

Hapkak* and Curtain Wall: Imaginaries of Tradition and Technology in the Three Kims' North Korean Modern Architecture

Jelena Prokopljević

International University of Catalonia/Pompeu Fabra University

Abstract

The architecture developed in North Korea since its foundation in 1948 but especially since the proclamation of the Juche thought as the unique state ideology in the early 1960s, has included two major referential imaginaries: the Korean traditional architecture and the expression of the economic and technological progress. The presence of these imaginaries, mediated by the architectural language but also by the production policies, have oscillated throughout decades with varying intensity under the rule of each of the three Kims. The paper analyses different elements of traditionally and technologically inspired architecture, resumed in the title in two significative elements, the hapkak roof and the glass curtain wall, and looks into their transformation and modern interpretation in different times. The aim is to link the dominance of either of those imaginaries with the epoch and political discourses of Kim Il Sung, Kim Jong Il and Kim Jong Un, as tools for establishing the periodicity of contemporary North Korean architecture despite the omnipresent discourse of the national character of North Korean architecture. All three leaders have had strong influence on the architectural creation, understood as regimes' most valuable propaganda device and have preferred one over another imaginary. It will also be interesting to link these variations with changes in the international architectural scene.

Keywords: North Korea, Modern architecture, Juche ideology, technology, progress, representation

* The present paper is largely based on material collected during the research on North Korean architecture conducted between 2009-2012 with a visit to Pyongyang and interviews with architects at the Paektusan Academy of Architecture. The first phase was partially funded by Casa Asia Barcelona and published in the book co-authored with Roger Mateos Miret. The second phase of the research is on-going and based mainly on material published in North Korea and worldwide.

Received June 19, 2019; Revised version received July 31, 2019; Accepted August 25, 2019

1. Introduction

The socialist architecture developed in North Korea has generally been explained through two discursive frameworks: that of totalitarian architecture and that of national formalism, outdated and out-scaled (Petrecca, 2005; Portal, 2005). The buildings like the Rectorate of the Kim Il Sung University, built in 1940s have been analysed under similar prism as the People Study House built almost 40 years later although the material, economic and urban contexts differ considerably in the two periods. To the contrary to all western architectural historiography and critique, when applied to Socialist architecture and especially to North Korea, the political immobility and apparent monolithism of the regime seem to determine the orientation and the tone of the lecture. Meanwhile, the general history of architecture is explained through Modern Movement, International Style, Brutalism, Critical Regionalism, Post-Modernism, High-Tech architecture, Minimalism, Eco-sustainable construction and even parametric design. The contextual implications on local and global scale are crucial for design and for its implementation both in society as in historiography.

This text aims at systematizing a periodicity in reading North Korean contemporary architecture that is inevitably linked with the successive leaderships of the three Kims and at the same time analysing the contexts and political discourses of each of them that affected or defined the architectural representation. The focus on North Korean architecture is not isolated from the international scene. However when locating different ideas on the timeline of global architectural history, the ideological preferences and North Korean specificities will be kept in mind. Therefore, the connection of North Korean architecture with the global scene is inevitably filtered through the tendencies and influences of the socialist world, through their specific interpretation of modernist and post-modernist architecture.

The study is centred in Pyongyang that since the foundation of the DPRK in 1948 has been the centre of political action and all the construction projects have been undertaken with the importance of the capital city in mind. The newly designed capital cities of the post-colonial and post war era have aimed at certain grade of national representativeness even above their strict functionality or

economic efficiency (Vale 2008). Pyongyang was no exception, as the Second World War marked the end of Japanese domination over Korean Peninsula and the liberation war coincided with socialist revolution. In the aftermath of the conflict, the new society was being forged and the new capital had to embody this transformation. New allies on the international level were the source of technology and formal tendencies, both of them important for the definition of the new architecture, whose symbolism sought to express, in a coherent and recognizable manner, the identity of this emerging social reality.

Although the Korean peninsula was already divided between the two states, the capital city recognized by both was Seoul, while Pyongyang was understood as a temporary administrative centre until the Korean nation would hypothetically define the framework of the reunification. For this reason, the first post-independency construction in Pyongyang had simply repeated formulas imported from Soviet Union in a very austere manner. The new construction and the new style was awaiting to express the identity of the new Korean nation that was still to be formed out of the two states.

The Korean War was a terrible setback in the process of reconstruction. The intent of forced reunification ended in an enormous destruction and the loss of around two million lives on all sides (Halberstam 2009). Pyongyang was practically erased in the bombing raids that only left couple of large buildings standing as a landmark (Springer 2003). The plans for the new socialist Pyongyang were being drafted in bomb-shelters underneath the Moranbong Theatre (Pyongyang Panorama 1995) following two very important decisions: to rebuild Pyongyang in the same place despite the ruins, additional difficulties and costs, and to imbed it a western-style rational structure (Mateos et al. 2012; Yim 2016). When the guns silenced in 1953, Pyongyang started to emerge as a completely new urban space, a symbol of survival and of the profound transformation of Korean Society that political ideologues promoted. The imaginary behind the architectural forms referred to non-Korean models, determined to change the way people understood modernity and urbanity.

The leaders closely followed this change of architectural paradigm and the practice of “on spot guidance” was from the beginning extended to design,

planning and construction (Construcción en Corea 1991). All of the three Kims participated in the decision-making process regarding the urban environment, housing policies and elements of design; their role is generally of absolute importance for defining any aspect of life in DPRK, so it makes easy the initial definition of the architectural periodicity. However, the time of each leader's tenure was defined by different moments in political, economic or urban sense, so the architectural production can hardly be analysed as monolithic, or repetitive in different periods. The approximation of North Korea to the movement of Non Aligned countries and the inter-Korean undeclared competition in architectural and urban design (Ahn 2014) marked variations in architectural styles, materials used and symbolisms necessary to provide the politically correct interpretation of the built structures, accessible and understandable for the wide public.

The imaginaries present in each period oscillated from the preference for representations of advances in technology to the imaginary of tradition and historic architecture of Korea. The establishment of the Juche thought as the unique ideology of the state in early 1960s was an impulse for defining the neo-national architecture for large public buildings. The architecture of the new century has been oriented toward new technologies, the use of new materials and increasing awareness of environmental and climatic efficiency. Green technology is marking the contemporary architectural discourse while the reference to the traditional forms of the Juche architecture, although still present, is not any more the dominant source of symbolism (Kim 2013).

2. Kim Il Sung, 1953-1970s

Kim Il Sung, founder of the DPRK, general secretary of the Workers' Party, supreme general of the army and the president of the state –the title he still holds after his death- was educated in the USSR and had Stalin's support among possible leaders for the new state. In fact the Communist Party of North Korea had different fractions, among them, the one that remained in the country during the occupation and war, the one exiled in Manchuria and the group exiled in the USSR –that

supported Kim Il Sung (Lankov 2002). Once a leader, he had to gain his authority over the other groups that in 1950s in fact meant to purge them. The forced re-construction process and problems that came along were sometimes used as perfect excuses to resolve those political differences.

The main task of the Kim Il Sung's first years was to rebuild the country and to provide sufficient housing, working spaces and public equipment for the surviving population. Therefore the architecture built in the first two decades of the new government, was mainly the architecture of necessity. This included, apart from construction of residential complexes, the creation of urban referents and symbolic spaces, so the first area of Pyongyang to be rebuilt in 1954 was the Kim Il Sung square.

Kim Il Sung relied a great deal on the international aid in the reconstruction process for the exchange of knowledge through the presence of foreign architects and experts and also through the donations of material and technology. Korean War was the first major Cold War conflict and solidarity between socialist countries was evidenced in the aid to rebuild North Korea (Armstrong 2005). Kim Il Sung visited Moscow in search for help in September 1953 and Beijing in November of the same year (Szalontai 2005, 45-46). The international assistance came in form of building materials and technology, skilled workers and an opportunity –for Korean technicians- to study in the Soviet or Chinese universities. The USSR rebuilt the port city of Nampo, along with many infrastructures and institutions. China had troops stationed in North Korean territory until 1959 that worked in construction among other duties; in 1954 nearly 300 Chinese architects and technicians landed in North Korea and nearly 3,000 North Koreans workers had the opportunity to study for a year in China (Shen et al. 2012). However, the most generous aid, taking into account the size and capacity of the country, came from the DDR who sent more than 450 construction specialists, led by architect Hans Grotewohl, son of the country's prime minister, with projects to rebuild the industrial city of Hamhung that had been almost 80% destroyed. This assistance program lasted seven years, between 1955 and 1962 and represented a 1% annual GDP of the socialist country and got called off at the time of thaw after Stalin's death that inspired the North Korea's withdrawal from the Warsaw

political bloc (Frank 1996).

In this first stage, Pyongyang was being rebuilt as a European city, even more if we look at its urban layout. The city planned in 1951, while the bombs were still falling had a lot in common with the so called Stalin's plan for the reconstruction of Moscow of 1935, but also with the first master plan of Beijing from the same period: wide and large avenues and huge public spaces with closed urban blocks that defined them, as well as the formal unity of the street front that was considered means for enhancing the monumentality of the city spaces. Its author, the architect Kim Jong Hui had studied in Moscow and worked very closely with Kim Il Sung on the redesign and reconstruction of Pyongyang. Like Moscow, post-revolutionary Beijing, and other socialist cities, Pyongyang was centred on a large public square –Kim Il Sung square- and wide, straight avenues. The main artery, Stalin Street -renamed Sungri or “Victory” Street in the late 1950s-, like Stalinallee in East Berlin, was lined with multi-story residential apartments. Buildings such as Daedongmun Theatre (1955), Moranbong Theatre and Taedonggang Hotel (1956) shared characteristics with public and cultural centres in Moscow, Warsaw, or East Berlin (Prokopljević et al. 2015; Kang 1990; Han 2006).

The construction during the first post war years can hardly be identified with Korean architectural heritage. The ideological connections with Europe and East European models were the reason for the implementation of the Socialist Realism in the pre-war and early post Korean War buildings. Socialist realism was a style developed in 1930s during the Stalin's rule in the USSR that followed the formula: “national in form and socialist in content” (Paperny 2002). The national form it refers to, could in fact be any kind of historicist form, mainly from prosperous period of national history, necessarily approvable from the ideological standpoint (Groys 2008). Generally it reformulated neoclassical examples for their link between the classical forms of ancient Greek temples with the idea of democracy. The neoclassical base was then enriched either by typical local elements or with revolutionary insignia, making it understandable for the proletarian masses. In the interwar and the first post-war period, the architecture of Kim Il Sung was based on fast reconstruction using technologies and forms imported from socialist allies

and avoiding references to Korean historicist architecture.

In the mid-1950s the imaginary of technological progress started to dominate the architecture and construction as consequence of two factors: on one side Krushev's critique of Stalin's monumental constructions as waste of resources and on the other, the endemic housing shortage in the growing North Korean cities. The focus was placed on prefabrication of structural elements, enclosure and installations in order to build faster and to build more. This way between 1954 and 1960, about 600,000 homes were built and another 800,000 units were completed until 1969. The Six Year Plan of this decade set the goal at building homes for 300,000 families per year, both in urban and rural areas and by 1976 North Korea had built homes for three quarters of the population (Kim 1983, 103; Hunter 1999, 187). The new construction system based on USSR technology and assembly methods impulsed the industrialization of the construction process, as well as the profound change of design in favour of new schemes of residential spaces based on repetition and combination of modular elements.

The introduction of prefabricated systems in the second half of 1950s had strong opposition of the Minister of construction, Kim Sung Hwa, who argued that the implementation of modular concrete elements on large scale would be difficult in the North Korean context of poorly developed industry. The minister was purged on accusations to be a soviet spy in the times of difficult relations between DPRK and USSR. Similar to the Chinese "Great Leap Forward" in 1959 was proclaimed the Chollima movement, a campaign for mass mobilization to realize the objectives of the 1st Five-Year Plan (1957-1961) in field of construction (Kim 1983, 526-536).

It was the new minister of construction, Choe Jae Ha, the first minister of worker's origin who was in charge of implementing the complex system of prefabricated construction, with the main objective to put an end to the housing shortage. The system, modelled after the more developed models from the USSR, included the construction of new factories of structural elements and concrete walls, and the rapid modernization and industrialization of the entire process from the project to the construction site. Choe Jae Ha was responsible for major successes in construction speed: during his tenure the record was set in building

20,839 homes with materials planned for 7,000; he imposed an extremely accelerated rhythm of works, the famous “Pyongyang speed” which is still remembered nowadays. A housing unit got to be assembled in only 14 minutes by using prefabricated components increasing exponentially the production of new homes (Kim 2007).

The technology and the industrialization became the main theme of the political discourse and the new image was imbedded in the residential districts of Pyongyang and other large towns. The modular housing blocks, built following similar designs and using similar structural and enclosure elements of reinforced concrete started to fill the newly formed neighbourhood units known as microdistricts (Yim 2016). Dwellings with 2 or 3 bedrooms, living room, kitchen and bathroom changed the housing models following designs from Eastern Europe. The long horizontal slabs with 4-5 floors located along the main streets and surrounded by green spaces resembled soviet residential blocks popularly called “Khrushchevka” that had defined many cities of Eastern Europe, throughout 1950s.

By 1960 most of the representative public buildings of central Pyongyang shared neo-classicist socialist realist style while growing residential quarters used prefabricated concrete structures with modular walls, typified doors and windows and repetitive appearance. The differentiation of the functions through form was the result of the specific moments of their construction more than a decision to assign specific styles to different uses. Still, although in the URSS the new public cultural and administration buildings also acquired new, more modern and functional style, in North Korea the architecture of public buildings continued to be dominated by national form.

Starting from 1955, the *Juche* idea, a Korean version of Marxism-Leninism made its presence in Kim Il Sung’s discourses. The meaning of the words Ju –Che, master of one’s destiny, marked the main lines: independence, equality and auto-sufficiency that had to be expressed through art. Architecture took a nationalistic turn, strengthening the national component of socialist realism. The first buildings in the neo-national style were the Okryu restaurant on the Taedong river bank and Pyongyang Grand Theatre, designed by Paek Si Ha in 1960 and opened to host the IV Party Congress that proclaimed the ideological independence

from Moscow and Beijing (Springer 2003; Kang 2007). The early bird of this tendency was the Pyongyang Train Station opened in 1958 and designed with participation of Chinese technicians, using materials from China and USSR. The superposition of traditional eight-sided roof, clad with glazed ceramic tiles, over neoclassical arches, cornices and composite columns was similar to the style of Central Station or National Agricultural Exhibition, both built in Beijing as part of the “Ten Great Buildings” campaign of 1950s that commemorated 10th anniversary of the Revolution (Greco et al. 2008).

3. Kim Jong Il 1970s-2011

Although Kim Il Sung remained officially in power until his death in 1994, since 1970s it was Kim Jong Il who managed architecture and construction issues. Since mid-1960s, being only 20 years old, he was already working for the Party’s Central Committee and in 1967 was put in charge of the Arts and Culture section of the Propaganda Department. In 1971 he was appointed chief of the Central Committee Cultural Department and in 1973 was in charge of the entire Department of the Propaganda and Agitation of the Party. At this time he started to be called “Dear Leader” and started to forge his legitimacy through public action, to be formally proclaimed as successor in 1980.

The mission of Kim Jong Il was to elevate arts and architecture –the most visible and perdurable among them- at the level of propaganda and to increase their political content. He was the first political leader to publish treatises on arts such as cinema, music, mass gymnastic performances and architecture. The book on architecture was included in his complete works and published in 1991 (Kim 2006), containing ideas and messages on different issues related to architecture and urbanism and based on projects developed during the previous two decades of frenetic construction. The book titled “The Art of Architecture” is still considered one of the most important theoretical manuals on architecture in North Korea. The impact of the 40 years of Kim Jong Il’s vision of architecture has left an important mark on the city: all the main buildings and housing complexes

were built with his approval, mainly in 3 turns: around 1972 and 1982 – to celebrate Kim Il Sung’s birthdays and in 1988 at the time of the Seoul Olympic Games.

Following the proclamation of the Juche idea as the main ideological framework, the Korean Workers’ Party issued a directive to “overcome formalism and dogmatism by the establishment of Juche for the realization of more, faster, and better architecture” (Ahn 2014, 82). It marked the end of imported influences in North Korean architecture and the initial point of development—on large scale—of the neo national Juche architecture. 1972 was also politically important year: the new constitution was adopted, finally recognizing the separation of the two Koreas and Pyongyang as the permanent capital city of the Northern part. Until then, it was considered as a temporary capital awaiting the reunification where Seoul was intended to be the capital of the unified state. This fact was an important impulse for redesigning the city with some of the most prominent buildings containing explicit references to traditional architecture.

The book, “The Art of Architecture” was a systematization of the theory of the architecture national in form and socialist in content, as the specific Korean elements to express the form were not identified until 1960s. Throughout four chapters it developed all the relevant aspects of an architecture intended to be socially and politically significant art. The first chapter discussed the close relationship between architecture and society and argued that architecture cannot be supranational or supra-classist, but its main objective is to adapt to the particular socio-political context. The second explores the sources of inspiration, concluding that a good building is not “nihilistic” or “restorationist” concerning the national heritage. The desired solutions are innovative and original, that neither overestimate nor underestimate the national historic architecture. The third chapter is dedicated to urban and architectural composition rules necessary to create dynamic, stimulating and optimistic environment, and the fourth to issues of organization and management of the construction process. Political education and the strict following of the Party ideological lines are considered essential for the proper development and implementation of the new architecture in the North Korean society (Kim 2006; Prokopljević 2014).

The most prominent elements of the new architecture were based on examples of ancient royal palaces or temples, historically most relevant buildings in any culture, that nevertheless have never served as inspiration of the socialist realist models from Eastern Europe. Complex curvilinear roof structures known as *ryukak* (six-sided roof), *shakak* (four-sided) and especially *hapkak* (four-sided roofs with cut corners that form triangular pediments on the sides) have marked the silhouettes of the new cultural facilities. The glazed ceramic tiles, dark grey or green covered the curved eaves, with white frames on the superior ridge, similar to those of ancient palaces (Mateos et al. 2012, 119). However, the shape of traditional roof was never simply imitated. According to Kim Jong Il's dictate that the new North Korean architecture should innovate within traditional formal repertoire, the elements of the roofs were multiplied as if one sole building were a whole complex of palaces or temples. The other and most important innovation was obviously the reinforced concrete structure that replaced the wooden elements and also the logic of building in wood.

Under the roof traditional structure is extremely complicated and formally rich, based on small wooden brackets called *tougong* that determine the span between major columns and support large beams that form and carry the roof. The cantilevered covers with dominant component of geometry are traditionally painted in vivid colours expression importance of the building beneath. The new North Korean constructions like People's Palace of Culture (1974) or International Friendship Exhibition (1978) also had their roof placed over a set or colourful *tougongs*, however these were massively produced. Traditional structural element carved of wood was replaced by a purely decorative motive prefabricated in concrete. To some extent also the general traditional structure based on columns, beams and wooden or brick enclosure walls, was transformed and applied using similar concrete elements. Apart from the changed materiality, the most important characteristics of the new "Juche" architecture was its superhuman scale, quite distant from the traditional origin. Unlike the construction of 1950s, the public buildings of this period were explained through their vast surfaces of tens even hundreds of thousands of square meters. For instance, Moranbong Theatre was built in 1946 with surface of 5,700 m² and reconstructed in 2005 with total floor

surface of 13,100m²; The Great Pyongyang Theatre of 1960 has a total surface of 29,000m², while the theatres of 1970s and 1980s overcome 40,000m²: Mansudae Art Theatre 60,000, Hamhung Great theatre 70,000 or East Pyongyang Theatre opened in 1989 with 43,800m² (Corea Construcción 1991; Pyongyang Panorama, 1995).

Pagoda was another religious element used to inspire the new national architecture. Interesting for its simplicity, especially the stone pagodas of Koryo Dynasty, were translated into monuments like the famous Juche Tower (1982). In fact, out of Korean long history it is especially the Koryo period that had inspired the Juche architecture, as it was considered as genuinely North Korean, with its capital in the city of Kaesong, the only historic centre to be reconstructed by the new power. The national form was complemented by emblems of the new power, forged in the liberation and the revolutionary struggle. Party symbols and sculptural groups, abundant in all socialist architectures was enriched in North Korea by special floral relieves. The flowers used were representing the nation or its Leaders: Magnolia, Azalea or Kimilsungia, specially grown orchid dedicated to Kim Il Sung.

Three moments of inauguration of spectacular buildings marked the golden period of the creation of Pyongyang as the showcase of national progress: 60th birthday of Kim Il Sung in 1972, his 70th birthday in 1982 and the Opening of the 13th Festival of Youth and Students that replaced the frustrated co-organization of 1988 Summer Olympics with South Korea. The monumental complex on Mansu Hill with the Museum of Revolution was opened on April 15, 1972, and during the following years People's Palace of Culture, House of Culture February the 8th, Mansudae Art Theatre and Martyrs' cemetery on Taesong Hill, all of them exploring the combination of modern and traditional elements in their volumes, decoration and materials. The wave was crowned with opening of presidential residence, the Kumsusan Palace in 1976, an immense example of this mixture where large horizontal cornices and double cornices dominate visually and redefine the traditional cantilevered roofs including the concrete replica of the tougong brackets system. Kumsusan palace is known now for being the mausoleum of both Kim Il Sung and Kim Jong Il, with the floral decoration on façades, cornices and

balustrades based on kimilsungia and magnolia flowers (Kimilsungia 1999; Ho 1997).

The peak in the presence of traditional elements in monumental buildings of Pyongyang was reached in April of 1982 with openings of three most significant monuments: The Tower of Juche Idea, The Arch of Triumph and the Grand People's Study Palace on Kim Il Sung square. Each of them in a different way refer to elements of ancient Korean noble and religious architecture. Juche tower, the massive obelisk that celebrates the North Korean leading ideology and carries the torch that "illuminates the revolutionary path", is a 170m high stone pagoda that extends visually the Kim Il Sung square across the Taedong River (El Monumento a la Idea Zuche 1987). The Arch of Triumph celebrates the liberation of North Korea from colonial rule in 1945 and is crowned by three horizontal cantilevered cornices, with a relieve representing traditional *tougong* wooden supporting structure. Similar traditional arches celebrating liberation from colonial domination were built in Laos and Cambodia over the decade of 1960s. Grand People's Study house, a country's largest library (Palacio de Estudio del Pueblo 1982; Springer 2003; Petrecca 2005) presides Kim Il Sung Square, also enlarged in the time of the construction of the palace. Its form of an enormous imperial palace –with all the decorative arsenal of the modernized traditional elements- is a symbolic background for the military parades and national celebrations that take place on the square.

The last big event that marked the construction of Pyongyang representative physiognomy in 1989, marked also the final years of the existence of Socialist block and the relatively stable economic growth based on exchange mainly with the URSS and China, but also the strengthening of commercial relations with other continents, especially post-colonial African nations trough the movement of Non Aligned Countries. The failed intent to co-organize the Summer Olympic Games with South Korea in 1988 lasted for almost 5 years and comprised huge construction effort. Many sports facilities were built for the occasion: the Chongchun sports village with different pavilions for sports like basketball, volleyball, taekwondo, weight lifting, gymnastics, etc., The Mayday stadium on Rungna island, quantified as the largest in the world in that moment, with 150,000 seats. These constructions

promoted a renewed more abstract and more technological treatment of the national elements, that, following the Kim Jong Il's instructions still had to be clearly perceivable (Construcción en Corea 1991).

While the Mayday stadium was explained as a large magnolia, the national flower, and its façade had medallions with socialist realist relieves, the most striking feature was its cover of 16 double curved conoid lattices, supported on three-dimensional steel girders and finished with silver coloured zinc cover. The structural technology was an important element of these new construction oriented towards foreign visitors and intended to showcase the capacity of resolving complex structural requirements and generate imaginative shapes. In a way the construction on Rungna island formed an interesting mirror of the Jamsil sports complex built at the same time on the river Han in Seoul by the famed architect Kim Swoo Geoun (Jung et al., 2013; Ahn 2014).

The Kwangbok residential avenue was also designed as a replica of the Olympic village and marked the first development on the outskirts of the Pyongyang centre defined in the post-war city masterplan. The new avenue was preceded by Chollima residential avenue from 1970s and Changwangg Avenue from mid 1980s that have defined the modern residential macrostructure of Pyongyang. The structural base was the reinforced concrete prefabricated prism, arranged in three-dimensional manner (Kim 2006; Yim 2016) combining horizontal and vertical volumes. The aim was to achieve an innovative form and a stimulating urban environment where residential blocks are placed among greenery, public art and amenities. According to Kim Jong Il's theory, all the elements of the complex were to have a unifying formal elements: shape of windows or balconies, stripes of colour or special tiling, a sort of narrative thread to unify them and distinguish one avenue from another. It was also preferred to include some allusion to Korean tradition in form of a mural painting, mosaic or floral relief. These elements were also shared in public centres that enriched the cultural life of the area, especially the new building of Pyongyang circus with an abstract version of the traditional hapkak roof (Pyongyang Panorama 1995).

Kwangbok Avenue and especially the subsequent Tongil Avenue augmented extremely the urban scale to street widths of over 100m and innovated in the forms

of the buildings introducing curvilinear and circular floor-plans. The vertical plans formed of horizontal white and black -opaque-transparent- stripes of balconies and windows created a recognizable image of residential area similar to those that were growing on the outskirts of growing Chinese and South Korean cities as well as large cities of the socialist world. Despite plans to build around a million housing units by the end of the 20th century, the economic crises provoked by the fall of the socialist block meant a long delay in all economic activity.

However, during the same period of late 1980s and early '90s important hotels for international visitors were designed for Pyongyang. The most famous among them, the still unfinished Ryugyong hotel was supposed to provide lodgement for all the foreign visitors to the city. Hotels brought a different aesthetics and different appreciation of the urban space that prioritized the height, the view, transparency and colours. Hotel Koryo opened in 1985 with 45 floors and two revolving restaurants on the top that provided 360° view over the city (Pyongyang Koryo Hotel 2006). The hotel's twin towers introduce the semi-transparent glass surface resembling a curtain-wall in the central part of their façades, a flat glass surface that will mark the architecture of the new century. The simple white façades of the Yanggakdo hotel -opened in 1996 on the tip of the Yanggak island-, introduced reflecting glass on its multiple windows and the façade of the hotel's entrance level (Kang 1990; Petrecca 2008).

The uninterrupted reflecting glass surface will be the symbol of modernity in the first decades of the new century, at the time when North Korea started taking part in the high-rise race of East Asia. The architecture and construction during the last years of Kim Jong Il's period introduced many innovations in structural systems and cladding materials, a trend that is still developing through new projects.

4. Kim Jong Un 2011-actuality

Kim Jong Un is the last leader in the "red" dynasty of North Korea that assumed the power after the death of Kim Jong Il in December of 2011. A year before

he was already escalating in the military apparatus and was proclaimed general of the armed forces. Still, his youth –he was around 28 when ascended to presidency–, his lack of presence in the public life and absence of revolutionary activity, the traditional source of political relevancy, made necessary his constant pursuit of legitimacy in the first years of his rule. This quest has had two expressions: military exhibition –following the Songun policy started by his father– and intense building activity.

The construction has not only changed its appearance over the last decade, but has also changed the preferential use and the design of public spaces. In fact, the city organization started to follow different logic from the socialist city planning.

The first intervention, inherited from the previous period, opened in 2012 redesigned the entire Mansu hill including the new residential complex built around Changjon Street with 100,000 flats. The project was part of the city remodelling for the celebrations of the centenary of the Kim Il Sung's birth, and the Juche year N° 100. Located between Kim Il Sung Square and the great monument on the Mansu hill, a group of eight rounded skyscrapers, up to 40 floors high, were intended to modify the city's skyline. Their location near the Taedong River, directly accessed from the Okryu Bridge converted them into the first residential complex to value of the prominent position in the city as an important part of the quality of the real estate promotion. In a way this complex is the first among those that include features that can be related to free-market logic (Explore DPRK, March 2019).

The new Mirae Avenue is located on the shore of the Taedong River, between the Yanggak and Chungsong Bridges and consists of around twenty residential blocks, accompanied with commercial and public centres. The high standard housing complex was inaugurated in early November, 2015 to mark the 70th anniversary of the Korea Workers' Party foundation after only a yearlong construction process that included repeated visits of Kim Jong Un. Two important visual references frame the avenue: the twin towers of 40 floors dedicated to teachers of Kim Chaek University of Technology, finished in terracotta coloured tiles and the great tower of 53 floors with floor plan shape inspired by the atomic orbits and crowned with a pole with this symbol of science. Technology, new

energy, material like reflective glass, aluminium and stainless steel dominate the aesthetic of the complex (Naenara, May 2018; Wainwright 2018).

The flats of around 200 square meters, the average, are projected for the scientific community: teachers and researchers from different Pyongyang Universities. They were delivered fully equipped and furnished, so that their users, according to Kim Jong Un, could install comfortably, bringing along only personal items as if the state were providing the “hardware” for the correct operation of the creators of the technological progress. An important feature of this project is its location that reveals a change in understanding and creating the urban space: it initiates the expansion of the Taedong waterfront front and appreciates the land value as a function of its natural position and attractiveness as function of the views on the landscape or cityscape, regardless of the preconceived urban plan (Yim 2016).

The second spectacular housing project is the recently opened Ryomyong Street that leads to the Kumsusan palace, the Kim family mausoleum, near the historic rectorate of the Kim Il Sung University. In fact, the landmark of the development is one of the Eternal life towers –the obelisk built after Kim Il Sung’s death. It has been a star project of the government, much publicized and visited by Kim Jong Un on different occasions; also built in a record time of one year, between April 2016 to be ready for the Day of the Sun–Kim Il Sung’ birthday- on April 15, 2017.

With the second highest skyscraper of the city, the 70-floor green tower, the street is much wider than Mirae Avenue and is also a sign of the country’s economic development despite the international economic sanctions. The idea behind these huge and fast developments is that the people can appreciate the change as expressed by one of the participants in the construction: “In five years you can witness the change,” Rim Duk Jae – a 58-year-old factory section chief from Ryanggang Province – told NK News following the ceremony. “When you wake up you see different things and when you go to sleep you see different things, the Korean people have worked fast with strong energy and we have built many modernized buildings” (NK News, 2017). This was a message the government was keen to convey in the face of mounting economic sanctions against the country.

The Prime Minister said that the opening demonstrated that the limited external economic exchange due to the long lasting sanctions, were not having their desired effect, and that the DPRK was growing stronger (38 North, 2017).

The street itself also contained evidence of emerging trends in the city's relative construction boom with solar panels featuring on many of the buildings. While many of Pyongyang's residents have used privately owned photovoltaic solar panels in recent years to supplement energy needs, the appearance of large panels and solar powered street lights point to the government's increasing promotion of renewable energy (KCNA, March 2017).

On the other hand, both projects incorporate an increased level of diversification and design of public space, with green areas, urban furnishing, pedestrian walkways, cycling tracks, along with a variety of communal amenities from shops and restaurants to library, pharmacy, barber's, beauty salon, laundry, dressmaker and shoemaker. In the case of Mirae scientists' street, the improvement and arrangement of the river banks has been an important part of the project (North Korea Economy Watch, 2013).

Aside from the spectacular residential complexes, the first projects for public use of the Kim Jong Un era were destined to improve the quality of the leisure time of Pyongyang citizens. In order to make a visible statement about the nation's progress and the promising future, Kim Jong Un chose the fields unattended for decades: free, non-monumental, public spaces and facilities for leisure time activities that people would appreciate immediately (Naenara, February 2013, March 2016). In 2013 Munsu waterpark was opened with numerous swimming pools, waterslides, attractions, sports fields and restaurants, located in the Eastern part of the city. The project was supervised by the leader himself and constructed in a relatively short time with the help of the army. The park contains modern technology of sensors to monitor the water and ambient features in different circuits: temperature, flux, waves, moisture, etc. Among the similar leisure time centres, Munsu Park most evidently explores the imaginary of technological progress with transparent pyramids supported on three-dimensional steel beams and covered with glass curtain wall, along all the electronics employed in the operating circuits of different attractions (Wainwright 2018).

Other similar, though less sophisticated facilities preceded Munsu Park: Rungna People's Pleasure Island built next to the Mayday stadium (Naenara, October, 2013) or Mangyongdae funfair, neighbouring the historic complex of Kim Il Sung's birth house. Pyongyang Zoo was remodelled as part of the same effort for improving the individual free time consumption offer. The original centre, opened in 1959, was redesigned to include the natural history museum with spectacular reproductions of dinosaurs, video projections, and aquarium with water tunnel and dolphins pool. Designing spaces for free time individual activities was a new concept, linked with the new leadership contrasting the socialist tradition of too organized and monitored free time on the bases of collective activities, education or voluntary work.

Masikryong ski resort was also one of the Kim Jong Un's pet projects, located near the city of Wonsan with its recently renovated airport. According to Kim Il Sung's ideas, Wonsan and surrounding areas should be transformed into a very rich tourist zone, with the access to the sea and to the mountains. Masikryong is a big resort, of around 20 hectares, with 9 ski paths and a hotel that is said to be one of the most luxurious in the country. The resort opened in 2014 under a very close supervision by Kim Jong Un himself. He had recalled the "speed of Pyongyang", applied to the fast construction of housing blocks, to build this new space for leisure time, changing its title slightly to "Masikryong speed" (Choson Exchange, 2016). It is quite indicative that the idea of speed building, once applied to the resolution of the massive housing shortage, now forms part of a different campaign, of construction of high class leisure time centre.

In 2015 opened the Sci-Tech complex, the first spectacular construction on the tip of the Suk island in the Taedong River. Also built in a very short time and with active guidance of Kim Jong Un, the centre has an unusual silhouette, in line with the direct visual associations that inspired sports pavilions built in the late 1980s. The shape of an atom, with the large glass dome representing the nucleus and three surrounding corridors forming elliptical orbits of three smaller domes that represent electrons. The building is an illustrative response to the international doubts about NK nuclear program. As for its interior use, it has the extension of around 100,000 square meters and hosts offices and scientific labs,

with the visitors' area organized as a military museum with a large Taepodong missile exposed in the central glazed hall. Again the spectacularity of modern materials, reflective blue shaded glass and steel geodesic structure, place the focus on the material and technological progress that form the new architectural narrative.

The projects of the recent years are the materialization of the Kim Jong Un's ideas and prescriptions about architecture of the 21st century, similar to those of the 1980s that followed the guidance and texts by Kim Jong Il, finally published as his 1991 treatise on architecture. In December of 2013, the Brilliant Comrade, popular name for Kim Jong Un pronounced a discourse at the course organized for workers from construction sector, a text that has later been published and translated to different languages (Kim 2013). The leader called for innovation in design, not copies of foreign projects, but new unrepeatable forms, suitable with the North Korean socialist system that considers the people as its central point. The buildings should have in mind above all the commodity and quality of interior spaces but also introduce new artistic values capable of improving the cityscape. The new architecture should inevitably be linked with the progress and innovation in the construction industry and should stimulate the research of the new materials and construction techniques. Despite mentioning the expression of Juche character through architecture, Kim Jong Un doesn't describe any particular idea or preference regarding the architectural form or urban organization. Unlike Kim Jong Il, he rather stays on general ground and remarks that architecture should cause visual impact and be in line with the international trends. Another important point in his speech was the mention of the necessity of introduction of green technologies, the energy saving or energy generating devices, as well as the benefits of the presence of green areas in the city (Naenara, August 2018).

5. Conclusions

The built heritage developed during the 70 years long history of the DPRK constitutes almost the only architectural and urban legacy in the North Korea. The anti-colonial liberation struggle that coincided with socialist revolution called for

a complete renovation of artistic and architectural expression while the destruction during the Korean War converted Pyongyang into *tabula rasa*, an empty territory for the new construction. Like in other socialist states, the new architecture was creating a habitat for a new socialist society with standards and organization radically different from the tradition. Kim Il Sung followed the external influences, moreover as the Socialist Realism promoted by the Stalinist Soviet Union, theoretically included some national elements in the architectural creation. The early North Korean architecture was more European than Korean, sign of the new ideology but also sign that monumental buildings of neoclassical design were now open for the Korean proletariat. This period started the national tendency that has continued throughout the following decades, although the intentions, interpretations, materials and construction techniques have varied greatly, starting from the early post-war brick walls and concrete slabs built on site.

For the necessities of the fast reconstruction, Kim Il Sung imported experts, machinery and building technology and in the early 1950s this was the most important feature of the new construction. The second half of the same decade brought the imperative of prefabrication, practically at the same time Khrushchev impulsed the rationalization and industrialization of the construction process, fruit of his fierce critique of Stalin's monumental buildings and cult of personality. Apart from completely changing the city scape throughout the country, the new architecture also represented the development of the nation's industry.

A different political moment, the proclamation of the Juche idea as the state's ideology and the new constitution of 1972 that acknowledged Pyongyang as the capital city, were the meaningful frame for a creation of the new national style, based on the historicist forms and details enriched with revolutionary and ideological motives, although built in contemporary materials and techniques. At the same time the western architecture was also "returning" to historicist inspirations in terms of formal experimentation, extending the function of architecture to that of symbol and sign linked to the realm of discourse and communication. Architects like Robert Ventury, Charles Jencks or Ricardo Bofill embraced classical decorative forms and used them in an innovative, even ironic way, mixing them with contemporary structures, so reinforced concrete neo-classical columns and

pediments could easily be juxtaposed with reflective glass curtain wall.

The architecture developed during the golden decade of North Korean construction of 1980s, referred to as “monumental creation” in North Korean literature (Construcción en Corea 1991), could be interpreted through elements of postmodernism with visual allegories capable of easily communicating the building’s intentions and meanings to the large non-professional public. Outsized cultural and sports palaces crowned with reinforced concrete *hapkak* roofs with prefabricated *tougong* brackets redesigned the national form in a much larger scale and in more complex volumes. The interpretations of postmodern character of the late socialist and post-socialist architecture of 1980s and 1990s are being developed for different national contexts, and some insightful reflections even link concepts of socialist realist architecture of 1930s to 1950s with those of post-modernism (Loan 1999; Koolhaas, lecture 2014, min.32). In case of North Korea, Socialist Realist architecture was developed during the reconstruction after the Korean War, either with neoclassical or with traditional Korean influence. Of course, an important distinction must be made: while western postmodernism was the architecture of consumerism, intended to generate forms appealing to the large public, in the socialist world the architecture was extremely politicized, so the buildings had to be attractive for the proletariat and communicate correctly the ruling ideology.

The organization of the Olympic Games in South Korea, parallel to the country’s intense economic growth also in 1980s initiated development of the waterfront of the Han River in Seoul with Jamsil sports complex and Olympic village based on high-rise residential blocks. Although the co-organization of the games was finally frustrated, the construction of sports facilities and housing neighbourhoods followed similar principles. Before the crises that followed the disintegration of the socialist block, Pyongyang had started to modernize its skyline and to take part in the Asian high-rise race with hotels like Koryo, Yanggakdo and the unfinished Ryugyong intended to overcome the height of Eifel Tower.

The technological progress, new materials, sustainability and systems for saving and generating clean energy mark the architectural creation of the last decade under the leadership of Kim Jong Un (Pyongyang Times, July 2019). Although the

national form has not disappeared as the source of architectural meaning, new imaginaries tend to express the advances, the atomic technology and, above all, the capacity of the North Korean economy to contrast the international economic sanctions, energetic and material shortages. In public presentations of the new projects it is repeatedly underlined the “leader’s unshakeable determination to develop the country into a powerful socialist country by prioritizing science and technology” (Naenara, May 2018). In the contemporary architecture of Pyongyang, North Korea’s showcase city, the curtain wall of reflecting glass is used as a promise of the future progress but also as a cover of the precarious building conditions, low quality structural materials and unfinished projects.

References

- Ahn, C. 2014. "Seoul and Pyongyang: Architecture as the Embodiment of World Systems." *Crow's Eye View: The Korean Peninsula*, edited by H. Pai and M. Cho. Seoul: ARKO
- Armstrong, C. 2005. "Fraternal Socialism: The International Reconstruction of North Korea, 1953 – 1962." *Cold War History* 5 (2): 161-187.
- _____. 2009. "Juche and North Korea's Global Aspiration." Discussion Paper No. 65, APEC (Asia Pacific Economic Cooperation) Study Center, Columbia University, New York.
- Chaubin, F. 2011. *Cosmic Communist Constructions Photographed*. Cologne: Taschen.
- Frank, R. 1996. *Die DDR und Nordkorea: Der Wiederaufbau der Stadt Hamhung von 1954 – 1962*. Aachen: Shaker
- Goldhoorn, B. and Meuser, P. 2009. *Capitalist Realism. New Architecture in Russia*. Berlin: DOM
- Greco, C. and Santoro, C. 2008. *Beijing. The New City*, Milano: Skira editore.
- Groys, B. 2011 [1992]. *The Total Art of Stalinism. Avant-Garde, Aesthetic Dictatorship and Beyond*. London and New York: Verso.
- Halberstam, D. 2009. *La Guerra Olvidada. Historia de la Guerra de Corea*. Barcelona: Crítica.
- Hunter, H-L. 1999. *Kim Il Sung's North Korea*. Westport and London: Praeger.
- Loan, A. 1999. "A Postmodern Critic's Kit for Interpreting Socialist Realism." In *Architecture and Revolution: Contemporary perspectives on Central and Eastern Europe*, edited by N. Leach. London and New York: Routledge.
- Jung, I., Knapp, R., Ruan X., eds. 2013. *Architecture and Urbanism in Modern Korea (Spatial Habitus: Making and Meaning in Asia's Architecture)*. Hong Kong: Hawaii University Press.
- Lankov, A. 2002. *From Stalin to Kim Il Sung: The Formation of North Korea 1945-1960*. New Brunswick: Rutgers University Press.
- Mateos Miret, R. and Prokopljević, J. 2012. *Corea del Norte, Utopía de Hormigón: Arquitectura y urbanismo al servicio de una ideología*. Brenes, Sevilla: Muñoz Moya Editores.
- Meuser, P. 2012. *Architectural and Cultural Guide Pyongyang*. Berlin: DOM.
- Paperny, V. 2002. *Architecture in the Age of Stalin: Culture Two*. Cambridge: Cambridge University Press.
- Petrecca, Andrea. 2005. "Pyongyang Photoshop Urbanism." *Domus*, No. 882.

- Portal, J. 2005. *Art under Control in North Korea*. London: Reaktion Books.
- Prokopljević, J. 2013. Fronteras permeables de la arquitectura de Corea del Norte, *Inter Asian Papers*, No. 30, Centro de Estudios e Investigación sobre Asia Oriental Universitat Autònoma de Barcelona.
- _____. 2014. "Architecture for the Leader, City for the Masses." In *Crow's Eye View: The Korean Peninsula*, edited by H. Pai and M. Cho. Seoul: ARKO.
- Prokopljević, J. and Armstrong, C. 2015. "Socialist Postmodernism. Conceptual and comparative analysis of recent representative architecture in in Pyongyang, Astana and Ashgabat, 1989-2014." *Tiempo Devorado. Revista de Historia Actual*, No. 2. Universitat Autònoma de Barcelona. 98-118.
- Springer, C. 2003. *Pyongyang: The Hidden History of the North Korean Capital*. Saranda Books.
- Urban, F. 2009. *Neo-Historical East Berlin: Architecture and Urban Design in the German Democratic Republic, 1970 – 1990*. Farnham, Surrey: Ashgate.
- Yim, D., Luna R. and Prokopljević, J. eds. 2016. *Unprecedented Pyongyang*. Barcelona: Actar.
- Vale, Lawrence J. 2008. *Architecture, Power, and National Identity*. London and New York: Routledge.
- Wainwright, O. 2018. *Inside North Korea*. Köln: Taschen.
- Shen, Z. and Xia, Y. 2012. "China and the Post-War Reconstruction of North Korea, 1953-1961." NKIDP working paper No. 4, Woodrow Wilson International Center for Scholars, Washington DC.

North Korean Sources:

- Choe, Won Chol. 2008. "Chongryu Restaurant." *Korea Pictorial*. December, No. 630.
- Construcción en Corea. 1991. Pyongyang: Editorial de la revista ilustrada "Corea".
- Corea en el siglo XX. 2002. Los 100 hechos más relevantes. Pyongyang: Ediciones en Lenguas Extranjeras.
- El Monumento a la Idea Zuche, 1987. Pyongyang: Editorial de la Revista Ilustrada "Corea".
- Ham, Song Do. 2009. "Housing Development Pushed Forward." *Korea Pictorial*. December, No. 642.
- Han, Pong Chan. 2006. "Reconstructed Moranbong Theatre." *Korea Pictorial*. February, No. 596.

- Interview with the architects Tak Yong Su, Jong Myong Ho and Sin Tong Ho, Paektusan Academy, Pyongyang, 18-02-2009.
- Kang, Gwang Su. 1990. "Hotel." Pyongyang: National Directorate of Tourism.
- Kang, Yun Hui. 2007. "Reconstructed Okryu Restaurant." *Korea Pictorial*. April, No. 610.
- Kim, Chang Ja. 1984. *Immortal idea Juche*. Pyongyang, Ediciones en Lenguas Extranjeras.
- Kim, Han Gil. 1979. *Modern history of Korea*. Pyongyang: Ediciones en Lenguas Extranjeras.
- Kim, Jong Il. 2006. "The Art of Architecture." *Selected Works* vol. 11, Spanish edition. Pyongyang: Ediciones en lenguas Extranjeras, 114-275.
- Kim, Il Sung. 1983. "For the Successful Implementation of the First Five-Year Plan, Concluding speech at the Conference of the Workers' Party of Korea (March 6, 1958)." *Complete Works* vol. 12, Spanish edition. Pyongyang: Ediciones en lenguas Extranjeras, 90-118.
- _____. 1983. "Everything for the Prosperity and Development of the Country. Speech at the 3rd session of the Second Supreme Peoples' Assembly (June 11, 1958)." *Complete Works* vol. 12, Spanish edition. Pyongyang: Ediciones en lenguas Extranjeras, 277-298.
- _____. 1983. "For Higher Quality in Construction. Speech at a meeting of the construction workers of Pyongyang (December 25, 1958)." *Complete Works* vol. 12, Spanish edition. Pyongyang: Ediciones en lenguas Extranjeras, 526-536.
- _____. 1988. "Para Mejorar la Administración del Territorio Nacional y el Trabajo de Urbanización. Speech at the reunion with Ministry of Territorial Administration and Ministry of Urbanization (November 9, 1978)." *Complete Works* vol. 33, Spanish edition, Pyongyang: Ediciones en lenguas Extranjeras, 508-519.
- "Kimilsungia." 1999. Pyongyang: Foreign Languages Publishing House
- Kim, Kum Jin. 2006. "Mangyongdae 1.000-seated Restaurant." *Korea Pictorial*, December, nº 606.
- Kim, Thae Hyon. 2007. "First Minister of Worker Origin." *Korea Pictorial*. May, No. 611.
- Kim, Un Sim. 2007. "East Pyongyang Grand Theatre." *Korea Pictorial*, April, No. 610.
- Monument to Party Founding, 2005. Pyongyang: Korea Pictorial
- Pak, Yong Ho. 1997. *Kimjongilia Show*. Pyongyang: Kimjongilia Federation.
- Yon, Bom. 2009. "Apartment houses in Mansudae Street." *Korea Pictorial*, December, No. 42.
- Palacio de Estudio de Pueblo. 1982. Pyongyang: Ediciones en lenguas extranjeras.
- Primer titular obrero. 2005. Acerca de Choe Jae Ha, ex ministro de Construcción, in *Korea Today*, Spanish edition, November, No. 429.

Pyongyang Koryo Hotel. 2006. Pyongyang: Korea Pictorial.

Pyongyang Panorama. 1995. Pyongyang: Ediciones en lenguas extranjeras.

The Mangyongdae Schoolchildren's Palace. 1995. Pyongyang: Korea Pictorial.

Internet websites:

38 North: Pyongyang's Construction Boom: Is North Korea Beating Sanctions? By: Henri Féron, July 18, 2017 <https://www.38north.org/2017/07/hferon071817/>.

Choson Exchange, November 2, 2016, [https://www.chosonexchange.org/our-blog/2016/10/22/peed-battling](https://www.chosonexchange.org/our-blog/2016/10/22/speed-battling).

Explore DPRK: Changing Scenery of Taedong River, March 10, 2019. <https://exploredprk.com/articles/changing-scenery-of-taedong-river/>.

KCNA: Introducidas técnicas de arquitectura verde en construcción de avenida Ryomyong, March 14, 2017. <http://www.kcna.kp/kcna.user.article.retrieveNewsViewInfoList.kcmsf#this>

Kim Jong Un (2013), Abramos una era de plena prosperidad de la construcción materializando cabalmente la original idea del Partido sobre la arquitectura. Pyongyang <https://www.kfa-h.org/obras-kim-jong-un/>.

Naenara: Pyongyang Undergoes New Appearance, February 11, 2013, <http://www.naenara.com.kp/en/society/?natural+36+175>.

Naenara: New Appearance of Rungna Islet, October 10, 2013, <http://www.naenara.com.kp/en/society/?natural+34+193>.

Naenara: Pyongyang Undergoes Complete Change, March 30, 2016 <http://www.naenara.com.kp/en/society/?natural+21+1866>.

Naenara: Unha Scientists Street, May 7, 2018. <http://www.naenara.com.kp/en/society/?life+17+392>.

Naenara: Mirae Scientists Street, May 9, 2018. <http://www.naenara.com.kp/en/society/?life+17+3395>.

Naenara: Sci-tech Presentation in the Field of Green Architecture, August 24, 2018. <http://www.naenara.com.kp/en/society/?science+1+3667>.

NK News, April 13, 2017, <https://www.nknews.org/2017/04/north-korea-opens-ryomyong-street-in-pyongyang/>.

North Korean Economy Watch, May 23, 2013. City Beautification Law <http://www.nkeconwatch.com/2013/05/23/north-korea-passes-city-beautification-law/>.

Pyongyang Times: Research centre for architectural development, July 14, 2019. <http://www.pyongyangtimes.com.kp/?bbs=30657>.

Rem Koolhaas, 2014, "Russia for Beginners", lecture <https://www.youtube.com/watch?v=6oelsf4pdZg>.

The Guardian: Pyongyang is booming, but in North Korea all is not what it seems, by Tania Branigan, January 15, 2015. <https://www.theguardian.com/world/2015/jan/15/-sp-pyongyang-north-korea-kim-jong-un>.

Wilson Center Digital Archive. "Agreement on Korean technical personnel receiving training in China and Chinese technical personnel working in Korea made by the governments of the People's Republic of China and the Democratic People's Republic of Korea", (1953), doc. 114168.