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SCIENTISTS AND TECHNOLOGISTS OF NORTH KOREA RUSHED INTO THE PUBLIC AS THE 'ON-SITE RESEARCH PROGRAM' WAS LAUNCHED

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Abstract

In the end of 1950s, the economic growth in North Korea rose to an unexpected rate of 44%. The more vigorous the production activities became, the more important the role of science and technology became. So, the government of North Korea emphasized the improvement of science and the technological support activities to the production sites, such as factories, mines and farms.

Unfortunately, there were few scientists and technologists at the production sites, and to make matters worse, the scientists and technologists who were dispatched from Soviet Union to support the production activities, withdrew at the end of 1957. At that time, the members of 'the Academy of Sciences of Democratic People's Republic of Korea,' who were top-class scientists and technologists, rushed into the public. The policy was named as 'On-site Research Program'. As the On-site Research Program launched on January 3rd, 1958, the roles of the members of the Academy were changed. After the Program, they took the responsibility for not only the scientific research activities in the laboratories, but also the on-site activities.

The On-Site Research Program, "to do the scientific research activities at the production sites," made the members of the Academy sent to the production sites, and the reality of North Korea fully took into account in the scientific and technological activities. The scientific and technological system of North Korea started to be executed in self-supporting manner by the Program. Satisfying the good results of the Program, the leaders of North Korea expanded the execution domain of the Program into 'the ideology education project' and 'the technological innovation movement for the working masses.' After actively executed, the Program made many changes not only in the field of science and technology, but also in other fields, especially the production site, the education system, and the Chollima Movement. The very important result of the Program was the formation of North Korean-style science and technology, putting great emphasis on the enthusiastic participation of the workers and the dependence of resources, manpower and ability of science and technology. Later, the North Korean-style science and technology was given a peculiar name, 'Juche science and technology.'

1. Launching the On-Site Research Program

'The Academy of Sciences of Democratic People's Republic of Korea(established on December 1st, 1952)' was made to concentrate on professional scientific researches with the premise that its activities would be supported by

foreign countries. These are the reasons how a policy like this could be made. In those days, socialist allies like the Soviet Union and China supported the scientific and technological activities in North Korea. Also, the institutes annexed to the Ministries for production were in charge of the technological support activities for the production site, like recovering from the effects of the War under the help of the foreign countries. As the actual conditions were not good for running the Academy and the aforementioned annexed institutes according to the plan, the Academy was pressed into service frequently for technological support activities in the time of recovery. The Academy's technological support activities continued even after the time when the recovery project (1953~1956) was almost completed and the next project for economic development (1957~1961) started to be executed, though the frequency and the intensity were lowered because there was not sufficient manpower to substitute the Academy's activities.

Because professional research activities were so difficult, meaningful results could not be easily obtained, even though scientists and technologists devoted themselves to the researches. Therefore, some members of the Academy thought it reasonable that technological support activities should be treated as obstacles to research activities. The members of the Academy, who did not assent to the idea that technological support activities were equally important as scientific research activities, were reluctant to do 'the on-site activities' but were willing to do 'the activities in the laboratory.' The leaders of North Korea were very discontented with these activities. As they had the idea that science and technology is 'direct productivity' and that theoretical research unlinked with practice is meaningless, they could not admit the change where the activities of the Academy became more and more estranged from the production site. Even though the Academy was established for professional scientific researches, the change of the circumstances made the Academy criticized for their aforementioned activities. The recovery project from the effects of the War and the construction project of product equipments became the most important activities at that time.

In consequence, the Second Presidium of the Academy(1956~1958), which put the operation of the Academy on track, started making efforts to intensify 'the tendency toward the production site' of the Academy and to induce the scientific research to be linked with practice. These efforts, to intensify 'the tendency toward the production site,' became more radically important after the change of international circumstances and national management lines. As the sudden diminishment of foreign assistance derailed the resource supply plan and technological support activities for the production site, the Academy had to actively rush to the production site. The Academy, originally intended to concentrate in scientific research, had to give technological assistance for the production site by controlling the institutes annexed to the Ministries for production, which could not sufficiently provide support activities by themselves.

'Going to the production site' deserved to be actively executed for the Academy itself, because scientists and technologists of the Academy could make use of the equipments at the production site for their researches. At that time, the sudden diminishment of foreign assistance made it also more difficult to get experimental equipments by the Academy itself.

The equipments at the production sites were repaired by the advanced foreign technology, and the first operators of the equipments were directly instructed by foreign technologists. The operating skill could be handed over by the Bonus System for the Pass-on-technique and the Pass-on-skill System at the Work Place[1]. These situations at the production sites show that the equipments and the operating skill had reached a state of low-level stability or a higher state than the Academy's, at least on the equipment side.2

Consequently, the fact that the Academy could give technological support activities to the production sites and the production sites could give the equipments and advanced technology to the Academy for their researches, rapidly executed the 'going to the production site' policy. That is, the change of the national management line, such as making

‘the line for the independence of national economy’ based on ‘the preference of heavy industry development,’ made the Academy rapidly intensify their ‘tendency toward the production site.’

The leaders of the Academy, who wanted to keep pace with the change of North Korean society, started to strengthen the technological support activities for the production sites under the name of ‘The On-Site Research Program,’ which Kim IlSung instructed on January 3rd, 1958, “Let scientists and technologists go into the production sites and do research activities at the spot.”3 The reason why the president Kim IlSung, the highest chief of North Korea, directly instructed the mission was that the urgent circumstances of North Korea gave him no other choice but to use his authority as the supreme head to send the members of the Academy to the production sites. Though the members did not reach unanimity of opinion for the on-site activities until then, there was not enough time for their survival. The change of the Academy’s role would have two contrary results: it would improve scientific research activities and technological support activities both, or it would spoil them both at once. Therefore, the consensus had not been reached even though the discussion took over a year. The intensification of the line for the independence of the national economy weakened the national capacity, such as money and resources, and this change made it difficult to support scientific research activities and technological support activities at once. Hence, the leaders of the Academy closed the discussion for consensus in a hurry and concluded that the whole capacity of the field of science and technology had to be concentrated to support the production activities, to solve the emergent scientific and technological obstacles by themselves.4

The initial plan of the On-Site Research Program was just to give technological support which was urgently needed at the production sites, and to be directly supplied with the equipments and resources for support activities from the site. That is, the aim of the Program was to closely connect the Academy and the production sites while the members of the Academy were solving the urgent technological problems at the production sites. It could be said that the On-Site Research Program was the intensified version of the policy ‘confirming the connection with the production site’ in ‘the 10-year Project for the Development of Science and Technology (1957~1966)’, but the initial policy was a little conservative. The policy ‘confirming the connection with the production site’ was just limited to selecting the research topics and applying the research results to production, but the On-Site Research Program was actively intensified to connect all the activities of researches, especially scientific research activities, with production. The domain of scientific research activities was broadened to the production site, which had not been a place for research but just production. The On-Site Research Program intensified ‘the collective activity for scientific research,’ which was one method for research activities in North Korea. The collective activity of scientific research, which concerned only the scientific institutes until then, came to include all the fields related to scientific and technological activities, such as institutes of the Academy, the institutes annexed to the Ministries for production, universities and the production sites. It can be said that the initial purpose of the collective activity for scientific research was just for the inside field of science and technology, and after then, its purpose became much larger to construct a national cooperation system between the field of science-technology and the production site for the development of national economy.

2. The Relation between the On-Site Research Program and the Formation of North Korean-Style Science and Technology (Juche science and technology)

In the latter half of 1958, 6 months after the Program was launched, the leaders of the Academy started to evaluate

the activities of the Academy positively. ‘Glorious victory of our party’s science and technology policy’ was the first and typical article, full of self-confidence, in *Tongbo*.5 It could be said that the change of the evaluation was directly caused by the On-Site Research Program, because the Program was directly pointed out as ‘a important policy which makes epoch-making development in our research activities of science and technology,’6 and the Program was stated as a very important policy in *History of Development of Science and Technology in D.P.R.K.: After Liberation Vol. 1 (1945-1970)* which appraised the activities of science and technology in North Korea.7 That is, the On-Site Research Program was the core policy of science and technology, pursued by North Koreans themselves, and the leaders of the Academy anticipated its results very much.

The government, content with the results of the On-Site Research Program, decided to systemize and legislate it.8 The laws, passed on June 11th, 1958, according to the conclusion of the Fist Party Conference, had special provisions for urgent tasks of science and technology. The Program was stated in the laws as the solution for the aforementioned tasks.9

After then, the execution of the Program intensified the technological support activities of the Academy and tightened the connection between the Academy and the production sites. The scientific and technological activities became more sensitive to the production sites. After the line for the independence of national economy became more strengthened, the resources for economic activities, such as fuel and raw materials, had to be self-supported. The change of the production sites led the Academy to concretely realize the North Korean-style science and technology, which emphasizes the self-sustenance of resources, manpower and ability of science and technology. The word, ‘Juche,’ became officially used in the field of science and technology since 1958,10 such as: “we must have a correct understanding of Juche in science and technology, closely connected with our national circumstance,”11 “we must adopt [the advanced country’s] science and technology and creatively apply them to our country with Juche,”12 and “we must strengthen the Juche in scientific and technological activities and make science and technology to contribute to our revolution.”13

The On-Site Research Program launched at the same time, in 1958. Because the Program was discussed in the above articles, where the word ‘Juche’ started to be used in the field of science and technology, and the Program was introduced to intensify the self-supporting activities of science and technology in North Korea, it can be argued that the formation of North Korean-style science and technology, named ‘Juche science and technology,’ was due to the On-Site Research Program.

One of the reasons how the Program could be executed quickly and actively, was that the field of science and technology was adequately prepared to do self-supporting activities. The scientists and technologists who were educated in the time of Japanese colonial rule and already gathered in North Korea, named ‘Oraen (old) scientist and technologist,’ such as Li SeungKi, Ryeo KyeongGu, and Li JaeEop, had been supported in their researches since the Academy opened, so their research topics had already passed the theoretical research stage and were waiting to be applied to the production lines in 1958. Their research activities were directly backed by the government with the policy, ‘we must support the fields which can yield earlier, or the scientists and technologists who have been ready, first of all.’14 The Oraen scientists and technologists had the direct or indirect experience to find the substitutions in the Second World War, so their research topics were already oriented to be sensitive to the actual conditions of the country.

In addition, because the policy ‘when scientists and technologists select the research topics, they must put the topics first which can produce good results after being applied to the production sites’ was already launched, though not actively, the results of scientific researches could have the characteristics, to be easily applied to the production sites.

Also, the Academy's experience of joining the recovery project, and the fact that there were many new Academy members who had worked for a long time on the spot, can persuasively explain how the policy could be changed somewhat radically.

3. Upgrading the On-Site Research Program

After being launched, the driving of the On-Site Research Program was upgraded more rapidly and after all, entered a new phase with extended meaning. It took no more than one year. As the fragmentarily suggested meanings of the Program were gathered and adjusted, the purpose of the Program was broadened from the technological support activities and the sharing of equipments and resources between the Academy and the production sites, to the ideological education activities for scientists, technologists and workers.15 As a matter of course, it cannot be said that there was no examination of the Program's usefulness in ideological education at first. However, the leaders of the Academy could not emphasize positively the ideological education side of the Program because it would provoke another opposition. They were so busy persuading the members of the Academy, who were reluctant to do their researches at the spot, putting stress on the advanced technology and equipments on the production sites, so the Program could not be used for education at first. Luckily, launching the Program could have solved the problem, the lack of connection between the Academy and the production sites, but the ideological problems of scientists and technologists were not weakened. Moreover, the ideological problems became the obstacles of the Program. As the Program went on track, the ideological education side of the Program stood out in strong relief.

In those days, some of the scientists and technologists were criticized for the ideological problems, such as their dogmatic attitude for Soviet science and technology, immodesty, disdain of labor, research topics aloof from reality, their tendency of individualism, and the lack of loyalty to the Party. For these problems' solutions, the Program was worth noticing because of the following critical characteristics: the initial purpose of the Program was to intensify the independence of science and technology; it was the Party, not the Academy, which was in charge of the Program; by the Program, scientists and technologists had to leave the laboratory and go to the production sites, where the production activities for the national economy were urgently executed, and they had to co-work with the laborers at the spot.

The On-Site Research Program was expected to be beneficial for the ideological education of the on-site laborers, too. Until the Program was implemented, the laborers at the spot were negative toward the notion of solving the problems confronted within the production activities, by themselves. However, with the Program, the experience of solving the problems by themselves with the help of scientists and technologists, changed their minds in a positive direction. The workers could escape from the fear of science and technology, the passive attitude and the dependent tendency, which was called 'mysticism about technique.'16 Also, because scientists and technologists, sent to the production sites after the Program, taught science and technology to the workers, the Program improved scientific and technological ability of the workers. According to the abovementioned effects of the Program, the leaders of the Academy decided to intensify the Program. They anticipated that the technological supports for the production site would become more active, that the ideological education for scientists, technologists and workers would have good effects, and that the connection between scientists, technologists and workers would be stronger.

Furthermore, the On-Site Research Program made clarified the idea of the scientific research as direct productivity and the thought of the production activities. The consensus of the masses was very important in North Korea from early

on, and it became even more important because of ‘the Chollima Movement (started from December 1956)’, which showed the real effects of the unanimously enthusiastic masses on productivity. The experience of the Chollima Mmovement made a new middle stage, namely that the ‘workers must have the ability of science and technology,’ between the starting stage of improving productivity and the final stage of advancing science and technology.17 That is, science and technology as direct productivity could be achieved by the masses, which had the ability of science and technology within themselves. The change suggested ‘the scientific and technological movement for the working masses’ and ‘the technological innovation movement for the working masses,’ their purposes to teach the laborers science and technology with the help of scientists and technologists executing the On-Site Research Program at the spots. Also, ‘the public lectures for science and technology’ were held at the production sites and ‘the dissemination project of scientific and technological knowledge’ became active. One of the characteristics of North Korean-style science and technology, ‘on the basis of the people’s creativity,’ made its concrete form after these procedures.18

As the centers of the scientific research activities were to solve the problems at the production sites, the researches became a part of the production activities and reversely, the production activities became accepted a part of the scientific research activities. The production innovators and the new design originators, who had no formal education, could be chosen as the researchers of the Academy with the recognition of their scientific and technological talent. They could present their field experiences at the academic conferences, which were treated equally with scientific research results.19

‘The research program by correspondence’ was made to promote innovators and originators writing dissertations and theses with their field experiences, and to allow them to keep their positions at the production sites while writing their papers.20 The appearance of the program showed that the distance between the scientific research and the production activities became shortened. The program, to do scientific research without leaving their production sites, was to back up the already existing program of researcher education. With the research students keeping in contact with the production sites, they could sustain the idea of attaching importance to the on-site activity while conducting scientific researches. Also, as the ways for study became diversified, the talented workers for science and technology, such as innovators and originators, could study advanced science and technology and became high-level scientists and technologists.21 It can be said that the research program by correspondence was ‘the On-Site Research Program for educational activities’ as well as ‘the on-site educational program,’ because the educational activities could keep pace with the production activities by the program. Cooperation between the educational institutions and the production sites could be achieved by the program, with similar effects as the ‘Kongjang (plant) University,’ launched in 1960. It was a rare case that 400 innovators and originators were induced to be research students from 1958 when the On-Site Research Program launched, to 1962. It is hard to find a similar case in other socialist countries.22

At first, the aim of the On-Site Research Program was simple, to do the scientific research activities and the production activities at once on the spot, with sending the members of the Academy to the production sites and constructing the On-Site Research Centers. However, after the Program went on track, the meaning of the Program was changed and extended. The Program embraced other aims, such as the ideological education project, the technological innovation movement for the working masses, and the scientists and technologists gathering project. At last, the On-Site Research Program became a representative program of the Academy in North Korea.

4. The Influences after the On-Site Research Program was launched

After the Program executed, the production sites became very important places for scientific and technological activities, as well as for economical activities. With the on-site activities of the Academy, the shortage of technological support activities could be fulfilled, and many emergent troubles, happen in the production sites, could be solved. As the number of scientists and technologists, sent to the production sites, became larger, 'the technological innovation movement for the working masses' and 'the dissemination project of scientific and technological knowledge' were actively executed. According to these executions, the mysticism about technique among workers was smashed and the distance between worker and scientist-technologist became narrowed. The changes of the production sites took an important role to improve the scientific and technological level in the spots. The firm foundation, on which the public became a hard core of scientific and technological activities, as repeatedly emphasized in North Korea, started to be built up since then.

With the influence of the On-Site Research Program, which made the domain of scientific research activities broadened to the production site, the domain of university educational activities was broadened to the production sites. It was 'the Kongjang University' which was founded in these situations since 1960. The Kongjang University was erected mainly at the big-scale plants by themselves, and became regular course of higher education from the first time. With the educational system as Kongjang University, the workers could have university education without leaving their production sites. Therefore, the Kongjang University was established for keeping many workers on the spot who had higher scientific and technological knowledge. To make Kongjang University, the chief manager of the production site became the president of the Kongjang University, the equipments of the production site were utilized as the educational equipments, and the scientists and technologists, who were already sent to the production sites, became teachers for science and technology. They made the teaching materials by themselves, too.[23] That is, the Kongjang University system could be launched because of the On-Site Research Program. Scientists and technologists, whose roles were very important and main in Kongjang University system, started to be sent to the production sites after the Program, and their dramatically increased number made the Kongjang University launched. In cooperation with 'the research program by correspondence,' the Kongjang University made the new education system work, which was intended to guarantee the worker's regular education from their hard work in the fields. These policies could be said the line for intensifying 'the tendency toward the production site' in education, similar with 'the tendency toward the production site' in science and technology. The education system changes in 1959 and 1967, which intended to make the science and technology education strong, were the following policies of the line.

The Program played a main role in the on-site activities becoming the center of all activities in North Korea and the development of science and technology directly influencing the productive activities. However, there were not only good effects but also bat effects in executing the Program. With the Program launched, the North Korean-style science and technology could be formed on the one side, and the scientific and technological activities could be distorted on the other side. For the development of science and technology, the professional scientific researches are necessarily required and for the effective professional researches, special conditions are inevitably needed, in which scientists and technologists could concentrate on their research topics without any hindrance.

However, the Program could not match with the conditions sufficiently, because the Program's goals were to do professional research activities together with supporting the on-site production activities. Because the Program could exercise its best power over the industrialization stage, the Program made good results from the end of the 1950s when there were many ripened researches ready to be industrialized, but its effect could not last until the end of the 1960s or

the beginning of the 1970s when the shrinkage of professional research activities made the development of fundamental science and source technology disturbed. It was very harmful that there was no time to progress researches to be ready for industrialization during the on-site activities of the Program. As the leaders of the North Korea appreciated this weak points of the Program, the Pyongsong science city, constructed from 1968, have been designed to include only research institutes and experimental factories. With the Pyongsong science city constructed, the Academy could have the environment for professional research activities.[24] Though there were a few faults, the Program has been the representative policy of science and technology in North Korea still now.

5. Conclusion

The On-Site Research Program, which had heavy influence on the change of the Academy, the production sites, educational system, the Chollima Movement and the economic activities like above, must be considered a main factor in reforming the North Korean society at least in the 1950s and 1960s. With the Program, the North Korean science and technology could have formed its peculiar characteristics. The scientific and technological activities could be performed just relying on the self-resources, the self-technology, the self-manpower and the enthusiastic participation of the workers. The experience on the production sites could be treated equally with the formal education. Most of all, as the actual conditions of the production sites could be reflected in the activities of science and technology, the policy of 'tendency toward the production sites' could be intensified. The North Korean-style science and technology, named the Juche science and technology, could be formed on the foundation of these characteristics. After the Program, the scientists and technologists of North Korea should be the on-site researchers, not the laboratory researchers, as well as ideologues and specialists.

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[1] About the Bonus System for the Pass-on-technique and the Pass-on-skill System at the Work Place, see Kim YeonChul, *The Process of Industrialization and the Politics of Factory Management in North Korea(1953-1970): The Socio-economic Origins of the Suryong Political System*, Doctorial Dissertation (Seoul: Sung Kyun Kwan University, 1996), pp.169-170.

[2] "For Guaranteeing the Results of 1958 Scientific Research Policies in Strict Accordance with the Policies of the Party," *Technological Science* 1958(1) (Pyongyang: the D.P.R.K Academy Publishing House), pp.1-5; Kim InSik, "Let the Scientific Research Activities Close to the Production Sites," *Gwahakwon Tongbo* (a journal of D.P.R.K. Academy for study and information) 1958(4), pp.44-48.

[3] The Direct Instruction of the On-Site Research Program by Kim IlSung could be found in "The Conditions of Executing the Tasks which were Suggested to Scientists and Technologists at the Third Party Congress, and Remained Tasks," *Tongbo* 1959(3), pp.1-8.

[4] Kim InSik, "Let the Scientific Research Activities Close to the Production Sites," *Tongbo* 1958(4), pp.44-48.

[5] Baek NamUn, "Glorious Victory of our Party' Scientific Policies," *Tongbo* 1958(4), pp.1-8.

[6] "The 1957 Summing-up Report on the Work of the Academy," *Tongbo* 1958(2), p.20.

[7] Yoon MyeongSu, *History of Development of Science and Technology in D.P.R.K.: After Liberation Vol. 1 (1945-1970)* (Pyongyang: the Science and Encyclopedia Publishing House, 1994), pp.122-124.

[8] Baek NamUn, "Glorious Victory of our Party' Scientific Policies," pp.1-8.

[9] "Law of the First 5-year Plan for National Economy Development (1957-1961)," *Rodong Sinmun* June 12th, 1958.

[10] The first time when 'Juche' was used officially by Kim IlSung, was December 29th, 1955 in the speech, "On establishing Juche firmly with eliminating dogmatism and formalism in the ideological work," Li JongSeok, *Study on the Workers Party of Korea: Focusing on the Guiding Idea and the Change of the Structure* (Seoul: Yuk., 1995), p.35.

[11] Baek NamUn, "The 5-year Report after Foundation of the Academy," *Tongbo* 1958(1), p.16.

[12] Baek NamUn, "For the Epoch-making Development of Science," *Tongbo* 1958(2), p.15.

[13] "For Guaranteeing the Results of 1958 Scientific Research Policies in Strict Accordance with the Policies of the Party," p.2.

[14] Do BongSeop, "On Firmly Establishing the Collective Research System for the Development of Crude Drug," *Tongbo* 1957(1), pp.7-12.

[15] Kim InSik, "Let the Scientific Research Activities Close to the Production Sites," pp.44-48, is a synthetic report of the On-Site Research Program.

[16] Baek NamUn, "The Summing-up Report of 3-year Project of the Academy (1956-1958)," *Tongbo* 1958(6), pp.5-15.

[17] Li MyeongSeo, "The Great Meening of the September Plenum of the Party Central Committee in Socialist Construction," *Tongbo* 1958(5), pp.9-17.

[18] Yoon MyeongSu, *History of Development of Science and Technology*, p.7.

[19] "The Nationwide Scientific Discussion on Technological Science," *Tongbo* 1958(6), pp.56-60.
[20] Kim InSik, "Let the Scientific Research Activities Close to the Production Sites," pp.44-48.
[21] Kim InSik, "Let the Scientific Research Activities Close to the Production Sites," pp.44-48; Baek NamUn, "Our Nation's Development of Science and Technology during 15 Years after Liberation," *Tongbo* 1960(4), pp.1-9.
[22] Kang YeongChang, "Accelerate All-round Technological Reconstruction and Cultural Revolution with Carrying through the Party's Policies," *Tongbo* 1962(6), pp.1-11.
[23] Lee EunYeong, , "Study on the Kongjang University: Focusing on 'the Connection between Education and Labor,'" Master's Thesis, Seoul National University, 1993, pp.59-96.
[24] Park BongSong, "To construct the Science City," *40 Years of Juche Science with the Leader* (Pyongyang: the Social Science Publishing House, 1988), pp.78-88; Kang HoJe, "North Korean Academy of Sciences and the On-Site Research Program: Shaping of the North Korean type Science and Technology," Master's Thesis, Seoul National University, 2001 pp.307-325.