microdistrict block from the major streets that structure the block. Thirdly, there is an Octant Type that divides a microdistrict

into an eight subdivided blocks. It creates the most human-scale spaces and dimensions as each pair between low and high rise buildings is within 100-meter square. Lastly, the Linear Periphery Type is the opposite of the second type. The low-rise buildings form the outer part of the microdistrict, while the high-rise towers are almost freely located in the middle. It has a freedom of controlling the size of open spaces and height of high-rise towers as long as the periphery block is structured with low-rise buildings.

4.5.4 Vehicle Circulation

Vehicle circulation and parking are the fourth aspect of the new guidelines. The original guidelines prohibited thru-traffic in microdistricts. Maintaining the conditions of the living environment was the main objective of the guidelines, which suggested that vehicle usage should be minimized in the microdistrict so that open spaces and pedestrian environments could be protected. Only minimum service and emergency access were allowed in the microdistrict. This guideline was followed closely even when the scale of microdistricts grew dramatically because people used public transportation to travel to work, and the private ownership of cars was restricted regardless. In addition, in theory, the idea of microdistrict and residential area, as a combination of microdistricts, is basically to provide the maximum amount of amenities for people within walking distance. Thus, the structure of the city, which is created by microdistricts, minimized the need for private car ownership.[332]

However, given that private vehicle ownership has recently increased in North Korea,[333] private vehicles will soon be allowed in microdistrict compounds. This creates another issue: parking. There were no regulations or guidelines about parking in the original guidelines because private vehicles were severely restricted. However, private car ownership means that parking lots are essential in the microdistrict compound. Even though it is inevitable that the number of cars will increase, surface car parking taking up public space in the microdistrict is considered a negative factor.[334] This phenomenon has already been seen in other post-socialist cities. With the increase in private car ownership in a microdistrict without designated space for parking, the cars began occupying the edges of open spaces or inner

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[332] Siegelbaum, L. H. (2011). The Socialist Car: Automobility in the Eastern Bloc. Cornell University Press.

[333] 이영종. (2017, January 30). 북한도 마이카 시대?...SUV '뻐꾸기' 몰면 일등 신랑감. Retrieved November 12, 2022, from https://www.joongang.co.kr/article/21189859#home Lee Young-jong. (2017, January 30). Bug-han-do ma-i-ka si-dae?...SUV 'ppeo-kku-gi' mol-myeon il-deung sin-lang-gam. (Era of private car ownership in North Korea)

[334] Shchur, A., Lobikava, N., & Lobikava, V. (2020). Revitalization of (post-) Soviet neighbourhood with nature-based solutions. Acta Horticulturae et Regiotecturae 2/2020. p76

streets. The quality of open spaces in the microdistrict thus suffered, as parking lots divided them.

To address these two issues, limiting thru-traffic and allowing a decent number of parking spaces in the compound, the new guidelines suggest underground parking lots for the new microdistrict. As in the original guidelines, a limited number of vehicles, such as service or emergency vehicles, are allowed on the ground level, while most private cars are parked underneath the compound. In this sense, emergency access could provide a basic structure to divide zones between residential groups, open spaces, and other amenities, but at the same time, as this would not allow any thru-traffic, this division would not function as a strict barrier but rather as a loose connector. Underground parking lots should be structured based on the scale of the residential group rather than that of the microdistrict to control the scale of underground parking.

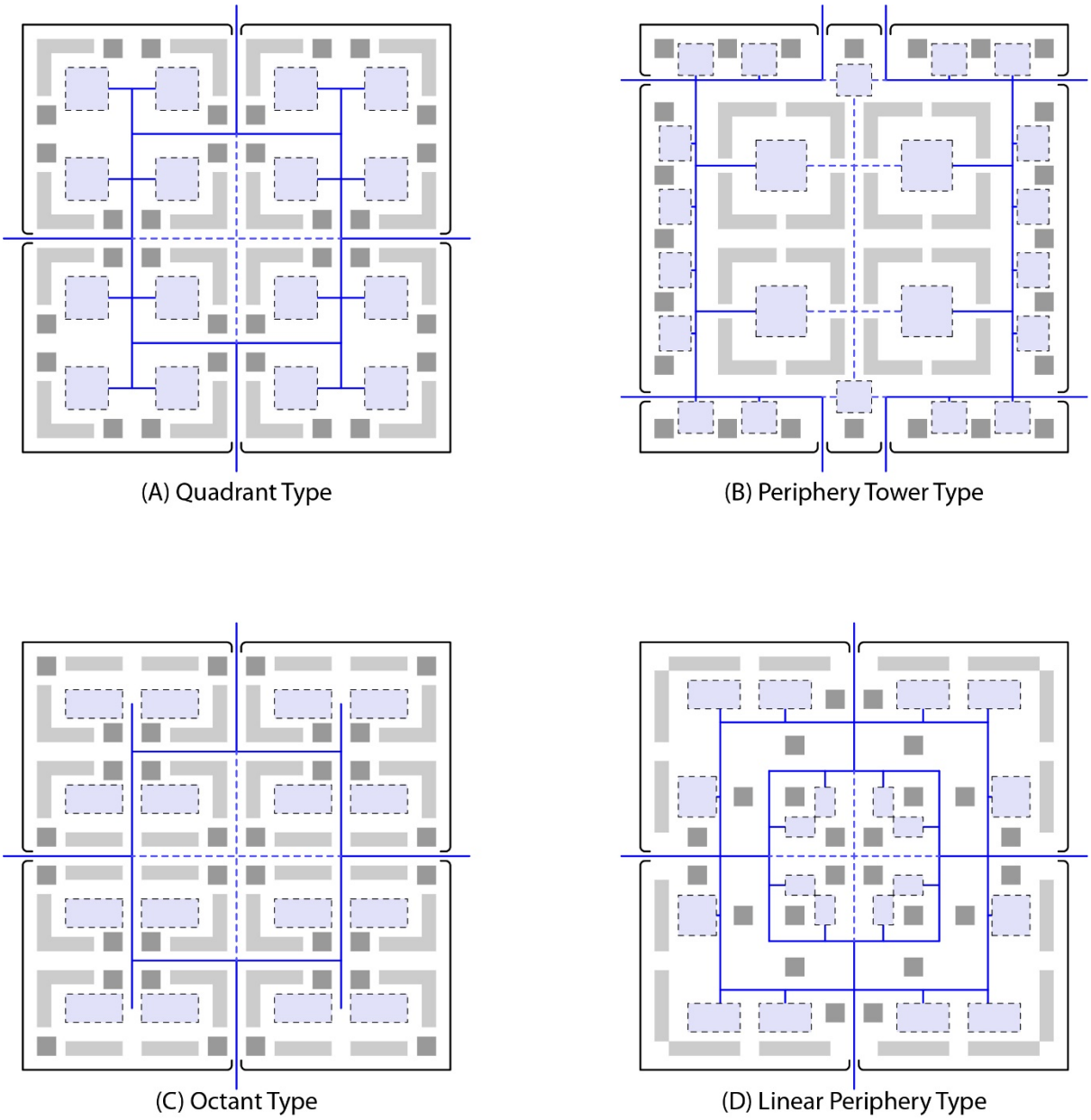


Figure 110. Vehicle Circulation with Underground Parking drawn by author

4.5.5 Open Space

The issue of underground parking is strongly related to the fifth aspect, the open space. The original guidelines argued that only about 20% to 25% should be allowed for built area, and the rest should be planned as a variety of open spaces, such as parks, playgrounds, and buffer spaces. Although not all of these areas were developed with decent landscapes, they certainly provided sufficient open space for the inhabitants, especially for kids who could meet their friends there. However, as recent infill developments in some microdistricts demonstrate, this large open space—in other words, an undeveloped area—is at risk. Other

post-socialist cases also show that these open spaces are often filled with more housing or covered with private vehicles. During the transition from a socialist to a market-oriented system, the value of these open spaces are lost, and instead of implementing decent landscape in these areas, other programs occupy the actual open . Thus, in the new guidelines, the value of the original microdistrict guideline is preserved. The building coverage ratio is kept under 30%, while the rest is designated as car-free open space. The fourth guideline, allowing underground private vehicle parking lots, allows the ground level to be car-free zone, and this gives the microdistrict a chance to realize decent quality open space on the ground level that the original microdistrict guideline sought. Following the original guidelines, the new ones also suggest residential gardens as the smallest scale for open space, residential group gardens as a community-scale open space, and the microdistrict garden as the largest open space. The residential garden is used as a buffer space between residential buildings and other open spaces, where planting can be undertaken. Meanwhile, residential group gardens can be used in many different ways. They can provide a small playground for children, open space for resting, or community farming. Lastly, the microdistrict garden can be used as a leisure or recreational space. It is comparable to a neighborhood park, which also provides a social focal point. The size can vary, but the new guidelines suggest that 15% to 20% of the microdistrict area should be designated for the microdistrict garden. In a 20-hectare microdistrict, the microdistrict garden would be four hectares, which is slightly smaller than a football field.

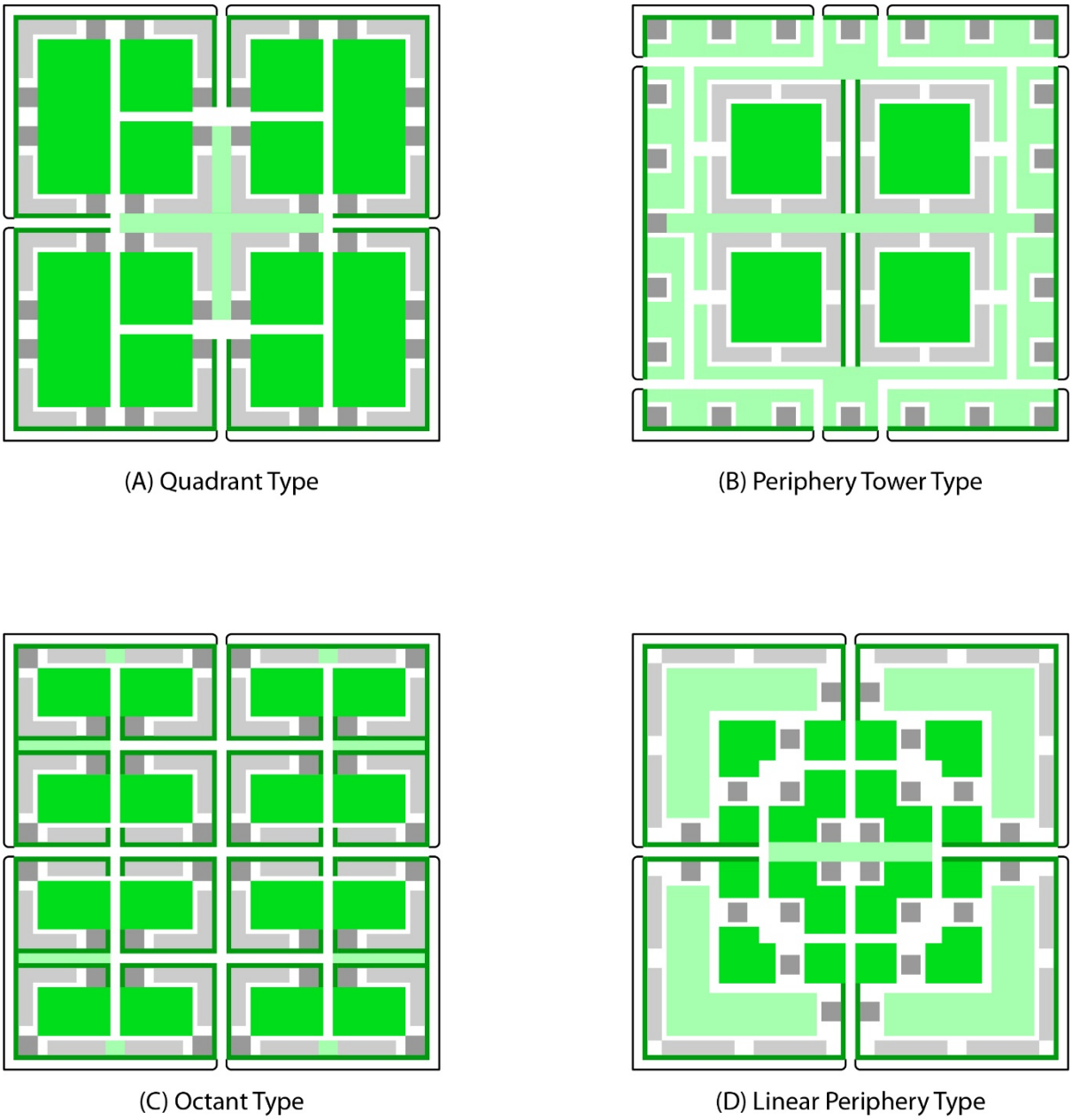


Figure 111. Open Space Structure drawn by author

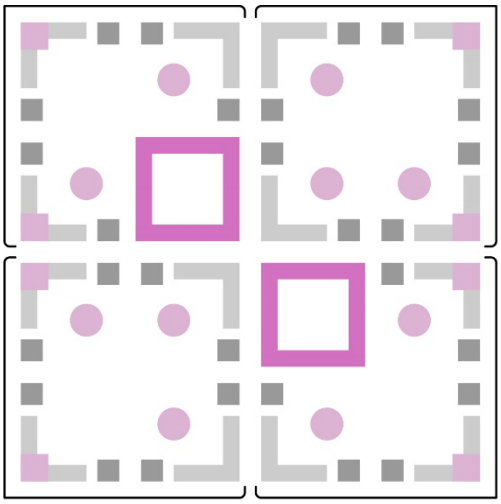
4.5.6 Variety of Programs

Finally, the microdistrict programs are readdressed. One of the unique features of microdistricts is that they provide almost all the amenities one need in daily life. First, as in Perry's neighborhood unit theory, an elementary-level school is provided, and the size of a microdistrict is mostly defined by the population that requires one elementary school system. Depending on the size of the microdistrict, middle and high schools are also sometimes embedded in the compound, which means that the students do not need to leave the complex and can walk to schools. Daycare centers are also provided, not merely as a paternalistic

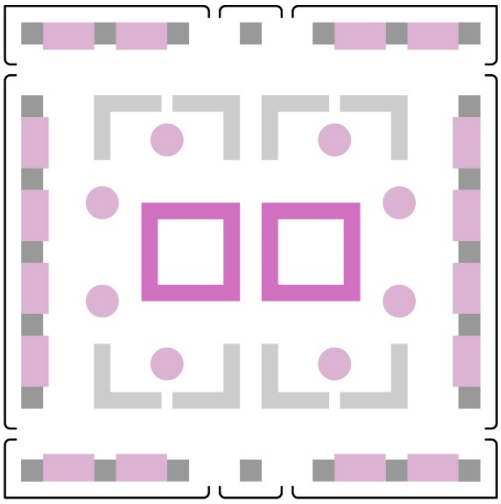
gesture, but also to allow a supportive atmosphere for working parents. In some cases, in microdistricts, although this did not occur in North Korea, community kitchens are even provided as part of the idea of co-raising children among the members of the commune. As a strategy to build a self-sustaining community, small factories and work-units operated, and many daily necessities, such as seasoning pastes, tofu, soaps, or towels, are produced here. However, as mentioned earlier, all of these programs are at risk now. In fact, they are already disappearing from many recent housing developments in North Korea.

Aside from housing, the commercial program only accounts for the microdistrict program is still taken into account. In fact, the commercial areas in recent developments, such as the Ryomyong and Mirae Scientist Street Developments, are much larger than any other prior microdistricts. This is an inevitable phenomenon with the growth of market-oriented systems. Production facilities that relied on a controlled economy failed during the economic transformation, and supporting amenities, such as schools and daycare facilities, are not profitable items in terms of real estate concepts. In a way, the recent trend in North Korea is almost a natural phenomenon.

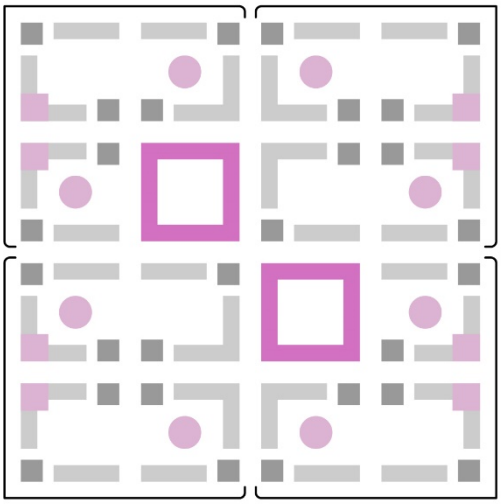
However, as many city models—such as the 15-minute city, compact city, or new urbanisms— suggest, providing all of the above amenities is essential to creating a sustainable living environment. It is to create a social mix as well as a circular economy within the micro-scale city. Therefore, the new guidelines suggest providing a variety of service amenities that also appeared in the original microdistrict guidelines. In addition, production amenities are emphasized and varied so that they can contain a greater variety of kinds of production. Originally, production was limited to certain types, but the new microdistrict provides different levels of production, from that of a single person to microdistrict-level production. It is also not limited to manufacturing production and includes content production.



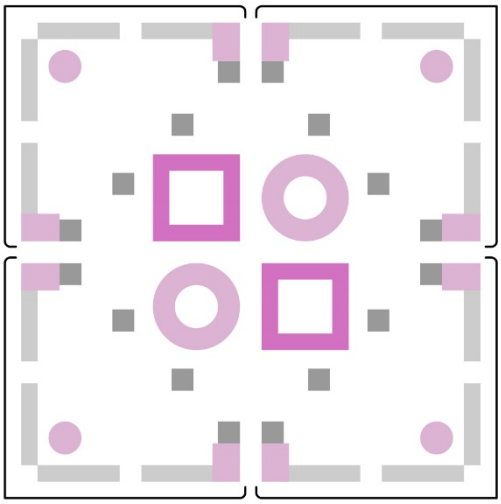
(A) Quadrant Type



(B) Periphery Tower Type



(C) Octant Type



(D) Linear Periphery Type

Figure 112. Amenities in Microdistrict drawn by author

5. Conclusion

Microdistrict concept was widespread amongst the Socialist Bloc countries, such as the Soviet Union, China, Vietnam, East Germany, Hungary, and North Korea through fraternal relationships amongst them. For instance, East German architects and planners were sent to the Soviet Union to learn socialist urban planning principles after World War II. Later, their know-how with microdistrict development was exported to North Korea and Vietnam by sending East German architects and planners to those countries during postwar reconstruction periods. Both conceptual and practical aspects of microdistricts were well-received as a basic structure for constructing a city. It did not only well reflect the socialist idea of providing equal access to daily amenities for all working class citizens, but also provided a solution to housing shortages after the wars. Prefabricated construction methods started to be widely used during Khrushchev's era in the late 1950s, allowing the massive application of microdistricts across socialist cities.

Since the fall of the Berlin Wall, however, socialist aspects–from the economic system to social values–began to fall apart and the microdistrict was not an exception. Given the prefabricated construction method, it is not surprising that microdistrict design is often criticized for its homogeneity.[335] This paternalistic approach on housing supply was a practical solution for housing shortage and also a method to assert social control. For instance, the size of families is influenced by only providing a limited number of rooms. When socialist countries began to adopt market-oriented economies and open up the real estate market to the private sector, homogeneous housing became less favored by their citizens. Moscow recently launched a program to demolish its 7,900 microdistrict blocks to replace them with larger flats.[336] Baku's Microdistrict No.1, the first microdistrict in Azerbaijan, is also scheduled to be demolished. A total of 34 buildings will be demolished and over 1,700 families will be relocated.[337]

[335] Hess, Daniel Baldwin. "Transport in mikrorayons." Journal of Planning History, vol. 17, no. 3, 6 June 2017, pp. 184–204, https://doi.org/10.1177/1538513217707082.
[336] Luhn , Alec. "Moscow's Big Move: Is This the Biggest Urban Demolition Project Ever?" The Guardian, Guardian News and Media, 31 Mar. 2017, www.theguardian.com/cities/2017/mar/31/moscow-biggest-urban-demolition-project-khrushchevka-flats.
[337] Baku's 1st Microdistrict next in line for demolition. MEYDAN.TV. 29 Oct. 2021, https://d9mc3ts4czbpr.cloudfront.net/en/article/bakus-1st-microdistrict-next-in-line-for-demolition/

With this context of microdistrict in other socialist countries, in this study, I have investigated the historical background of the North Korean microdistrict as well as its applications in Pyongyang from the 1950s to 2010s through document-based research, case studies, and interviews. As in many other countries in the Socialist Bloc, the North Korean microdistrict was adopted from the Soviet Union, specifically to drive mass housing developments after the Korean War (1950 and 1953). Microdistricts were not only intended to meet housing demand, but also to build a socialist society and cities. Soon after independence from colonial Japan in 1945, the Korean Peninsula was divided into two, North and South, and the official Democratic People's Republic of Korea was founded in 1948. Post-war construction was the first major opportunity through which North Korea could propagate its ideology through the built environment.

A variety of microdistrict models were proposed in the 1950s; these came from foreign architects and planners who traveled to North Korea during the post-war construction period. It was not until 1963 that North Korea started to make its own version of the microdistrict. 주택소구역계획(ju-taeg-so-gu-yeog-gye-hoeg) was published in 1963 and provided guidelines for microdistricts, including reflections on the unique conditions of North Korea, such as climate, culture, and topography.

Case studies show that microdistrict developments in North Korea generally followed the original theory and the North Korean guidelines well until the 1960s. Areas, densities, the height of buildings, and the layout of the developments closely resembled the guidelines. However, when the population grew dramatically in the 1970s, a new housing typology emerged: the high-rise tower.

The spread of elevators and the spread of a new type of floor-heating system also helped the development of this high-rise housing typology. High rises influenced the general rules of the microdistrict. The layout could not remain the same, as the guidelines were based on a low-rise, linear typology with a certain directional orientation. In addition, the linear types were used to form open spaces within microdistricts, whereas the high-rise types relate differently to open spaces at the ground level. The densities of these developments was much higher than what the guidelines suggested; their purpose was to accommodate more housing units. The introduction of the high-rise type also changed how microdistrict developments relate to the city's structure. Before, most microdistricts were block developments that formed the grid structure of the city. However, in the 1970s, North Korean cities, especially Pyongyang, expanded through the development of major boulevards, along which microdistricts were built. Microdistricts were thus no longer a tool to form the city's block

pattern; rather, they emphasized the perspectival scene of major boulevards with a combination of high-rise buildings—the vertical element in perspective—and linear-type buildings—the horizontal element.

This expansion is also explained through mappings of city boundaries and locations of developments in Pyongyang. While microdistrict developments in the 1950s and the 1960s emerged within the old boundaries of Pyongyang, mostly within the ancient PyongyangSeong boundary and the boundary of the 1930 Master Plan drawn by the Japanese, the developments in the 1970s expanded outward.

This phenomenon continued until the 1980s and 1990s, when Pyongyang developed the two most distinguished boulevards, Gwangbok Street and Tongil Street. A series of microdistrict developments were built along these two streets from the late 1980s through the early 1990s. Given that similarly to the 1970s developments, these developments accommodated the increasing population of Pyongyang, high-rise apartment buildings was the dominant typology. They were built taller than 40 stories, compared to 20 to 25 in the 1970s and only high-rise apartments were built in those microdistricts - there was no combination of low- or mid-rise types. These developments exceeded the boundary of the master plan drawn in 1953. The development trend, however, ceased due to the Arduous March, which began in 1994.

There were effectively no major housing developments until the 2000s. However, in the 2010s, when the new leader Kim Jong Un assumed power, major microdistrict developments began in Pyongyang again, starting with the Changjun Street Development (2012). A series of dense, high-rise microdistricts— Mirae Scientist Street (2015), the Ryomyong Street Development (2017), and the Botong River Development—were either developed or planned for development. Unlike those of the 1990s, these developments are in the city center. Little of the North Korean microdistrict guidelines was used in these new developments due to the influence of the market economy.

Discrepancies persist between the concept of microdistricts and the real lives in microdistricts. Interviews with defectors from North Korea revealed that the locations of elementary schools were adjacent to where they lived, just as the guidelines described, while many open spaces in microdistricts did not play the role suggested by the guidelines . Mostly, they were merely empty spaces, although the guidelines suggest a clear structure of open spaces, such as playgrounds, buffer spaces, and community gardens. In addition, even though

work-units are a unique feature of microdistricts and used to produce cottage-industry products, they have recently lost this function with the encroachment of the market economy. The witnesses in this study described how and why the recent housing developments in North Korea did not follow the microdistrict guidelines. The new developments tend to discard microdistrict features that did not function well, such as providing a variety of open-space structures or work-units for local production.

Nonetheless, there are certain microdistrict values that are relevant to the current context. Firstly, microdistricts already have features that recent models such as the 15-minute city or compact city recommend for making a more sustainable city. They are decentralized urban planning model promoting local living. These models recommend that all necessary features for daily living, such as work, leisure, shopping, and studying, should be in close proximity to residences so that people create fewer emissions by traveling and have more personal time everyday to build a more sound life. Obviously, these are not entirely new urban planning models created recently, but rather iterations of Perry's Neighborhood Unit concept proposed in the 1920s, which emphasized local living. The microdistrict concept is also influenced by Perry's idea, and thus, the suggestions mentioned above also overlap with socialist ideas for developing microdistricts. Therefore, I argue that there are concepts of microdistricts that can be an urbanistic solution for contemporary cities. The 15-minute city, the compact city model, and microdistricts all recommend having some amenities, such as shops and daycares, within the residential compound, while having some other amenities, such as parks and workplaces, can be more widely distributed in the city. Although there are aspects broke down during the controlled economic era, such as stores and groceries, interviewees in this research also emphasized the advantages of having kindergartens and schools within the microdistrict compound for the safety and convenience it provides.

Secondly, the superblock plan for microdistricts creates a pedestrian-safe environment and public space. Superblock planning, including microdistrict compounds, used to be criticized for their disconnections to other street networks of the city as they did not allow any through traffic. However, examples such as the Barcelona Superblock project demonstrate that superblocks can increase social interaction in neighborhoods, foster sustainable mobility, and provide more public spaces. Superblocks reduce the number of streetsdedicated to vehicular traffic and promote usage of public transportation. It is a similar strategy to microdistrict compounds that tried to provide enough public spaces and safer environments. The microdistrict guideline clearly states that there shall be no through traffic

within the microdistrict compound, and the major streets serve as the elements that divide one microdistrict from another. Although it is related to the restrictions of private car ownership, microdistrict promotes public transportation and provides car-free environment in the compound. These effects are clear in North Korean microdistrict compounds where elementary school students gather and go to school together every morning without supervision.

Lastly, the microdistrict idea can encourage social mixing and create circular economies in neighborhoods. Having residences and workplaces in close proximity was one of the key points of the microdistrict planning because socialist planners believed that reducing commuting time between home and work would give working class people more time for rest and leisure. Therefore, socialist cities located microdistrict compounds close to factories or often allocated micro-factories, such as work-units in North Korea, within microdistrict compounds. Cities such as Brussels are making an effort to bring production facilities back into the city, which was socially unbalanced when only white collar jobs are located in the city.[338] Borret argues that many blue collar workers have no option but to live in the city where most daily necessities are provided within imminent distance, and therefore, the city should provide their workplaces along with housing. John Doyle also insists that having intimate relationships between production and living, especially with the help of new technology, will reduce a significant amount of carbon emissions and enhance urbancircular economies.[339] Thus, I argue that it is necessary to understand how circular economies and social mixing occurred in socialist microdistricts. In North Korean microdistricts, using recycled materials, daily necessities were produced by the microdistrict residents, mostly females, in work units and were sold at stores located within the compound. Although this system broke down when a market-oriented economy infiltrated the country, the local circular economy, where production and consumption occurred among microdistrict residents, demonstrates a possibility of how a new residential model can adopt this idea.

Although many microdistrict compounds face removal in post-socialist cities, as mentioned above, there are still efforts to preserve those structures. For example, Snopek argues that some microdistrict compounds should be preserved for their significance to

[338] Yim, Dongwoo, and Rafael Luna. Production Urbanism the Meta-Industrial City. John Wiley & Sons, 2021.
[339] Luna, R., Moulis, A., Micheli, S., Crist, G., Doyle, J., & Yim, D. House precinct territory: Design Strategies for the productive city. ORO EDITIONS, 2023.

citizens' memories.[340] Kozlov also argues that these structures have to be preserved and remodeled to accommodate existing communities and socioeconomic conditions.[341] In fact, many projects are currently underway to find ways to keep microdistrict structures in the current context. The ISOCARP Institute, the Center for Urban Excellence, proposed a project called The Model for ESG-Renovation for renovating microdistrict compounds to provide high-quality environmental, social, and regulatory effects. However, I argue that microdistricts have more relevance than just preserving the values of the past. It is crucial to understand how these current, urbanistic values can be achieved along with accommodating the socio-economic demands of people.

The North Korean microdistrict guidelines are suggested to be revised, reflecting current demands as well as existing values of the microdistrict, to address how the concept of original microdistricts can be applied as a new housing model. Like the original North Korean microdistrict guidelines, revised guidelines are visually described to show how microdistrict values and socio-economic demands are translated into physical structures. Although my historical research is focused on cities in North Korea, I argue that the new guidelines are relevant to other postsocialist cities as well as capitalist cities looking for a new urban housing model. My proposed guidelines emphasize that the core values of microdistricts need to be applied in current cities, rather than older designs for them.

My research also contributes to developing research methodologies on North Korea. The limitations of this research are the lack of detailed information, especially lack of quantitative data, such as statistics or surveys. Thus, most analyses had to be based on what could be gleaned from satellite images, magazine drawings, and photos. Although three methodologies, document research, case studies, and interviews, were used, cross-referenced and analyzed, the lack of other information is a limitation of the research. For instance, having a survey about use of open space amongst the current residents of microdistricts might show different perspectives than interviewing four defectors. Also, as there is a lack of North Korean literature on microdistricts, it is not easy to find a variety of perspectives on them. Yet, cross-referencing between tangible and intangible aspects, such as morphology of microdistrict and daily lives in them, is still a useful way of understanding the microdistrict.

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[340] Snopek, Kuba. *Belyayevo Forever: A Soviet Microrayon on Its Way to the UNESCO List*. Berlin: Dom Publishers, 2015.
[341] V Kozlov 2021 IOP Conf. Ser.: Earth Environ. Sci. 751 012026.

Thus, I posit that using multiple research methodologies together and cross-referencing them could be a solid tool for research on North Korea until there is more direct access to information.

In short, socialist microdistricts were intended to build solid, sustaining communities by providing a residential compound that also houses people's daily needs, such as education, leisure, consumption, and production. However, many microdistricts in post-socialist cities are at risk of demolition due to their obsolete structure as well as their unpopularity in the real estate market. These transitions are also witnessed in North Korea. North Korea presents a unique case, with the continuous development of microdistricts from the postwar period in the 1950s until the present day. Through case studies spanning this period and interviews with former residents of microdistricts, lessons have been learned. While certain aspects of microdistricts are deemed obsolete, there are also core values of microdistricts that align well with modern urban models.

There are ways in which new microdistricts could accommodate both the original concept and market demands. The core values of the socialist microdistrict have much in common with city models that have been recentlyproposed to build more sustainable living environments. The research analyzed the values of the microdistrict and its reality through North Korean microdistrict guidelines and case studies in Pyongyang. I believe that the revised microdistrict guidelines proposed in the research are widely applicable.

Bibliography

Abramson, D. B. *Review: The Work Unit from Workplace to Social Institution. Built Environment*, 34(2), 232–234. 2008.

Ahn, JH. "북한 최고급 아파트 브로슈어 단독 입수." NK News - North Korea News, December 29, 2016. https://kr.nknews.org/북한-최고급-아파트-브로슈어-단독-입수.

Ahn, Jin Hee. "The Sopic Regime of North Korea Landscapes in Field Guidance Photographs of Rodong Sinmun ," 2019.

Andrusz, Gregory, Michael Harloe, Ivan Szelenyi, and David Smith. *Cities after Socialism: Urban and Regional Change and Conflict in Post-Socialist Societies*. Hoboken: J. Wiley & Sons, 2011.

Armstrong, Charles K. *Tyranny of the Weak: North Korea and the World, 1950-1992*. Ithaca, London: Cornell University Press, 2017.

Armstrong, Charles. "Fraternal Socialism: The International Reconstruction of North Korea, 1953–62." *Cold War History* 5, no. 2 (2005): 161–87.

Armstrong, Charles. "The Destruction and Reconstruction of North Korea, 1950-1960." *The Asia-Pacific Journal* 7 (March 16, 2009).

Axenov, Konstantin, Isolde Brade, and Evgenij Bondarchuk. *The Transformation of Urban Space in Post-Soviet Russia*. London: Routledge, 2009.

Baek, Jeonghoon. A Survey on the Actual Condition of Architecture in North Korea through Information Acquisition System Construction. 2019.

Bertaud, Alain. "Cities without Land Markets: Location and Land Use in the Socialist City." *Policy Research Working Papers*, 1999. https://doi.org/10.1596/1813-9450-1477.

Blau, Eve. *Project Zagreb: Transition as Condition, Strategy, Practice*. Barcelona: ACTAR, 2007.

Brossa, Marc. "Legacies of the South Korean Mass Housing Project." *Journal of Interdisciplinary Studies in Architecture and Urbanism*, 2016, 86–107.

Byrnes, Mark. "The Disappearing Mass Housing of the Soviet Union." Bloomberg.com. Bloomberg, March 8, 2017. https://www.bloomberg.com/news/articles/2017-03-08/the-disappearing-mass-housing-of-the-soviet-union.

Carlin, Robert, and Rachel Minyoung Lee. “What If Sanctions Brought North Korea to the Brink? ‘Well, in 1941..." - 38 North: Informed Analysis of North Korea.” 38 North, September 13, 2017. https://www.38north.org/2017/09/jbaron090717/.

Chosŏn Minjujuŭi Inmin Konghwaguk. P‘yŏngyang : Chosŏn Hwabosa, 1986.

Chŏn Sang-in. *Pukhan, Tosi Ro Ikta*. Sŏul T'ŭkpyŏlsi: T'ongilbu T'ongil Kyoyugwŏn, 2015.

Chua, Calvin. “Productive Pyongyang.” Productive Pyongyang - Spatial Anatomy. Accessed March 18, 2023. https://anatomy.sg/Productive-Pyongyang.

Chung, Youngchul. “Changes in the North Korean Economy : Market, Donju and Resurgence of State.” *Critical Review of History* 126 (2019): 134–59. https://doi.org/10.38080/crh.2019.02.126.134.

Collier, S. J. *Post-Soviet Social: Neoliberalism, social modernity, Biopolitics*. Princeton University Press. 2011.

“Compact City.” Wikipedia. Wikimedia Foundation, November 30, 2022. https://en.wikipedia.org/wiki/Compact_city.

Davies, R., & Ilič , M. From Khrushchev(1935-6) to Khrushchev (1956-64) : Construction Policy Compared. The PERSA Working Papers, 61. 2010.

D'Hooghe, Alexander. “Science Towns as Fragments of a New Civilisation: The Soviet Development of Siberia.” *Interdisciplinary Science Reviews* 31, no. 2 (2006): 135–48. https://doi.org/10.1179/030801806x103352.

“Donju Are Princes of North Korean Economy.” Korea joongAng Daily, October 9, 2018. https://koreajoongangdaily.joins.com/news/article/article.aspx?aid=3054069.

Engel, Barbara. “The Concept of the Socialist City; Plans and Patterns of Soviet Urbanism.” *International Planning History Society Proceedings* 19, no. 1 (n.d.): 663–78.

Fedchenko, Irina G. “Humanistic Idea of a Micro-District in the XX Century.” *Journal of Siberian Federal University Humanities & Social Sciences* 5 (2015).

Foot, Rosemary. *A Substitute for Victory: The Politics of Peacemaking at the Korean Armistice Talks*. Ithaca, NY: Cornell University Press, 1990.

Frank, Rüdiger. *Die DDR Und Nordkorea - Der Wiederaufbau Der Stadt Hamhùng Von 1954-1962*. Shaker Verlag, 1996.

French, Richard Anthony, and Hamilton F E Ian. *The Socialist City: Spatial Structure in Soviet and East European Cities*. Chichester: Wiley, 1979.

Geissdoerfer, Martin, Paulo Savaget, Nancy M.P. Bocken, and Erik Jan Hultink. “The Circular Economy – a New Sustainability Paradigm?” *Journal of Cleaner Production* 143 (2017): 757–68. https://doi.org/10.1016/j.jclepro.2016.12.048.

Glatte, G, and H Grie.,. Technical Catalog of VEB – *the Principal Client for Complex Housing Construction in Cottbus*. 1978.

Goodkind , Daniel, Loraine West , and Peter Johnson . Rep. *A Reassessment of Mortality in North Korea, 1993-2008* . Washington, D.C. , 2011.

Hauberg, H. Research by design : a research strategy . Architecture & Education Journal; , n.5 / 2011.

Henselmann. Der Einfluss der sozialistischen Lebensweise auf den St.dtebau und die Architektur in der DDR. *(The influence of socialist lifestyle on urban planning and architecture in the GDR).* Deutsche Architektur 5:264–265, 1966.

Hess, Daniel Baldwin. *"Transport in mikrorayons."* Journal of Planning History, vol. 17, no. 3, 6 June 2017, pp. 184–204, https://doi.org/10.1177/1538513217707082.

Holland, O. North Korea breaks ground on 10,000-home residential project in Major Housing Drive. CNN. February 16, 2022. https://edition.cnn.com/style/article/north-korea-housing-hwasong/index.html

Hotham, Oliver. "Under-Construction Pyongyang Tower Block Seen Fitted with Model Apartment: NK News." NK News - North Korea News, January 3, 2020. https://www.nknews.org/2019/11/under-construction-pyongyang-tower-block-seen-fitted-with-model-apartment.

Hotham, Oliver. "When North Korean Students Joined the 1956 Hungarian Revolution: NK News." NK News - North Korea News, December 30, 2019. https://www.nknews.org/2017/01/when-north-korean-students-joined-the-1956-hungarian-revolution/.

Hubka, Thomas. "Two worlds apart:" How the Working-Class Home Became Modern, 1900–1940, 8 Dec. 2020, pp. 41–84, https://doi.org/10.5749/j.ctv19fvzwj.6

Izvin, D., V. Lez'er, and Anna Kopytova. "The Issues of Infill Development in Cities of the Tyumen Region." *MATEC Web of Conferences* 170 (2018): 01065. https://doi.org/10.1051/matecconf/201817001065.

Jacoby, Sam, and Jingru (Cyan) Cheng. "Collective Forms in China: An Architectural Analysis of the People's Commune, Danwei, and Xiaoqu." *The Socio-spatial Design of Community and Governance*, 2020, 17–69. https://doi.org/10.1007/978-981-15-6811-4_2.

Jang, Kyoung Seok, and Hyung Min Kim. "Hamhung, the Second-Largest North Korean City: Dynasty Urbanism, Colonial Urbanism and Socialist Urbanism." *Cities* 114 (2021): 103191. https://doi.org/10.1016/j.cities.2021.103191.

Jang, Kyoung Seok, and Hyung Min Kim. “Hamhung, the Second-Largest North Korean City: Dynasty Urbanism, Colonial Urbanism and Socialist Urbanism.” *Cities* 114 (2021): 103191. https://doi.org/10.1016/j.cities.2021.103191.

Kim Chŏng-il. *Kŏnch'UK Yesullon: 1991-yŏn 5-wŏl 21-Il*. P'yŏngyang: Chosŏn Nodongdang Ch'ulp'ansa, 1992.

Kim, Il Sung. *All for the Postwar Rehabilitation and Development of the National Economy*. Pyongyang: Foreign Languages Publishing House, 1961.

Kim, Min-A. “A Study on the Planning of Microdistricts in Post-War North Korea ,” 2018.

Kim, Mina, and Inha Jung. “The Planning of Microdistricts in Post-War North Korea: Space, Power, and Everyday Life.” *Planning Perspectives* 32, no. 2 (2016): 199–223.

Kim, Suk Jin. “The Limits of Economic Reform in North Korea under the Kim Jong-Un Regime: Lessons from Chinese Experiences.” *International Journal of Korean Unification Studies* 30, no. 2 (2021): 1–28.

Kim, T'ae-u. *P'okkyŏk: Mi Konggun ŭi Kongjung P'okkyŏk Kirok ŭro ingnŭn Han'guk chŏnjaeng*. Kyŏnggi-do P'aju-si: Ch'angbi, 2013.

Kim, Youngcheol. “Architecture and City Planning of Konrad Püschel.” *SPACE* 620 (July 2019).

“King’s Cross Academy - Primary & Nursery School Camden.” Accessed March 18, 2023. https://www.kingscross.co.uk/kings-cross-academy.

Kliems, Alfrun, Marina Dmitrieva, Louise Bromby, Christian Dietz, and Carmen Popescu. “Projected Happiness, Old Myths and New Ambitions in a Bucharest Neighborhood.” Essay. In *The Post-Socialist City: Continuity and Change in Urban Space and Imagery*. Berlin: Jovis, 2010.

Ko, Yu-hwan. *Sahoejuŭi Tosi Wa Pukhan: Tosisa Yŏn'Gu Pangbŏp = an Introduction to the Research of North Korean Cities*. Kyŏnggi-do P'aju-si: Hanul Ak'ademi, 2013. *Korea Today*, 1959.

Kotkin, Stephen. *Steeltown, USSR: Soviet Society in the Gorbachev Era*. Berkeley: University of California Press, 1992.

Krasheninnokov, A. V. (n.d.). (rep.). The case of Moscow, Russia.

Krasheninnikov , A. V. Reconstruction and Modernization of Buildings and Complexes. Vysshaya Shkola. 1988.

Kukina, I V. *Buffer Zones of Large Cities*. 2006.

Lane, Robert, and Nina Rappaport. “Production Spaces for Industry 4.0.” Essay. In *The Design of Urban Manufacturing*. New York, NY: Routlegde, 2020.

Leonardo, C. Chinese Housing, residential typology analysis in Shanghai city (thesis). 2014.

Lu, D. Third World Modernism: Utopia, Modernity, and the People's Commune in China. Journal of Architectural Education, 60(3), 40–48. 2007.

Lu, D. Remaking Chinese urban form: Modernity, scarcity and space, 1949-2005. Routledge. 2011.

Luhn, Alec. "Moscow's Big Move: Is This the Biggest Urban Demolition Project Ever?" The Guardian, Guardian News and Media, 31 Mar. 2017, www.theguardian.com/cities/2017/mar/31/moscow-biggest-urbandemolition-project-khrushchevka-flats.

Luna, R., Moulis, A., Micheli, S., Crist, G., Doyle, J., & Yim, D. *House precinct territory: Design Strategies for the productive city.* ORO EDITIONS, 2023.

Marin, V., & Chelcea, L. The many (still) functional housing estates of Bucharest, Romania: A viable housing provider in Europe's densest capital city. Housing Estates in Europe, 167–190. 2018. https://doi.org/10.1007/978-3-319-92813-5_8

Maxim, J. (201AD). Mass Housing East and West. In The microrayon: the organization of mass housing ensembles, Bucharest, 1956-1967.

Meenakshi, Singhal. *"Neighborhood Unit and Its Conceptualization in the Contemporary Urban Context."* Institute of Town Planners India 8, no. 3 (September 2011).

Meibauer, J.rg. *"Images of the socialist city."* Barnelitter.rt Forskningstidsskrift, vol. 12, no.1, 23 Dec. 2021, pp. 1–13, https://doi.org/10.18261/issn.2000-7493-2021-01-09.

Meuser, Philipp, and Dimitrij Zadorin. *Towards a Typology of Soviet Mass Housing. Prefabrication in the USSR 1955 – 1991*. Berlin: DOM Publishers, 2015.

Meuser, Philipp. *"Introduction to the System of Soviet Mass Housing. Type Design, Typification and Typology."* Large Housing Estates under Socialism, Transcript, 2024, pp. 49–74.

Mosgorispolkom (Moscow City Executive Committee). Interim Guidelines for the Design of Residential Areas and Complexes in Moscow. 1981.

Moreno, Carlos, Zaheer Allam, Didier Chabaud, Catherine Gall, and Florent Pratlong. "Introducing the '15-Minute City': Sustainability, Resilience and Place Identity in Future Post-Pandemic Cities." MDPI. Multidisciplinary Digital Publishing Institute, January 8, 2021. https://www.mdpi.com/2624-6511/4/1/6.

Navarro, David, and Martyna Sobecka. "Prefab Panel Blocks: Mass Housing in the Soviet Bloc." Zupagrafika, www.zupagrafika.com/post/prefab-panel-blocks-mass-housing-in-the-soviet-bloc. Accessed 19 Mar. 2024.

Nipper, Josef. “The Transformation of Urban East Germany since the 'Wende' : From a Socialist City to a .... ?” *Hommes et Terres du Nord* 4, no. 1 (2002): 63–74. https://doi.org/10.3406/htn.2002.2826.

NK 조선. “평양도시설계사업소.” NK 조선, October 25, 2013. http://nk.chosun.com/bbs/list.html?table=bbs_24&idxno=2806&page=14&total=282&sc_area=&sc_word=.

ONŬL ŭi P'yŏngyang. Seoul: KBS Yŏngsang Saŏptan, 2000.

O’Leary, Sheila. *“The Constitutional Right to Housing in the Russian Federation: Rethinking the Guarantee in Light of Economic and Political Reform.”* American University International Law Review, vol. 9, no. 3,1994.

O'Sullivan, Feargus, and Laura Bliss. “Paris's 15-Minute City Could Be Coming to an Urban Area near You.” Bloomberg.com. Bloomberg, November 12, 2020. https://www.bloomberg.com/news/features/2020-11-12/paris-s-15-minute-city-could-be-coming-to-an-urban-area-near-you.

Park, Dongmin. “North Korean Architect Lee Hyeong: An Elite Architect's Partnership with Autocratic Rule, 1953-2000.” *Journal of the Architectural Institute of Korea* 36, no. 7 (July 30, 2020): 69–80.

Park, Ju-min. “Asia's Hottest Property Market Is Also Its Most Unlikely: North Korea.” Reuters. Thomson Reuters, March 25, 2014. https://www.reuters.com/article/us-korea-north-housing-insight/asias-hottest-property-market-is-also-its-most-unlikely-north-korea-idUSBREA2O1UP20140325.

Prokopljević, Jelena. “International Conference on Urban Studies 2021: Urban Kaleidoscope of North Korea.” In *Contradictory Architecture of the Kim Jong Un Decade. Reflections on the Recent Projects in Pyongyang*, 2021.

Pyongyang. Foreign Languages Publishing House, 1975.

Riis, Jacob A. *How the Other Half Lives Studies among the Tenements of New York*. S.l.: OTBEBOOKPUBLISHING, 2022.

Scarlatoiu, Greg. “Romanian Perspectives on Korean Unification: Regime Change and the Romanian Precedent.” *International Journal of Korean Studies*, October 2016.

Seo, Myengsoo. “Rethinking the Characteristics of North Korea’s Architecture and Construction Culture during its 1950s Post-War Recovery.” Korea Journal, vol. 61, no. 2, 2021, pp. 266–300.

Sharifi, Ayyoob. “Sustainability at the Neighborhood Level: Assessment Tools and the Pursuit of Sustainability,” 2013.

Shin, Gunsoo, and Inha Jung. “Appropriating the Socialist Way of Life: The Emergence of Mass Housing in Post-War North Korea.” *The Journal of Architecture* 21, no. 2 (2016): 159–80. https://doi.org/10.1080/13602365.2016.1156143.

Short, Elizabeth. “Microrayons as Heritage - Project Researches Ways of Preserving the Periphery.” TUDA, August 8, 2020. https://www.tuda.xyz/microrayons-as-heritage.

Sim, David. “North Korea: Kim Jong-Un Opens Atom-Shaped Science and Technology Building [Photos].” International Business Times UK. International Business Times, December 30, 2015. https://www.ibtimes.co.uk/north-korea-kim-jong-un-opens-atom-shaped-science-technology-building-photos-1526161.

Sin, Tong-sam. *1955-1962-yŏn Ku Tongdok Tosi sŏlgyet'im Ŭi Hamhŭng-Si Wa hŭngnam-Si ŭi Tosi Kyehoek: Sin Tong-Sam chŭngin ŭi Tosi Kyehoek Yŏksajŏk Koch'al*. Nonhyŏng, 2019.

Snopek, Kuba. *Belyayevo Forever: A Soviet Microrayon on Its Way to the UNESCO List*. Berlin: Dom Publishers, 2015.

Snopek, Kuba. “Why Moscow's Massacre of Mass Housing Is a Huge Mistake.” ArchDaily. ArchDaily, April 12, 2017. https://www.archdaily.com/868981/why-moscows-massacre-of-mass-housing-is-a-huge-mistake.

Stanilov, Stanislav T., Sonia Hirt, and Kiril Stanilov. “The Perils of Post-Socialist Transformation: Residential Development in Sofia.” Essay. In *The Post-Socialist City: Urban Form and Space Transformations in Central and Eastern Europe after Socialism*. Dordrecht: Springer, 2007.

Stanilov, Stanislav T., Yuri Medvedkov, and Olga Medvedkov. “Upscale Housing in Post-Soviet Moscow and Its Environs.” Essay. In *The Post-Socialist City: Urban Form and Space Transformations in Central and Eastern Europe after Socialism*. Dordrecht: Springer, 2007.

Schwenkel , Christina. *“Ruination and Reconstruction.”* American Academy, 14 Nov. 2019, www.americanacademy.de/ruination-and-reconstruction/

Szelényi Iván. *Urban Inequalities under State Socialism*. New York: Oxford University Press, 1983.

The Cuong, L., & Van Thanh, L. Assistance of the Germany Democratic Republic in the reconstruction of Vinh City, Nghe An province from 1973 to 1980. Vinh University Journal of Science, 41(4B). 2022. https://doi.org/10.56824/vujs.2022sh13

Tizot, Jean-Yves. “Ebenezer Howard’s Garden City Idea and the Ideology of Industrialism.” *Cahiers victoriens et édouardiens*, no. 87 Printemps (2018). https://doi.org/10.4000/cve.3605.

Tsarev, V I, and V I Krushlinskiy. Krasnoyarsk. Urban Design History and Development . 2001.

Urban, Florian. “Large Housing Estates of Berlin, Germany.” *Housing Estates in Europe*, 2018, 99–120. https://doi.org/10.1007/978-3-319-92813-5_5.

V Kozlov 2021 IOP Conf. Ser.: Earth Environ. Sci. 751 012026.

Varga-Harris, Christine. *Stories of House and Home: Soviet Apartment Life during the Khrushchev Years*. Ithaca: Cornell University Press, 2015.

Wallenwein , Fabienne. “The Housing Model Xiaoqu 小区: the Expression of an Increasing Polarization of the Urban Population in Chinese Cities,” 2013.

Weiss, Andrew S. “Russia's Oligarchy, Alive and Well.” The New York Times. The New York Times, December 30, 2013. https://www.nytimes.com/2013/12/31/opinion/russias-oligarchy-alive-and-well.html?_r=0.

Wiebenson, Dora. “Utopian Aspects of Tony Garnier's Cité Industrielle.” *Journal of the Society of Architectural Historians* 19, no. 1 (1960): 16–24. https://doi.org/10.2307/987962.

Yim, Dongwoo, Prokopljević Jelena, and Rafael Luna. *Unprecedented Pyongyang*. New York: Actar Publishers, 2016.

Yim, Dongwoo. “Hamhung: Traces of the Bauhaus Remain in the Korean Peninsula.” *SPACE* 620 (July 2019).

Yim, Dongwoo. *P'yŏngyang kŭrigo P'yŏngyang Ihu: P'yŏngyang Tosi Konggan E Taehan Tto Tarŭn SIGAK, 1953-2011 = Pyongyang and Pyongyang after Urban Transformation Program, Scale, Structure*. P'aju: Hyohyŏng Ch'ulp'an, 2011.

Yom , Song Hui. “Ryomyong Street - Energy-Saving Green Street.” Explore DPRK, February 16, 2020. https://exploredprk.com/articles/ryomyong-street-energy-saving-green-street/.

Zhao, Liang. *Modernizing Beijing: Moments of Political and Spatial Centrality*. Ann Arbor, MI: ProQuest, 2007.

노동신문, 평양 창전거리 조명 ‘위민헌신의 자국. Accessed March 18, 2023. https://news.mt.co.kr/mtview.php?no=2021053006348216954.

Rodong Newspaper, Pyeong-yang chang-jeon-geo-li jo-myeong ‘wi-min-heon-sin-ui ja-gug. Accessed March 18, 2023. (Lights in Chang-jeon-geo-li)

北경제지 '원가절감' 강조. NK 조선. Accessed March 16, 2023. http://nk.chosun.com/news/articleView.html?idxno=106201.

Buk-gyeong-je-ji 'won-ga-jeol-gam' gang-jo. NK jo-seon. Accessed March 16, 2023.

건설의 공업화. Essay. In *경제사전*. 평양: 사회과학출판사, 1970.

Geon-seol-ui gong-eob-hwa. Essay. In Gyeong-je-sa-jeon. Pyeong-yang: Sa-hoe-gwa-hag-chul-pan-sa, 1970. (Industrialization of Construction)

곽인옥, and 임을출. “세계북한학 학술 대회 .” In *평양 시장경제 실태와 특징에 대한 연구* 3, Vol. 3. 서울, 2016.

Kwak In-ok, and Im Eul-chul. “The world conference on North Korean studies.” In Pyeong-yang si-jang-gyeong-je sil-tae-wa teug-jing-e dae-han yeon-gu 3, Vol. 3. Seoul, 2016 (Analysis of North Korean Market)

김귀옥. “1980 년대 북한 사회의 발전과 좌절의 기로.” *현대북한연구* 7, no. 1 (2004): 109.

Kim Gwi-ok. “1980 nyeon-dae bug-han sa-hoe-ui bal-jeon-gwa jwa-jeol-ui gi-lo.” Hyeon-dae-bug-han-yeon-gu 7, no.1 (2004) (Crossroads of Development of North Korean Society in the 1980s)

김신. “북한체제시장화와 불가역적 체제변화 가능성 분석.” *통일과 평화* 12, no. 1 (2020): 49–52.

Kim Sin. “bug-han-che-je-si-jang-hwa-wa bul-ga-yeog-jeog che-je-byeon-hwa ga-neung-seong bun-seog.” Tong-il-gwa pyeong-hwa 12, no. 1 (2020). (Possibility of Facing Inevitable Marketization of North Korea)

김영희, and 김병옥. “북한의 상업활동 변화와 2000 년 이후 상업법 개정.” *통일정책연구* 24, no. 2 (2015): 117–41.

Kim Young Hee, and Kim Byung Ok. “Bug-han-ui sang-eob-hwal-dong byeon-hwa-wa 2000nyeon i-hu sang-eob-beob gae-jeong.” tong-il-jeong-chaeg-yeon-gu 24, no. 2(2015):117-41 (Changes in North Korean Commercial Activities and Commercial Law since 2000)

김정윤. “건설 부진에도 김정은式 설계는 지속?…백두산건축연구원 배급 ‘이상무.’” DailyNK, January 10, 2022. https://www.dailynk.com/20200713-2/.

Kim Jeong-yun. “Geon-seol bu-jin-e-do gim-jeong-eun-sik seol-gye-neun ji-sog?...baeg-du-san-geon-chug-yeon-gu-won bae-geub i-sang-mu.”Daily NK, January 10, 2022.

김정희. “평양시 김일성 광장의 건축적 구성에 대하여.” *건축과 건설* 2, 1956.

Gim-jeong-hui. “Pyeong-yang-si gim-il-seong gwang-jang-ui geon-chug-jeog gu-seong-e dae-ha-yeo.” Geon-chug-gwa Geon-seol 2, 1956. (About Architectural Composition of the Kim Il Sung Square)

김지수. Rep. *김정은 시대 북한 유·초·중등 교육 연구*. 진천: 한국교육개발원, 2019.

Kim Ji-soo. Rep. gim-jeong-eun si-dae bug-han yu-cho-jung-deung gyo-yug yeon-gu. Jin-cheon: Korean Educational Development Institute, 2019. (Research on education system of kindergarten, elementary school, and mid-high school in the Kim Jong Un regime)

김현수. Rep. *서울과 평양의 도시계획이념 및 공간구조 비교연구* , 2004.

Kim Hyun Soo. Rep. seo-ul-gwa pyeong-yang-ui do-si-gye-hoeg-i-nyeom mich gong-gan-gu-jo bi-gyo-yeon-gu, 2004. (Comparison Study of Urban Planning Theory and Spatial Structure between Seoul and Pyongyang)

남성욱. “평양시장 선점하는 중국자본.” 프레시안, April 7, 2005.

http://m.pressian.com/m/pages/articles/46319?no=46319#0DKW.

Nam Sung-wook. “Pyeong-yang-si-jang seon-jeom-ha-neun jung-gug-ja-bon.” Pressian, April 7, 2005. (Chinese Capital Pre-dominates Pyongyang Market)

대한건축학회. Rep. *통일대비 북한 SOC 현황 정보 조사 및 시나리오 기반 주거공급·인프라 조성 기본계획 수립 최종보고서*. 국토교통부;국토교통과학기술진흥원, 2018.

“동영상: 평양건축종합대학의 전도유망한 건축인재들.” 동영상 | 평양건축종합대학의 전도유망한 건축인재들. Accessed March 18, 2023.

https://dprktoday.com/videos/5444.

Dae-han-geon-chug-hag-hoe. Rep. Tong-il-dae-bi bug-han SOC hyeon-hwang jeong-bo jo-sa mich si-na-li-o gi-ban ju-geo-gong-geub-tbs-in-peu-la jo-seong gi-bon-gye-hoeg su-lib choe-jong-bo-go-seo. Gug-to-gyo-tong-bu;gug-to-gyo-tong-gwa-hag-gi-sul-jin-heung-won, 2018

리순건, and 백완기. *주택소구역계획*. 평양: 국립건설출판사, 1963.

Li-sun-geon, and Baeg-wan-gi. Ju-taeg-so-gu-yeog-gye-hoeg. pyeong-yang: gug-lib-geon-seol-chul-pan-sa, 1963.

리창근. *로동행정사업경험*. 평양: 사회과학출판사, 1989.

Li-chang-geun. Lo-dong-haeng-jeong-sa-eob-gyeong-heom. Pyeong-yang: Sa-hoe-gwa-hag-chul-pan-sa, 1989. (Experience in Labor Administration Project)

리화선. *조선건축사*. 서울: 발언, 1994.

Li-hwa-seon. Jo-seon-geon-chug-sa. Seo-ul: Bal-eon, 1994. (History of North Korean Architecture)

리화선. *조선건축사 2*. 평양: 과학백과사전종합출판사, 1989.

Li-hwa-seon. Jo-seon-geon-chug-sa-2. Pyeong-yang: Gwa-hag-baeg-gwa-sa-jeon-jong-hab-chul-pan-sa, 1989. (History of North Korean Architecture 2)

문관현. "평양건축종합대학, 北 건축설계 '컨트롤타워' 역할." 연합뉴스, December 27, 2016. https://www.yna.co.kr/view/AKR20161227145000014.

Mun Gwan-hyeon. "Pyeong-yang-geon-chug-jong-hab-dae-hag, Bug geon-chug-seol-gye keon-teu-lol-ta-wo yeog-hal." Yeon-hab-nyu-seu, December 27, 2016 (Pyongyang General University of Architecture takes the control tower role in North Korean Architecture)

박환용, 김수암, and 서붕교. "주거단지 개발의 계획지표와 주거밀도." *주택연구* 6, no. 1 (1998).

Park Hwan-yong, Kim Soo-am, and Seo Boong-gyo. "ju-geo-dan-ji gae-bal-ui gye-hoeg-ji-pyo-wa ju-geo-mil-do." Housing Research 6, no. 1 (1998) (Planning Guideline and Housing Density in Residential Complex Development)

변상욱. "북한건축워치 01_북한의 건축설계." *건축사*, March 2021.

Byun Sang wook. "Bug-han-geon-chug-wo-chi-01_bug-han-ui geon-chug-seol-gye." Geon-chug-sa, March 2021

변상욱. "북한건축워치 02_북한의 건축설계." *건축사*, April 2021.

Byun Sang wook. "Bug-han-geon-chug-wo-chi-02_bug-han-ui geon-chug-seol-gye." Geon-chug-sa, April 2021

변상욱. "북한건축워치 10_북한의 건축교육." *건축사*, December 2021.

Byun Sang wook. "Bug-han-geon-chug-wo-chi-10_bug-han-ui geon-chug-seol-gye." Geon-chug-sa, December 2021

"북한 18 일 만에 15 층 골조공사 완료와 위험한 미래! ." KBS 통일방송연구, June 3, 2016. https://office.kbs.co.kr/tongil/archives/29700.

"Bug-han 18il man-e 15cheung gol-jo-gong-sa wan-lyo-wa wi-heom-han mi-lae!." KBS tong-il-bang-song-yeon-gu, June 3, 2016

"북한 평양 여명거리 준공 모습 (1)." SPN 서울평양뉴스, May 16, 2017. http://www.spnews.co.kr/news/articleView.html?idxno=514.

"Bug-han pyeong-yang yeo-myeong-geo-li jun-gong mo-seub (1)." SPN Seoul-Pyongyang News, May 16, 2017 (Pictures of Ryomyong Street development)

서울평양뉴스편집팀. “70 년 동안 470 여개의 중요대상설계.” SPN 서울평양뉴스, July 6, 2020. www.spnews.co.kr/news/articleView.html?idxno=5863.

Seoul-Pyongyang-nyu-seu-pyeon-jib-tim. “70 nyeon dong-an 470yeo-gae-ui jung-yo-dae-sang-seol-gye.” SPN Seoul-Pyongyang News, July 6, 2020. (Designing around 470 significant projects in the past 70 years)

안기필. “부산물 직장에서 로동 및 임금조직.” *로동* 10, 1958.

An-gi-pil. “Bu-san-mul jig-jang-e-seo lo-dong mich im-geum-jo-jig.” Lo-dong 10, 1958. (Labor and Salary Structure at a Byproduct Company)

안윤석. “북한 백두산건축연구원 창립 40 주년...‘주요 건축물 설계 산실.’” SPN 서울평양뉴스, July 21, 2022. https://www.spnews.co.kr/news/articleView.html?idxno=54350.

An Yun-seog. “Baeg-du-san-geon-chug-yeon-gu-won chang-lib 40ju-nyeon...ju-yo geon-chug-mul seol-gye san-sil.” SPN Seoul-Pyongyang News, July 21, 2022

이계환. “새로 문 연 평양 대성백화점.. 세계적 수준 지향.” 통일뉴스, May 17, 2019. https://www.tongilnews.com/news/articleView.html?idxno=128746.

Lee Gye-hwan. “sae-lo mun yeon pyeong-yang dae-seong-baeg-hwa-jeom.. se-gye-jeog su-jun ji-hyang.” Tong-il News, May 17, 2019 (Dae-Seong Department Store Newly Opened and it Dreams to be a World-class Store)

이성희. “시장(장마당)을 키워드로 본 함흥.” mk.co.kr, August 13, 2020. https://www.mk.co.kr/premium/behind-story/view/2020/08/28822.

Lee Sung-hee. “si-jang(jang-ma-dang)eul ki-wo-deu-lo bon Hamhung.” MK News, August 13, 2020. (Reading Hamhung with the keyword of market)

이승현. “북, 보통강 테라스 주택단지 '경루동' 명칭 확정.” 통일뉴스, September 11, 2021. https://www.tongilnews.com/news/articleView.html?idxno=203121.

Lee Seung-hyun. “Bug, bo-tong-gang te-la-seu ju-taeg-dan-ji 'gyeong-lu-dong' myeong-ching hwag-jeong.”Tong-il News, September 11, 2021. (North Korea Names the Terraced Housing Complex along Botong River as ‘Gyeong-lu-dong’)

이제훈. “김정은 '보통강 계단식 주택단지' 또 방문...어떤 곳이기에?” 한겨레, April 1, 2021. https://www.hani.co.kr/arti/politics/defense/989138.html.

Lee Je-hoon. “Kim Jong Un 'bo-tong-gang gye-dan-sig ju-taeg-dan-ji' tto bang-mun...eo-tteon gos-i-gi-e?” Hangyeore, April 1, 2021. (Kim Jong Un Visits Terraced Housing Complex along Botong River)

장명봉. *북한법령집: 북한법연구 자료집*. 서울: 북한법연구회, 2005.

Jang Myeong-bong. Bug-han-beob-lyeong-jib: bug-han-beob-yeon-gu ja-lyo-jib. seo-ul: bug-han-beob-yeon-gu-hoe, 2005. (North Korean Statue Book)

전숙영. "가내편의서비스의 본질적 특성." *경제연구* 69 (1990): 12-13.

Jeon Sook-young. "Ga-nae-pyeon-ui-seo-bi-seu-ui bon-jil-jeog teug-seong." Economic Research 69 (1990) (Fundamental Features of Work Unit Services)

전일구. "A Research on after-School Activities of North Korea : Focusing on the Analysis of Extra - Curricular & Sojo Activities in the Education Newspaper since Kim Jong-Un's Regime (2012-2017) -." *Journal of Peace and Unification Studies* 10, no. 2 (2018): 241-88. https://doi.org/10.35369/jpus.10.2.201812.241.

정다민. "평양의 친환경기술 전시장, 려명거리." NK News - North Korea News, August 23, 2017. https://kr.nknews.org/%ED%8F%89%EC%96%91%EC%9D%98-%EC%A0%84%EC%8B%9C%EC%9E%A5-%EB%A0%A4%EB%AA%85%EA%B1%B0%EB%A6%AC/.

Jeong Da-min. "Pyeong-yang-ui chin-hwan-gyeong-gi-sul jeon-si-jang, Lyeo-myeong-geo-li." NK News, August 23, 2017.

정창현. "Vol.2 동향·정보 2." 한반도인프라포럼, April 29, 2021. https://kpif.or.kr/webzine/2021_04_m03_2.

Jeong-chang-hyeon. teVol.2 dong-hyang-tbs-jeong-bo 2.te han-ban-do-in-peu-la-po-leom, April 29, 2021

조명철, and 이종운. Rep. *7.1 경제관리개선조치 현황평가와 과제: 북한 경제개혁의 전망*. 세종: 대외경제정책연구원, 2003.

Cho Myong-chul, and Lee Jong-un. Rep. 7.1 gyeong-je-gwan-li-gae-seon-jo-chi hyeon-hwang-pyeong-ga-wa gwa-je: bug-han gyeong-je-gae-hyeog-ui jeon-mang. Se-jong: Korea Institute for International Economic Policy, 2003 (Analysis of 7.1 Improvement Strategy and Prospect on North Korean Economic Reform)

조선건축 1, 1990.

Jo-seon-geon-chug 1, 1990.

조선백과사전편찬위원회. In *광명백과사전*, 210. 평양: 백과사전출판사, 2004.

Jo-seon-baeg-gwa-sa-jeon-pyeon-chan-wi-won-hoe. In gwang-myeong-baeg-gwa-sa-jeon, 210. pyeong-yang: baeg-gwa-sa-jeon-chul-pan-sa, 2004.

조정훈. "北 김정은, 미래과학자거리 현지지도..'여기가 우리의 현실.'" 통일뉴스, October 21, 2015. http://www.tongilnews.com/news/articleView.html?idxno=114149.

조정훈. "北 평양 창광상점 내.외부 사진 공개." 통일뉴스, October 1, 2015. https://www.tongilnews.com/news/articleView.html?idxno=113864.

Jo Jeong-hun. "Bug pyeong-yang chang-gwang-sang-jeom nae.oe-bu sa-jin gong-gae." Tongil News, October 1, 2015. (Inside and Outside Photos of Changgwang Department Store)

천기철. "고도-개성시의 래일." *로동신문*. April 17, 1955.

Cheon-gi-cheol. "go-do-gae-seong-si-ui lae-il." Lo-dong-sin-mun. April 17, 1955. (Future of the ancient city Kaesung)

토지주택연구원. "북한주택 현황조사·분석 연구." *토지주택연구원*, 2015, 12.

To-ji-ju-taeg-yeon-gu-won. te-bug-han-ju-taeg hyeon-hwang-jo-sa-tbs-bun-seog yeon-gu.te to-ji-ju-taeg-yeon-gu-won, 2015, 12. (Analysis and Research of North Korean Housing)

"평양 창전거리 北 첫 '뉴타운'...창전거리 아파트 준공." 서울신문, June 21, 2012. https://www.seoul.co.kr/news/newsView.php?id=20120622500017.

"Pyeong-yang chang-jeon-geo-li Bug 'cheos nyu-ta-un'...chang-jeon-geo-li a-pa-teu jun-gong." Seoul Newspaper, June 21, 2012. (Pyongyang's the first new town Chang-jeon-geo-li Apartment is Completed)

"평양 창전거리 건설 비하인드," May 20, 2018. http://m.jajusibo.com/a.html?uid=39729.

"Pyeong-yang chang-jeon-geo-li geon-seol bi-ha-in-deu," May 20, 2018. (Behind story of Pyongyang Chang-jeon-geo-li development)

"평양건축종합대학." Wikipedia. Wikimedia Foundation, March 7, 2022. https://ko.wikipedia.org/wiki/%ED%8F%89%EC%96%91%EA%B1%B4%EC%B6%95%EC%A2%85%ED%95%A9%EB%8C%80%ED%95%99.

"Pyeong-yang-geon-chug-jong-hab-dae-hag." (Pyongyang General University of Architecture)

"평양도시설계사업소." NK 조선, October 25, 2013. http://nk.chosun.com/bbs/list.html?table=bbs_24&%3Bidxno=2806&%3Bpage=14&%3Btotal=282&%3Bsc_area=&%3Bsc_word=.

"pyeong-yang-do-si-seol-gye-sa-eob-so." NK Joseon, October, 25, 2013

학송현. “유엔공군의 평양 대공습작전,” n.d.
https://m.blog.naver.com/PostView.nhn?blogId=afytpark&logNo=20067131855&proxyReferer=https%3A%2F%2Fwww.google.com%2F.
Hag-song-hyeon. “Yu-en-gong-gun-ui pyeong-yang dae-gong-seub-jag-jeon, n.d.
(Airstrikes at Pyongyang by UN Airforce)

Appendix I

Interviewee A

Interview 9/30/2019

At Seongsudong Office

Male, 40s (1972)

Q. When did you leave North Korea?

A. I left in 2015.

Q. Did you come to South Korea directly after you left the NK?

A. I moved to Beijing in 2011 as the chief of a delegation with my family and traveled back and forth between Pyongyang and Beijing. During those four years, I renewed three passports because I had to travel to many cities between the two countries. And finally, in 2015, I left for South Korea with my family. I went to college in 1997 and started in the military after I graduated. In terms of architecture, as I was in the military, I was involved in the construction of two apartment buildings in Pyongyang and a berthing facility on Daedong River.

Q. So did you move to Pyongyang when you were starting college there in 1997?

A. Yes.

Q. Where did you live before then?

A. Before college, I lived in Pyongan-nam-do. I served the mandatory 10 years in the military before going to college and went to the school of tourism in college. I had to serve another five years in the military after college because my college education was sponsored by the military. I became an officer after college and served in many different departments, including the Ministry of Defense.

Q. I have a map of Pyongyang with me; could you roughly point out where you lived?

A. I lived in 소흥동 for six years from 2003 through 2008 and lived in a new apartment around the 전승기념관 area.

Q. How long did you live there?

A. In this area, just for three years, and then I left for China. The 소흥동 apartment was an older-style apartment that had a corridor in it.

Q. How high was it?

A. It was a seven-story-high building, and I lived on the fourth floor. And the second apartment was a new one, with a size of about 180 sqm. There were four bedrooms and two bathrooms.

Q. The new apartment was not a corridor type, was it?

A. No. It had elevator in the middle (core-type) and had four units per floor. But each of them was a different size. Oh, no—actually, it had five units per floor. The second and the fourth units were bigger than the others.

Q. So did you live there together with your family?

A. Yes, I did. I have two kids. So, I gave each of them a room, and my wife and I used the master bedroom. It had a large living room. It is like what you can find here in Seoul—there is no outdoor balcony. The balcony had been closed in to use it as a living room.

Q. Do you know when it was constructed?

A. Those internalized balconies started to appear in about 2005 or 2006.

Q. What about specifically your apartment? Was it constructed in the early 2000s?

A. It was 2008. I moved into a new apartment complex.

Q. How tall was the new building?

A. It was twenty-story building, and we lived on the fifth floor.

Q. How many bedrooms did you have in the first apartment?

A. There were two, and one bathroom.

Q. Do you know when it was built? 70s? 80s?

A. I guess it was in the late 1970s or early 1980s. It was constructed when the 안상택거리 was being developed around the Arch of Triumph.

Q. As far as I know, in those years, apartment buildings were constructed as compounds. And I am curious about what daily life was like in the compound. Where did you go shopping? Where did kids play in the compound?

A. For the first apartment, there was no designated park. That apartment was not part of the compound. But like the Chang-jun Street Development, Ryomyong Street, and Mirae Scientist Street Development, certain apartment buildings were developed as compounds from the start. But before those developments, there were no solid apartment compounds. You could only find a couple of swings and exercise equipment. But in each neighborhood (dong), there was a designated park for the residents. For instance, 상심공원 is a park for 상심동.

Q. So they are like neighborhood parks in Seoul?

A. Yes, and they are not that big. There is some exercise equipment and lawns where old people come and rest. Those are well structured for each neighborhood (dong)—not so well structured in smaller cities, but quite well structured in Pyongyang. But not really for each apartment compound.

Q. Does that mean that there was no space for kids to play in a compound?

A. No. There wasn't any type of playground for kids. Just some spaces where you put trees and benches.

Q. Where did you buy everyday items?

A. We went to Jangmadang. Each Guyeok has Jangmadang. But even before Jangmadang was established, there were small grocery markets in each district (구획). If District 1 and District 2 were in a neighborhood (dong), District 1 had its own market and small restaurant for the residents there. These are controlled and managed by the government organization called 상록부. But I could not buy whatever I wanted to buy there. It is a rationing system. You get what are allocated to you for a designated price.

But for Jangmadang that are located per Guyeok, people outside of Guyeok still can use them. Tongil Street has quite a big market, and people from other Guyeok come and buy certain products there. So, basically, most people use the Jangmadang in their Guyeok for most necessities, but they use bigger markets in other Guyeok for certain products that cannot be found in their Guyeok Jangmadang.

Q. How far was the Guyeok Jangmadang?

A. Not that far at all. For example, there was 인흥시장 in Moranbong-Guyeok where I lived, and it was only a 15-minute walk. Other Guyeok had similar conditions. In larger Guyeok, there are multiple markets so that it is never too long of a walk.

Q. What was leisure like in the apartment compound?

A. There were not many things to do in the compound. Instead, there were fields in each Guyeok where people could play sports and do leisure activities. So, adults and young adults came to those fields to spend time. For young kids, they had other facilities like swimming pools or amusement parks where they went and played. So very little happened in the compounds.

Q. What about the schools?

A. Daycare and kindergartens are in the compounds. And schools are always near where you live.

Q. How far are those schools from where people live?

A. All the schools are very close. Maybe within a 10-minute walking distance. All daycare, kindergarten, and schools are within a 10-minune walk. My children went to school three minutes away.

Q. That's the general condition for others, as well?

A. Yes. Because the compound is formed around a school.

Q. It seems that cottage-industries make some common items, like bean paste. Do you know anything about this?

A. Ah. It is called 가내작업반. There are things called 8.3 인민소비품. It is a system for housewives who do not work outside the home to produce some everyday goods. Nowadays, each 가내작업반 develops its own products to sell. Before, these were controlled by the government, which ordered specific products to 가내작업반 in each district. But today, this 가내작업반 is only nominal. People produce their own products by themselves and sell them through 가내작업반. Or they just pay the fee to the 가내작업반 organization to be exempted from their allocated work.

Q. So do people just make small products in their own home?

A. Yes. Because, originally, 가내작업반 was supposed to provide raw materials and ingredients to produce something. But this system was already broken. However, as the government still needs to collect profits from the 가내작업반, even when it doesn't supply any materials for them, the managers of 가내작업반 only pay the fee to the government. And the fee comes from the individuals who make and sell their own products at home.

So, when an individual thinks that making ice cream would make a better profit, she just makes it by herself and sells it in Jangmadang. There are no designated items that she needs to produce. And if the business gets bigger and needs any type of storage, she just rents storage somewhere outside of the city. This is how individual businesses grow.

Q. If those people are making and selling their own products, as you said, what are the popular items they are making these days?

A. It depends on the season. Many people buy wholesale products from China and resell them to markets in the city. Some people do the same thing for electronics. And also, some do this with South Korean products.

Q. So, it seems most of them are about sales rather than producing anything.

A. Some people make things. For example, you need to have a good connection to the government so that you can use electricity from somewhere. Then, you can put in your own refrigerator and make ice water to sell during hot summer days. Or maybe just rice cakes. Still, people buy cheaper breads from Pyongseong in the early morning, where the bread is about 2 won, and resell them for 5 won in Pyongyang. People also make candies by themselves to sell.

Q. Are those made in 가내작업반? Or in their own homes?

A. Their own homes. They make tofu or rice cakes at home. There are businesses such as laundry services. Some people collect laundry from other families and do the washing for them and charge a dollar for a kilo.

Q. So the space for 가내작업반 doesn't function at all these days?

A. No. Not these days. People still need to put their names in the organization of 가내작업반. But it doesn't function because there is no system running it anymore.

Q. When you moved to a new place, was there a big change in your lifestyle?

A. Of course, I moved to a bigger apartment. So, that is different. But there were other differences, as well. In the previous corridor-type apartment, as it was a corridor type, everybody on the same floor knew what we were doing. For example, as I was in the Ministry of Defense, I received more foodstuffs, such as cabbage, during the holidays from the government than other neighbors did. Then those neighbors saw it and gossiped about us. But in the new apartments, there were fewer units on the same floor, and families there were in a class similar to ours, so we didn't have to care about what they thought of us.

Q. Were there many interactions between the neighbors?

A. I cannot say "many." But in general, we were close with one or two families in the neighborhood. In Pyongyang, once you get a house, you live there for a decade or two, at least. So, it is hard to not interact with any families in the neighborhood. You have the best chance of becoming close with the family who lives below yours. Whether it is because of a water or noise issue, you have many reasons to see the family below. When the wives get close to each other, they occasionally go to the market together or to the sauna. And there is 인민반장. This person manages the building and distributes work to the neighbors. As there is no cleaning service, all tenants are responsible for cleaning the common areas in the compound. This 인민반장 distributes the roles and requirements to each tenant. And if you are out of town when you receive a designated role by 인민반장 to clean a certain area, you could ask your close family to take over the job for you. This is how you get close to each other in the neighborhood.

Q. So, is there a designated area in the city that tenants of each compound need to be responsible for?

A. Yes. There are designated areas in the compound as well as in the city. Some areas that the tenants need to cover go beyond the compound boundary. When there are more units in the compound, the area you're responsible for is reduced because there are more people cleaning the same area.

Q. In Seoul, sometimes there are issues because people in the apartment compound do not want to clean the snow. Does this happen in Pyongyang?

A. No. That is impossible. Because there is always 생활총화 (self-criticism meeting) among the neighbors, and if someone did not do their duty, they would be criticized by either 인민반장 or other neighbors.

Q. In Seoul, there are sanitation workers who clean the city. But it seems that is not the case in Pyongyang?

A. No. There is no occupation like that. All the cleaning work is done by the people. But we did have plumbers and electricians who fixed things. Most of the management of apartment buildings is done by the tenants themselves. Even plastering the corridor wall is done by the tenants. April and November are sanitation months. And the majority of management or beautification work is done in those months. Recently, some tenants have just paid fees to 인민반장 to be exempt from the task, and 인민반장 hires an agency to do the work.

Q. Other than it being a bigger unit, did you have any reason for moving to a new place?

A. In terms of proximity to the subway, the previous one was about a 15-minute walk to the subway station 개선문역, whereas the new one was only five minutes. I didn't commute via subway because I had a car. But my wife used the subway often. Also, the new apartment had a market and other amenities close by, and it was in a quiet neighborhood. Schools for my children were also close by. As it was a new apartment, I was hoping that the power supply would be stable. But it wasn't really. I went to my friend's house in Changjun Street Development in March and almost froze to death because it didn't have enough electricity to run a heater. I had my own self-generator at home. I had to share a bit of electricity produced with the family below because it caused some noise downstairs. There were also $800 PV panels to produce electricity. But these were only for lights, not for heating. So, we used a steam pot for heating. Some do use a gas or oil boiler, but these are super intense to use indoors.

Q. It seems each family or unit has its own heating solution?

A. Totally different. There is a lack of electricity in general. So, even in the new developments, where you can see all the fancy decorative lighting, its lighting line is different from the electricity line for the unit. So even when there is an electricity shortage in the unit, the decorative lighting outside still functions, which is why the fifth floor is considered the royal floor. Because you never can expect when the elevator will shut down. There were apartments sold for $200,000, but once they were sold, their resale prices drops down to $150,000 or so if the units are on the higher floors. And during the days of preparing kimchi for the winter, there are young teenagers helping carry cabbages to units because the elevators usually don't work. And they get some cabbages as the trade-off.

Q. Do you make kimchi together with other neighbors? Or just by yourself?

A. Most families make kimchi by themselves. Sometimes they make it together with relatives who live close by, but not necessarily with neighbors.

Q. Who developed the new apartment that you moved into?

A. It was not by a developer. It was part of the plan by 국가계획위원회 (National Planning Committee). They had a plan to build two twenty-story apartments there. It was kind of a redevelopment plan. There were single-story houses in the area, and the committee decided to demolish them and build new high-rise apartments.

Q. Did you have to pay for the apartment?

A. No. It was given to my family. In fact, it was more like a trade. I worked in the carrier industry in the downstream of Daedong River, and the company owned a dredging boat and provided sand for the construction site. The company received 10 units in the new development as a trade-off, and I got one of them. Their value was about $60,000 a unit. So, basically, we needed to provide sand and gravel that were worth $600,000.

Q. Wasn't the company that ran the dredging boat also a publicly owned company?

A. Yes. But still, there are trades between the government organizations.

Q. In your case, you got the new unit as a trade-off for the commodity you provided, but what about other units? Were they sold to people?

A. Yes, other people needed to buy them. And there were also people who received the units for free, or as a trade-off, and resold them on the market.

Q. In Pyongyang, is there a place or a neighborhood people admire or want to live in, like Gangnam in Seoul?

A. Joong-Guyeok, because the infrastructure is well developed in the area. There are subway lines and train stations. Also, the majority of the government organizations are in the guyeok, which is also why there is a lot of foot traffic in the area. People also need to visit Mandudae occasionally, where the Kim Il Sung and Kim Jong Il statues are, and this generates lots of foot traffic, as well. There are also famous restaurants, such as Okryu-kwan and Cheongryu-kwan, and large sports facilities, such as an ice rink, gym, and the Changgwangwon Heath Complex. Therefore, the price of apartments is more expensive than in other areas. Even though the apartments in the area are quite old, prices are still high because of the locational advantages.

Q. Then does Joong-Guyeok have a better electricity supply?

A. Not really. There is a separate power supply for the public facilities, including the leaders' statues. So, they never shut down. But the supply for general apartment buildings is not much different from other districts, so it shuts down quite often. The electricity is evenly distributed amongst the districts. So, no matter where you live, you get the same amount of electricity.

Q. How do people conceive the area? Is it based on the guyeok? Or neighborhood?

A. It's mostly based on the actual apartment rather than the area. So, there is no concept of which neighborhood is rich or not. There are apartments many people admire, though. There are certain neighborhoods where the high-class officials live, but those are just in another world for regular people, so people don't really care much.

Q. Is there a specific area that is well known for good education?

A. No. It is different from South Korea. Private lessons or institutions are not legal in North Korea. Of course, there are illegal private lessons. So, it doesn't really matter where you live because you can find a good tutor and decide whether the tutor will come to you, or your kid will go to the tutor's place. My daughter also got private lessons for piano. I paid the tutor $20 a month. In this case, my daughter went to the tutor's house, where the piano was, and the tutor taught four students together. Which means she earned $80 a month on top of her own salary.

Q. In general, how long does commuting take?

A. Perhaps about an hour or an hour and a half. Mostly, people use diesel buses and trams. In Pyongyang, we have inner-fortress and outer-fortress areas. There are subway lines in the inner-fortress area, but not in the outer areas.

Q. What type of residential style do people prefer?

A. People prefer apartments to single-family houses because apartments generally have better infrastructure and are safer. Even when you have to live on the top floor, people still prefer apartments. For a single-family house, you need to manage all the trash and sewage.

Interviewee B

Interview 10/4/2019

Female, 20s

Q. When did you move to South Korea?

A. In 2017.

Q. Did you also leave North Korea around that year?

A. Yes. I left North Korea in 2017.

Q. Were you born in Pyongyang? How long did you live in Pyongyang?

A. [Hesitates to answer]

Q. I am asking not to know exact place where you're from, but to understand what type of housing or residential district you lived in.

A. Yes, I was born in Pyongyang and lived there my whole life while I was in North Korea. I lived in Munsoo Street. In Pyongyang, Joong-Guyeok is like Seoul's Gangnam of Pyongyang, and Sungyo-Guyeok is like Gangbuk. So, Sungyo-Guyeok is in general more obsolete than Joong-Guyeok. There are high-rise buildings in Munsoo Street, but perhaps only 30% are high-rise, and the rest are low-rise buildings. I lived in an apartment that was about five stories high. It was a poor environment.

Q. What was the total number of stories?

A. In total, the building had five stories. I lived there ever since I was born. I was told that the Russians built them after the Korean War, which is why they were quite solid and steady even though they were old. I think it was built in the early 60s. In fact, it was better than the apartments that the North Koreans built. Also, the air quality where I lived was quite good because there were no factories around.

Q. What floor did you live on?

A. On the second floor.

Q. So, were there mixed-income families living in the same neighborhood?

A. Yes, there were families and classes of different income levels. There were apartments for diplomats as well as for military propaganda writers. My family was kind of in the middle.

Q. Who did you live with?

A. With my parents and grandparents from my mother's side.

Q. Did you have any siblings?

A. Yes. One.

Q. May I ask you how many rooms you had?

A. We had two rooms, and they were quite big. The bathroom was also big. I was a bit annoyed by the fact that I could not have a separate bathroom. The kitchen was big, but it was a sedentary type.

Q. What do you mean by a sedentary-type kitchen?

A. The kitchen was a bit lower than other floors, and there was a fireplace for cooking. And our floors were heated by this fireplace. There was no controller for the heating system—we just had to control it with this fireplace.

Q. Was your apartment part of the larger compound?

A. Yes. It was in a residential compound. Lower-income families lived in low-rise buildings in the compound. But I have heard that, these days, even when you have more income and money, you still live in those obsolete housing units so that you don't show off that you earn a lot.

Q. When you were young, did you play with your friends in the compound?

A. Yes. There is an organization called 인민반. They get tax and manage the compound with the tax income. They put plants or playground facilities in the compound. But not that many people use those public spaces because people are busy finding out ways to live. So, they were kind of useless.

Q. Did you go to school in the compound?

A. No. I went to school across the river.

Q. So it was quite far, no?

A. Not really. I just took a shuttle bus that crossed Okryu Bridge between the two sides of the Daedong River.

Q. Do you mind if I ask you what school you went to and what you studied?

A. I don't want to answer to that question because I went to a special school.

Q. Then did you go to school starting in elementary school?

A. Starting in kindergarten. So, my friends in my neighborhood were always saying that I just needed to marry to a guy living near my school, which is considered a good neighborhood. I crossed the river to go to school early in the morning and came back late at night.

Q. It doesn't sound like a typical commute to a school, does it?

A. No. It was an exceptional case. My parents wanted to send me to a good school even though we were not rich enough.

Q. May I ask you what your parents do for a living?

A. My dad was a doctor.

Q. So was it just your parents' decision to send you to the school across from where you lived? If you decide to, can you do that?

A. In fact, my parents' workplaces were also in Joong-Guyeok. So maybe that was part of the reason they sent me to that school.

Q. Have you seen many cases like yourself?

A. Most people cannot send their kids to good schools starting in kindergarten. They save up money and send the kids to those types of special schools for middle or high school educations. Sometimes, when they cannot afford it, they just come back to the schools near where they lived.

Q. Was your mom also a doctor?

A. I don't want to answer this question.

Q. What do you think was the reason your parents wanted to send you to the special school across the river?

A. I think the main reason was that their workplaces were close to my school. Also, they didn't want me to work in farming or labor-intensive jobs. The school I went to had a higher rate of going to college that other schools near where I lived. So, I think my parents just wanted me to have higher education. If you don't get a college education, the government just allocates you to a regular middle-class job or to the military.

Q. Did you work there before leaving for South Korea?

A. Yes, all people need to work in theory. So, on paper, I worked for 도시건설사업부 Urban Development Department, but I did not really work there. I just went to the office when inspectors were coming, but mostly I stayed at home.

Q. So, in reality, you didn't work there?

A. No. I didn't.

Q. Did you graduate college before you went to work?

A. No. I couldn't make it to college because we did not have enough money. I went to prestigious schools until middle school, but not for high school. Even if I could go to college, my parents did not have enough money to finance four years of my education.

Q. Is tuition expensive in North Korea?

A. It's not the tuition. Technically, there is no tuition. But there are bunch of fees that need to be paid to the school. So, for those students who are rich, they just pay them and don't even come to the school. On the other hand, for the students who didn't have enough money, they always got stressed because of money. I think that was one of the main reasons I didn't go to college.

Q. In your case, you said you took a shuttle bus that crossed the Okryu Bridge. But what about others in general? What would you say was the regular means of commuting?

A. On the other side of the river, where Joong-Guyeok is, there are subway lines that many people use. Some rich kids, they just rent a car with a driver together and take turns paying. And there are trackless trams, but the electricity shuts down often, so this was not a reliable means.

Q. What about when you go out with your friends?

A. I didn't really hang out much. I liked to stay at home when I wasn't working.

Q. Why didn't you like to hang out with your friends?

A. I sometimes did. But I wasn't so happy about it. Because I needed to spend money to have a good time, but I didn't have much. Also, I didn't have good clothing to wear for going out. I could get a ride to the place from my other friends, but I still needed money for drinks and food.

Q. Did you have some friends in the neighborhood?

A. I didn't have any friends in the neighborhood. In fact, I was not on the same wavelength as them.

Q. Why was that?

A. Because they went to school around the neighborhood, and they were close to each other. But when I tried to join them, I couldn't understand what they were saying. And I was much taller than others my age, so that was another reason I couldn't get along well with friends in my age around my neighborhood.

Q. It seems you are quite tall, aren't you?

A. Yes, I am taller than average. I'm 168cm. Kids in my apartment always pointed at me because I was too tall. My dad is not from Pyongyang. He is from Mt. Paekdu. So, he didn't eat high. But still, he was quite a tall person. So, I think it is all about genes, not about how well you eat. I was surprised to see people who are shorter than me in South Korea because I supposed they all ate better than I did, but still, I am taller. I drank milk for the first time in my life in South Korea.

Q. Do you know anything about 가내작업반? Maybe you didn't work there, but have you heard anything about it or know about it?

A. Yes, there are 가내작업반. But they produce useless things. I have seen what they make and thought nobody would buy it.

Q. What kind of things do they make?

A. Not sophisticated things like custom shoes. They were simpler things, like gloves or other things that could be easily made by sewing. And I always thought that not making them is better.

Q. Do people make things because they have allocated jobs?

A. Yes. Only few people like working on this. Most people just do the work because they are asked to do so.

Q. Then, are they mostly old ladies who work in these 가내작업반?

A. Yes, mostly. Or sometimes grandmothers in the family.

Q. I was told that the 가내작업반 is kind of useless these days.

A. Yes. It is mostly to force people to gather in a single place.

Q. Where did you go grocery shopping?

A. When I was young, we didn't have enough money, so we went to markets around where we lived. Sometimes, I went to nicer markets with my school friends.

Q. Is there any difference between your neighborhood market and the nicer market?

A. Basically, the number of items is so different. There were not many useful things in my neighborhood market, whereas the nicer one had so many interesting items. Not that I am saying that there are nice brands, but still, it had a greater variety of items. You basically have no option to choose in the neighborhood markets.

Q. How far were the neighborhood markets?

A. Just about a 10-minute walk.

Q. What about the nicer markets you mentioned?

A. I had to take a tram.

Q. Did you ride a bicycle?

A. No, not really, because I couldn't afford it.

Q. Is there any place that you ever wanted to go but couldn't?

A. I always wanted to go to 해당화관 (a luxurious leisure place in Pyongyang that has restaurants, a gym, a spa, indoor pools, cafes, stores, libraries, and so on.) My parents also wanted to go, but we could never afford it.

Q. What about hanging out in the parks? Because it doesn't cost anything.

A. Yes, true. But the younger generations don't really like to hang out there. It is considered old people's culture to spend time in the parks.

Q. I think this is it. Thank you very much.

A. Thank you.

Interviewee C

Interview 12/16/2019

Female, 46 (left in 2019)

Q. Hello, thank you very much for coming in today.

A. Hello.

Q. May I ask you when you left North Korea?

A. It was May this year.

Q. I was told that you are from Pyongyang. Have you lived anywhere else?

A. No. I grew up in Pyongyang and lived there until recently.

Q. Where did you live in the city, then?

A. I lived in Seongyo-Guyeok, where Pyongyang Light Industrial College and Juche Tower are.

Q. Then did you live in a high-rise apartment in that area?

A. I lived on the first floor of five-story building. There are tall apartments that are about twelve stories high, but I lived in a five-story building.

Q. Do you know when it was built?

A. I think it was built around the 1960s or 1970s. Not sure.

Q. How big was it?

A. There were two bedrooms, one small living room, and a small restroom.

Q. What about the kitchen? Was it a new kitchen?

A. No. We had to use a stokehole to cook.

Q. How long did you live there?

A. I moved there in 2006.

Q. Then where did you live before?

A. In Tongil Street Development. I lived in a semi-basement floor in a thirty-story building. I was the elevator technician.

Q. What do you mean by the elevator technician?

A. I ran and managed the elevator. As there was lack of electricity, I had to shut down the elevator at certain times and prevent people from riding it then.

Q. Compared to the Seongyo-guyeok, how big was the Tongil Street apartment?

A. It had four bedrooms with two bathrooms.

Q. It sounds like that was much bigger than the one you moved to, no?

A. Yes, but the Seongyo-goyeok one had a better transportation system, and as I said, the Tongil Street one was in the semi-basement.

Q. I see. How big was your family then?

A. I had two daughters and a husband.

Q. Where did your daughters go to school? How far were the schools?

A. The older one went to a middle school that was about a 10-minute walk, and the younger one went to an elementary school that was 15 minutes away from where we lived.

Q. Fifteen minutes sounds quite far for kids. Did she have to cross a big street?

A. No, she didn't have to cross any big streets. But the older one used to go to school in Joong-goyeok, which was across the river from where we lived.

Q. Why did she have to go to that school?

A. It was Kim Sung Joon Elementary School, which is considered a prestigious school in Pyongyang.

Q. What about going to a market? Was it close to where you lived?

A. There are markets in each guyeok. So, I used the market that was in my guyeok. Usually, it opened at 2pm and closed at 6pm.

Q. Do you know anything about 가내작업반? Based on what other interviewees said, it seems it is not functioning well these days.

A. Yes. There are about 30 female workers in 가내작업반. In theory, they must make products, like gloves, and deliver them to direct outlets. Otherwise, they must pay fees to the 가내작업반 managers. So mostly, these days, they have their own small businesses to pay the fee and earn extra.

Q. Where are those 가내작업반?

A. They are in the compound. Most workers are elders and seniors.

Q. Is it in a separate building from the apartments?

A. Yes, it is a single building that just has a room. It was supposed to be used for producing things, but these days, it is just used as office space.

Q. Did you have any close friends working in 가내작업반?

A. Not really.

Q. What kind of small businesses did those people at 가내작업반 have?

A. Some people sold small goods or candies on the first floor or basement of the apartment buildings.

Q. Did they make them by themselves?

A. No. Mostly they just bought them from the wholesalers and resold them in the compound.

Q. So it is like a store, isn't it?

A. Kind of, but they just sold the goods that the apartment. Occasionally, security officers check those businesses. There are people who sell things outside. We call them hoppers. But those people are heavily regulated by the officers.

Q. What was your main transportation method? For example, when you went to the market, what did you take?

A. Mostly bus or tram. Buses usually run between 6am and 9pm. People took buses to commute to provincial areas. It is called 지방벌이차, the provincial working bus. They go to provincial areas to provide labor during the farming season. But there is less traffic between Pyongyang and the provincial areas these days.

Q. How did you spend your leisure time?

A. I had free time only on Sundays. Usually, there was an environment-improving session during the morning that people needed to attend to clean and refurbish the compound. We also needed to do planting or cleaning of the surrounding streets. And sometimes, I went to Ryukyongwon, the public spa, in the afternoon.

Q. Thank you very much for your time today. I think this is it for today. Thank you.

A. You're welcome.

Interviewee D

Interview 12/16/2019

Female, 55 (left in 2013)

Q. When did you come to South Korea?

A. Five years ago.

Q. Did you come to South Korea directly from North Korea? Or did you live in China or somewhere else before?

A. I came to South Korea directly. I left North Korea in November 2013.

Q. Do you mind me asking your age?

A. I am 55.

Q. So you must have gotten used to life here in South Korea by now, no?

A. Not so much. Still struggling. I am much better now than before. But I still need to get used to it here more.

Q. Did you live in Pyongyang only?

A. I lived in Chungjin for about 10 years.

Q. So you lived in Pyongyang and moved to Chungjin, then moved back to Pyongyang again?

A. Yes. I married my husband, who's from Chungjin, so I moved to Chungjin when I got married. Then later I moved back to Pyongyang.

Q. When you lived in Pyongyang, can you identify where you lived?

A. I lived in Seosung-Guyeok, where the West Pyongyang station is.

Q. What type of housing were you in? How tall was it?

A. It was about 10 stories high. It was kind of average height.

Q. Would you say it was a typical housing type in Pyongyang?

A. I would say so. There are taller housing buildings as well as lower ones than where I lived. There are taller buildings along Tongil Street. But at the same time, there are five- to six-story buildings that added a couple of more floors on top and made 10-story buildings.

Q. Was the building a tower type or a corridor type?

A. There were six units per floor in my building. It was not a long, linear type of building.

Q. Which floor did you live on?

A. Fifth floor.

Q. Did you live together with your family?

A. Yes. I lived with my kids. Me and my two kids.

Q. How many rooms were there?

A. There were three bedrooms and one bathroom. The bathroom was quite big there. As there is always a water shortage, some people have water tanks in the bathroom.

Q. What about the kitchen? Was the kitchen a step lower than other rooms?

A. No. But there was a door to the kitchen. And there was another door in the kitchen that led to a small bedroom.

Q. Was it also a building that had added more floors on top?

A. Yes. It added more floors. There are new apartments in Joong-Guyeok that are sometimes more than 300 sqm. Those apartments have a shoe closet at the entrance, like the ones in South Korea, and a small room right by the entrance. They have large bathrooms and a separate kitchen and a storage area.

Q. Do you have any idea how old that apartment was?

A. It was quite an old one. But I'm not sure of the exact year. I cannot say it was a totally obsolete apartment, but it was still not a new one, either. The sink in my apartment was not that big. It was an outdated fashion with old kitchen cabinets. But when you go to those new apartments, they are big and good.

Q. When you were in Pyongyang, did your kids go to school?

A. Yes.

Q. Were the schools far from your place?

A. Not really. In general, schools are quite close. Maybe a 10-minute walk. Mostly, students don't need to take buses to go to school. They are all close to where you live. Collages are quite far. But until the high school level, the schools are very close to where you live.

Q. Did you work when you were there?

A. Yes.

Q. What was the commute like?

A. I commuted by tram. It took me about 30 minutes each way. The electricity supply was not stable for those trams, so sometimes, it took more than half an hour. But in general, I would say 30 minutes.

Q. What type of work did you do?

A. I worked for an ammunition company that made uniforms and various items for the military.

Q. Then what about when you went to a market? Did you walk?

A. Yes. There is Seosung Market near Hyuksin Station, and I could walk there. But there are bigger markets in other places, like the market on Tongil Street. I had to take trams to go to those markets. Those markets are all different sizes.

Q. What about the regular, everyday market?

A. That would be Seosung Market for me. It was about a 20-minute walk from where I lived.

Q. It seems there is an increasing number of street vendors in Pyongyang these days. Did you see them in the apartment compounds, as well?

A. I didn't see many in the compounds. But when you walk along the major streets, you could find many along the street or some in front of big markets. There are still government regulations against the street vendors, and those vendors are more easily found near the markets.

Q. Do you know anything about 가내작업반?

A. These days, people register their names in the 가내작업반 list but don't really go to work there. Mostly, people make income through their own small businesses and pay the fee to the 가내작업반 to keep their names registered. So, if one person is allocated to make $200 a month by the government organization and pay the fee for that amount, the organization doesn't really care what you do in reality. 8.3 가내작업반 usually make small goods that are really useless. So it is really hard to make money out of making products through 가내작업반. So, many people just pay the fee and run their own businesses.

Q. Where does the name 8.3 come from?

A. Not sure. People just called it 8.3. Perhaps it is just a policy name. It is basically recycling materials and making some goods out of those recycled materials.

Q. It seems most people from Pyongyang who I met say the 가내작업반 doesn't really function these days. Has it ever worked well?

A. In the past, there were some sewing machines, and people made products with them. It worked fine back then. But it naturally disappeared.

Q. Did you have any friends in your neighborhood?

A. Not really. My close friend was in Joong-Guyeok. I hung out a lot with her. But in general, it is old people who stay at home in the neighborhood, and mostly, young people go out to work, grocery shop, and so on. So, you don't really make friends in the neighborhood.

Q. What about young kids? Are there many playgrounds in the compound?

A. Those kids make friends in the neighborhoods. There are some playgrounds in the compound, but usually, they are not in good shape. There is a roller-skating track near Seosung Market, so kids in my neighborhood went there a lot.

Q. So, it seems the playgrounds in compound are not well developed?

A. No. When you see apartment compounds here in South Korea, all those outdoor spaces and playgrounds are well made. But, for sure, that is not the case in North Korea. Maybe a few swings and a seesaw. They are well made in the kindergartens, though.

Q. When kids are young, do people send them to daycare?

A. Yes. But even those daycare facilities have changed. Before, they were run by the government, but now, there are more facilities that require a higher fee than others, and they have become privatized.

Q. Are the daycare centers mostly in the compound?

A. I don't think all compounds have daycare facilities. Some had to send their kids to daycare outside of the compound. Elementary schools are always close by, but not necessarily the daycare centers.

Q. You said that your commuting time was about 30 minutes. Do you think that is an average time for workers?

A. I think it depends. If you are running your own small business as a vendor, you might just work near where you live. But if you work for a company, perhaps your commute is longer.

Q. Then do people move to a place close to their work?

A. Not really. Moving to a new place is not an easy thing in North Korea.

Q. It seems the real estate market is growing in Pyongyang, no?

A. Yes. The real estate broker is called 거간꾼. They find a match between the seller and the buyer. There is no official market, but these 거간꾼 have networks and connections so that they can make matches.

Q. I think that is pretty much it for this interview, thank you.

A. Thank you.

Appendix II

1. 2014 Venice Biennale Korean Pavilion

- Yim Participated in the exhibition as artist.
- Awarded Golden Lion.

In the immediate aftermath of World War II, the Korean Peninsula was divided in two. Within the polarizing global and state systems of the Cold War, a society and culture that had maintained a unified state entity for more than a millennium evolved radically divergent yet irrevocably interconnected economic, political, and ideological systems. The trauma of war and adversarial politics have too often sensationalized and over-simplified this condition, reproducing clichés and prejudices that obscure the complexity and possibilities that lie in the Peninsula's past, present, and future. In the Korean Pavilion, the architecture of North and South Korea is presented as an agent—a mechanism for generating alternative narratives capable of perceiving both the everyday and the monumental in new ways.

The exhibition is inspired by "Crow's Eye View," a serial poem by the Korean architect-turned-poet Yi Sang (1910–37). Published in 1934 and influenced by the Dada movement, "Crow's Eye View" is the emblem of the fragmented vision of a Korean poet who aspired to be a modern architect, an aspiration that was impossible to fulfill under the debilitations of Japanese colonial rule. In contrast to a bird's-eye view—a singular and universalizing perspective—it points to the impossibility of a cohesive grasp of not only the architecture of a divided Korea but the idea of architecture itself. Ironically, while most of the world is relatively free to visit North Korea and South Korea, South Koreans are rarely given the opportunity for direct communication. Admittedly a South Korean point of view, Crow's Eye View is a prologue for a yet unrealized joint exhibition of the two Koreas, what we would call the "First Architecture Exhibition of the Korean Peninsula."

The exhibition is by no means a comprehensive or balanced presentation of the architecture of the two Koreas. Like uncharted patches of an irregular globe, a diverse range of work produced by architects, urbanists, poets and writers, artists, photographers and filmmakers, curators and collectors forms a multiple set of research programs, entry nodes, and points of view. They call attention to the urban and architectural phenomena of the planned and the

informal, individual and collective, the heroic and the everyday. Intertwined yet in opposition, spilling over to each other, they reveal the way that a wide range of architectural interventions have reflected and shaped the life of the Korean Peninsula.[343]

Figure 113 2014 Venice Biennale Korea Pavilion, photo by Kyungsub Shin

1-a. North Korea Atlas

The exhibition of the Korean Pavilion started with very dry information and data of North Korean territories, such as land/mountain ratio, population distributions, and types of households. It was shown as dry as possible, and it represented the stance on contents of North Korea in the exhibition that was curated and filled by South Koreans.

[343] Exhibition description by Minsuk Cho, the commissioner of the Korean Pavilion in 2014

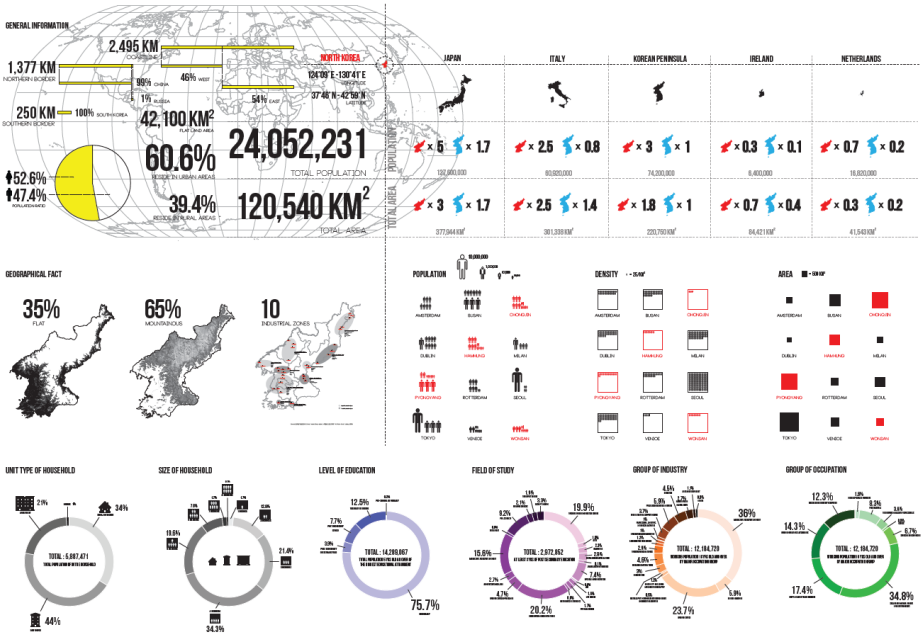

Figure 114 North Korea Atlas, drawn by author

1-b. Symbolic Urban Squares in 8 Major Cities in North Korea

Urban square is one of key features in urban structures in North Korea, mostly because of its political reasons based on socialist idea of having an urban space for public propaganda, as indicated in the 16 Urban Design Principals by GDR. Instead of showing provocative photo images of those spaces, the drawings emphasize physical aspects of the squares.

Figure 115 Exhibition scene[344]

[344] Photo taken by author. Symbolic squares drawings are juxtaposed with symbolic building photos taken by Alessandro Belgiojoso

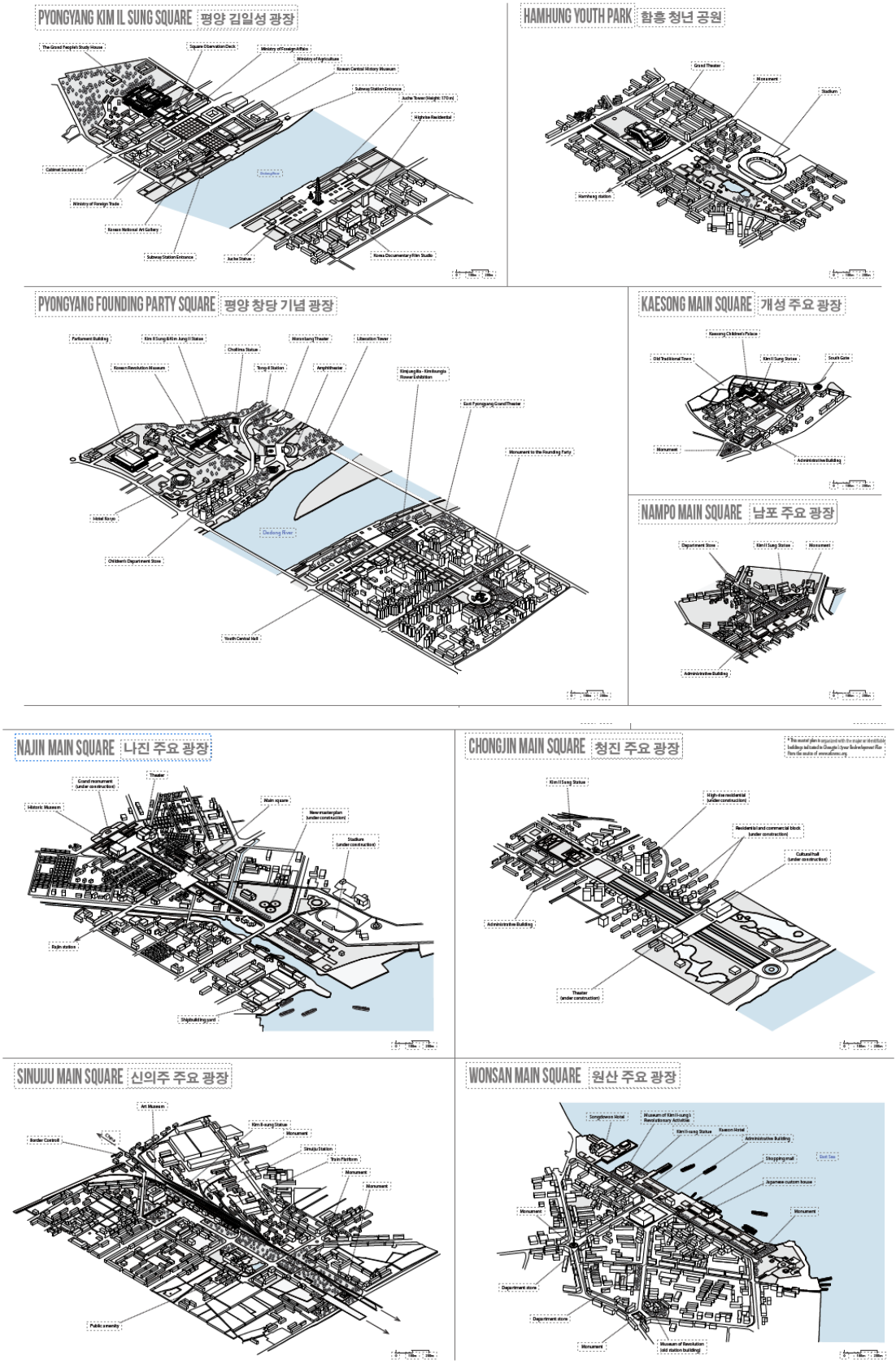

Figure 116 Symbolic Squares Drawings, drawn by author

1-c. Infrastructure & 27 Cities in North Korea

Major infrastructures of the North Korea are mapped out to show how much the nation is (dis)connected with other countries. All twenty-seven cities in North Korea are juxtaposed with each other to understand their sizes, populations, locations, and densities. They are laid out together to see hierarchies, if there is any, amongst themselves and to analyze characteristics of them.

Figure 117 Infrastructure of North Korea, photo taken by author

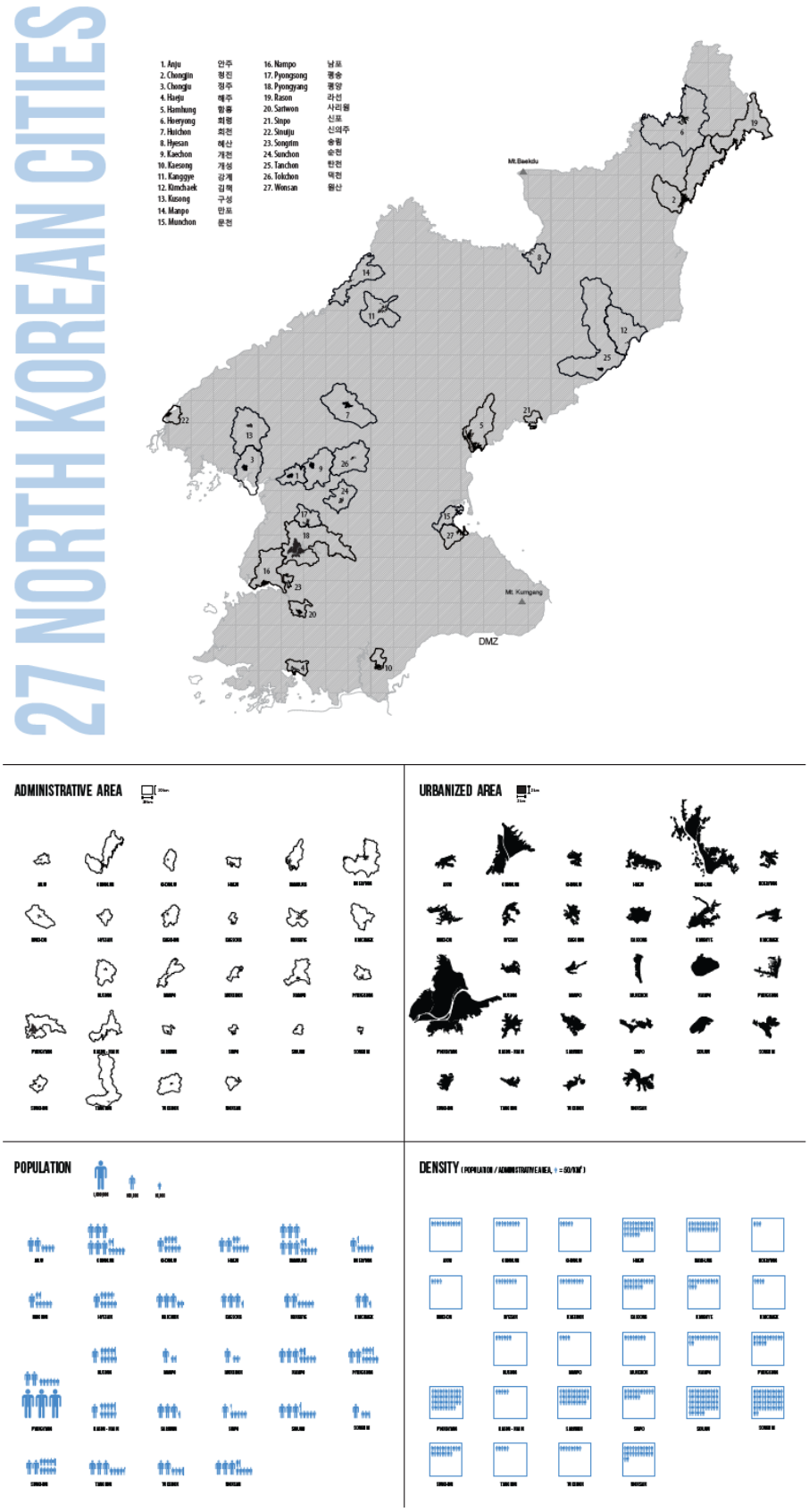

Figure 118 27 Cities in North Korea, drawn by author

1-d. Sallimjip Typologies

Sallimjip typologies are diagrammatized to understand material culture of North Korea. To understand the multi-layers of residential culture, the analysis covered from district layout to unit plan. Especially, in the exhibition, this was juxtaposed with South Korean apartment plans, researched and exhibited by Marc Brossa, to show audience how much they are different from, or they resemble with, each other.

Figure 119 Exhibition Scene, photo taken by author

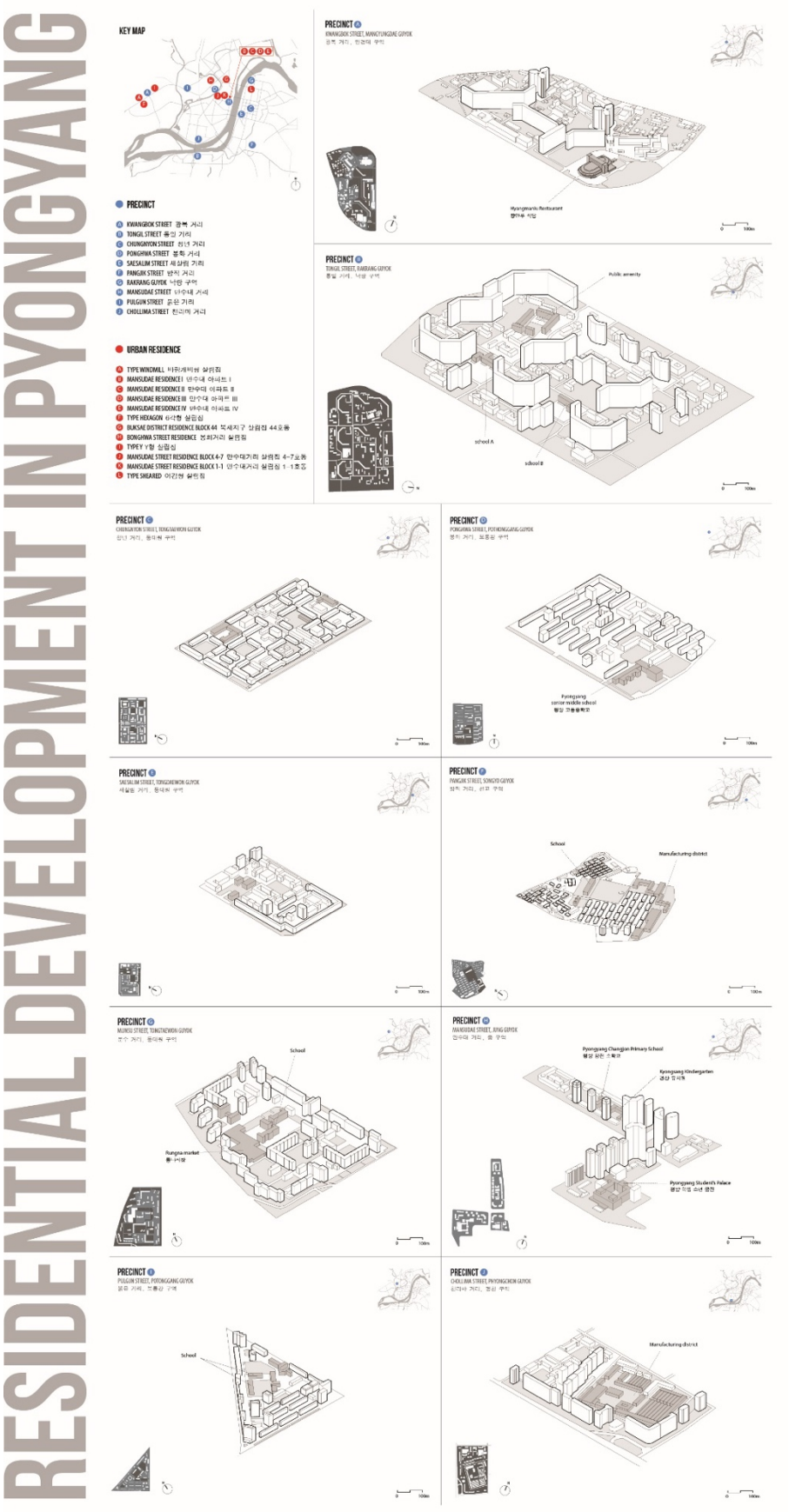

Figure 120 Residential development in Pyongyang, drawn by author

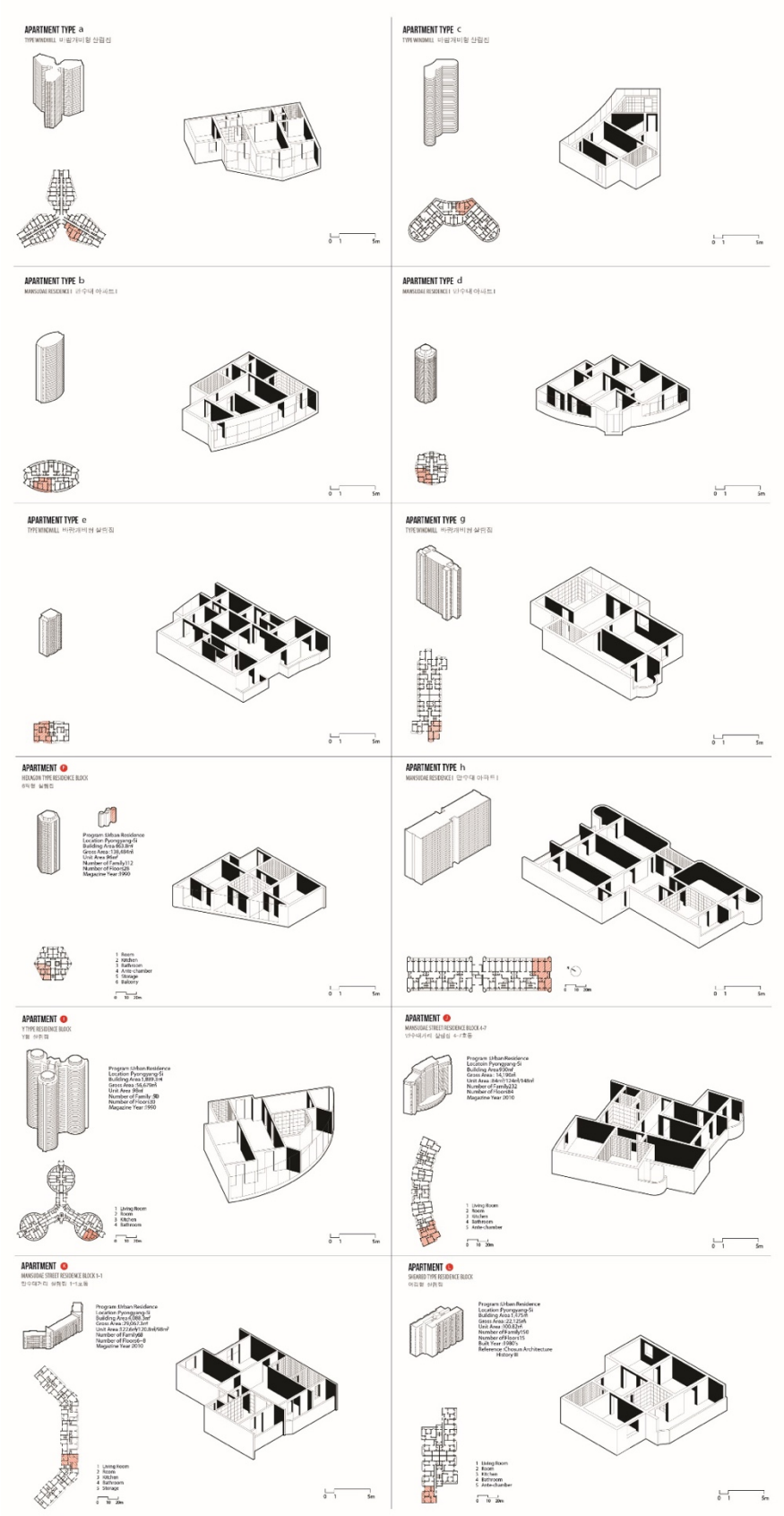

Figure 121Residential development in Pyongyang, building types and unit plans, drawn by author

2. <Pyongyang Sallim> at 2017 Seoul Biennale of Architecture and Urbanism

- Yim co-curated the exhibition with Calvin Chua.

Recently, Pyongyang has been experiencing a trend of increasing "donju," often referred to as those who possess wealth, as a result of introducing elements of a market economy. To meet the demands of these individuals, new apartments are continuously being constructed and supplied. In the past, Pyongyang adopted the concept of microdistrict within the framework of socialist urban planning, which involved constructing residential complexes. However, it appears that in recent times, satisfying the new housing demand has become more crucial than adhering to these ideological frameworks.

In this context, the exhibition focuses on apartments situated at this juncture, which can be considered a turning point in Pyongyang's housing development. Although these apartments may not represent the average housing environment in Pyongyang, they hold significant meaning as they mark a shift from the patterns of housing plans of the past 50 years to new development patterns. Therefore, the exhibition directs attention not only to the past and present average living conditions in Pyongyang but also to what direction future Pyongyang might take in terms of change. Furthermore, it acknowledges that the form of housing can reflect not only one's living environment but also various aspects such as culture, customs, and preferences.

The exhibition "Pyongyang Sallim" creates a model-house[345], allowing visitors to understand the lives and material culture of Pyongyang residents from various perspectives. " Pyongyang Sallim " consists of four main rooms: the entrance and living room, the dining area, the kitchen and balcony, and the bedroom. Each space's size has been newly arranged to fit the exhibition modules, and each space is exhibited along with the household items used in daily life that were imported from North Korea. All the furniture, wallpaper, flooring, lighting, etc., were custom-made based on examples from apartments in Pyongyang. Items like shoes, clothing, snacks, etc., were all purchased locally in North Korea. Through this, visitors are expected to experience how different the living spaces of Pyongyang residents are and what aspects are similar. In addition, each space in the living room, dining area, kitchen, and bedroom is equipped with exhibition content focused on the themes of history, culture, housing, and change. This not only provides visitors with an opportunity to experience the

[345] Model-house in South Korea means a mock-up sample house provided by developer to pre-sell units before the actual construction is finished.

model house but also allows them to access information about North Korea and Pyongyang from various angles. The history section delves into the history of Pyongyang, not only within the context of Korean history but also as a city that developed as a socialist city after the war. The culture section examines the lives of Pyongyang residents and explores the culture of Pyongyang as seen through foreign eyes. Furthermore, the housing section covers various forms of housing in Pyongyang, including low-rise, mid-rise, and high-rise buildings, while the change section predominantly showcases recent development projects that have been changing the cityscape of Pyongyang over the past five years. To effectively convey information, photos as well as maps, diagrams, and models have been employed. These elements have been integrated seamlessly into the layout of the model house to ensure that visitors feel like they are inside the apartment unit rather than an exhibition space.[346]

Figure 122 Pictures of Pyongyang sallimjip for references to design a model-house

2-a. Living Room

The exhibition starts with the model house of living room. Furniture, wallpapers, and other accessories are either replicates or products of North Korea.

[346] Exhibition description by Dongwoo Yim, the co-curator of the exhibition

Along with these model house elements, urban analyses of Pyongyang are shown on the wall. All units in North Korea hang portraits of Kim Il Sung and Kim Jong Un on the living room wall, which was a big hurdle to replicate in South Korea. Thus, abstracted face figures are printed and hung on the wall of Pyongyang Sallim exhibition not only to show the atmosphere of North Korean sallimjip unit but also to show censorship of South Korea.

Figure 123 Living Room in Pyongyang Sallim, photo by Kyungsub Shin

Figure 124 Living Room furniture and picture frames in Pyongyang Sallim, photo by Kyungsub Shin

2-b. Dining Room

In the replicated dining room, pictures of landmarks of Pyongyang are shown along with North Korean calendar brought from North Korea. Here, audiences experience Pyongyang through outsiders' lenses while understanding material culture of North Korea from the calendar.

Figure 125 Dining Room furniture in Pyongyang Sallim, photo by Kyungsub Shin

Figure 126 Dining Room in Pyongyang Sallim, photo by Kyungsub Shin

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2-c. Kitchen

The kitchen is an exhibition space where sallimjip typologies are exhibited through drawings, models, and panels. In the smallest space of the exhibition, audiences have a chance to understand the larger perspectives of North Korean housings.

Figure 127Kitchen in Pyongyang Sallim, photo by Kyungsub Shin

2-d. Balcony

The balcony space was designed to show an overview of Pyongyang. Through this experience, audiences could locate themselves in the city as well as understand the overall built environment of the city.

Figure 128 Balcony space outside of the Kitchen, photo by Kyungsub Shin

2-e. Bedroom

The exhibition ends at the bedroom where it is considered to be the most private space in any housing unit. The exhibition contents are consist with future proposals on Pyongyang, worked by international architects, and North Korean domestic books that contains propaganda contents. They are juxtaposed to show an ironic situation of the exhibition curated and seen by non-North Korean with North Korean contents.

Figure 129 Bedroom space in Pyongyang Sallim, photo by Kyungsub Shin

Figure 130 North Korean books exhibited in Pyongyang Sallim

Figure 131 Future Scenario by Yunoh Kim