

Some Heavy Tools in Chŏn-gok Palaeolithic Site

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쑤궈 구석기 유적출토 大型 石器

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요 약

경기도 연천군 전곡면 전곡리, 구석기시대유적을 1979년부터 1980년 까지 3차에 걸쳐 발굴하는 도중에 대단히 중요한 5점의 대형 석편석기와 1점의 석핵을 지표에서 채집하였다. 이 거대한 석편은 석기로 간주할 수 있고 1점의 석핵은 이러한 석편을 떼어내고 남은 것이었다. 주의할 가치가 있었던 것은 이러한 석편을 떼어내는 방법이 대단히 특수하다는 점이다. 이 방법은 남아프리카와 중국의 匭河 및 丁村유적에서 알려졌다. 중국의 고고학자들은 이 방법을 “投擊法”이라고 부르고 미국 고고학자 Sampson은 “Block-on-Block Technique”라고 부른다. 위의 방법으로 떼어낸 석편석기가 전곡 구석기시대 유적의 지표에서 채집된 것은 전곡 구석기문화의 성적이 상당히 복잡한 복합문화라고 생각하게 만들어 준다. 그리고 이 석편은 전곡 구석기시대 유적의 편년을 설정하는 데 중요한 자료의 하나가 될 것으로 믿는다.

I. Preface

Since 1964 palaeolithic sites have been excavated in Korean Pininsular. Up to date 12 sites have been known. They have been found “in situ” in strata. There are seven in the cave deposits, five in the reddish clays or yellowish clays in open air site (Fig. 1).

Five open air sites are distributed along the Tuman River, the Hantan River, the Southern Han River and the Kūmgang River.

Three among the five open air sites have been reported before such as Kulpo, Chŏn-gok and Sŏkchangni site.

Two palaeolithic sites, Ming Ori and Sou yang-kae, are situated by the Southern Han River, and they were excavated in 1983. A report of these findings will soon be published.

The present paper deals with the heavy tools from the Chŏngok site, including the five large pieces of the flake and a core which were found on the surface.

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The site of Chŏn-gok, Yonchon district, Kyŏng-gi Province is situated 38 01' 16 N, 127 03' 45 E and at 61 meters elevation, about 50km north of Seoul, along the Hantan River.¹⁾

The artefacts of this site found "in situ" or on the surface show extremely complex characteristics.

II. Heavy duty tools

The raw materials used by palaeolithic men in Chŏn-gok to make their tools are chiefly quartz or quartzite.

Five large flakes are nearly the same in shape and in size. Most of these flakes do not show signs of retouch, but some of them show traces of utilization. Only one piece can be considered as a real implement.

Large implements are generally controlled by a primary linear rock mass, and large flakes are usually struck off unprepared cores.

The group of implements have in common minimum trimming and less standardization in form than do the implements in other categories. There are the same phenomena in East Africa (formed during the Late Acheulean), Kehe and Tingtsun (China). The heavy tools usually exceed 14cm in length, and were made on compact rock masses. The major portion of the implement surface retains the original cortex.

The block-on-block technique were used in the Chŏn-gok site as were in Sangoan,²⁾ Kehe,³⁾ Tingtsun⁴⁾ that is a large block was held in both hands and struck against the edge of a heavy boulder. Flakes removed by this method have natural (plain) platforms, obtuse points of percussion, and large cones of percussion, and broad ventral face.

A core was collected on the surface of the same site, and it had four flake scars, and sinuous edges were produced by alternate flaking. It is a rectangular core produced by this method. It is made of quartz. Its dimensions are 40×29×10cm (Photo. 1).

The five flakes are as follows:

The first flake is a pan in shape, and has a natural platform, obtuse point of percussion, 65 degrees of the flake angle (The angle was formed between the axis of percussion and the central axis of the flake). Most of the dorsal face is natural cortex and roughly trimmed to form an irregular concave edge. The ventral face has twin bulbs, and a large conchoid, a trace of utiliz-

1) Choi Mou-Chang, "Report of the Third Excavation in Chon-gok Palaeolithic site," *Im Mun Kwa Hak Non Chong* (Kon-Kuk University), Vol. 14, 1982, pp. 207—239.

See a) Choi Mou-Chang, "The Palaeolithic Age in Korea," *Journal of Academic Affairs* (Kon-Kuk University), Vol. XXIV, No. 1, 1981, pp. 29—46.

b) Kim Won-yong, Choi Mou-Chang, Chung Young-Hwa, "The Palaeolithic Culture in Korea," *Academy of Korean Studies*, Vol. 81—1, 1981, pp. 49—96. Fig. 1—98.

2) C.G. Sampson, *The Stone Age Archaeology of Southern Africa*, New York and London: Academic Press, 1974, p. 109.

3) Chia Lan-po, Wang Tze-Yi, *Kehe* (An Early Palaeolithic site in South-Western Shansi), Academy Press (China), 1962, p. 39.

4) Pei Wen-Chung, *Report on the excavation of Palaeolithic sites at Tingtsun, Hsiangfjenhsien, Shansi Province, China*, Science Press (China), 1958, pp. 110—111.

ation at the distal part (opposite to butt). It is made of quartz. Its dimensions are $178 \times 147 \times 46$ mm and 1320g. in weight (Fig. 2) (Photo. 2).

The second flake is a pan in shape, and has a natural platform, obtuse point of percussion, 60 degrees of flake angle. Dorsal face is natural cortex. The ventral face has a large cone of percussion, and a trace of utilization at the distal part (opposite to butt). It is made of quartz. Its dimensions are $152 \times 142 \times 65$ mm and 1452g. in weight (Fig. 3) (Photo. 3).

The third flake is a pan in shape, and has a natural platform, obtuse point of percussion, 90 degrees of flake angle. Most of the dorsal face is natural cortex and is roughly trimmed at the distal. The ventral face has a large conchoid. It is a real tool called a chopping-tool. It is made of porphyry. Its dimensions are $141 \times 118 \times 49$ mm and 970g. in weight (Fig. 4) (Photo. 4).

The fourth flake is also a pan in shape, and has a natural platform, an obtuse point of percussion, 70 degrees of flake angle. The ventral face does not show any bulb or conchoid. But there is a trace at the distal. It is made of quartz. Its dimensions are $177 \times 146 \times 87$ mm and 1900 g. in weight (Fig. 5) (Photo. 5)

The five flake has a rectangular form, and has a natural platform, an obtuse point of percussion, 80 degrees of flake angle. The dorsal face is a natural cortex and is roughly trimmed on one side. At least four small flakes had been removed from the trimmed side. The ventral face is a large conchoid. The flake is a core, and is made of quartz. Its dimensions are $146 \times 121 \times 65$ mm and 1850 in weight (Fig. 6) (Photo. 6).

The above-mentioned flakes are large, heavy and crude, and bear one or twin bulbs and natural platform.

Chinese palaeolithic archaeologists have conducted experiments in which they struck a large block with a small block, and thus obtained similar flakes from such a durable material as hornfels. It is thought, therefore, that the Tingsun Man made his flakes by this method.⁵⁾

The Chŏn-gok flakes are somewhat similar to those named "Tingsun Industry", but the former differs from the latter in having no levallois technique and no recognized types.

III. Conclusions

This comparison between Chŏn-gok and Tingsun industry yields the age of the Chŏn-gok flakes, which is believed by the author to be the middle palaeolithic.

According to the typology of the Chŏn-gok industry is more or less contemporary with the Tingsun Industry but different in facies.

I think that the palaeolithic culture in Korean Peninsular seems to have developed independently, owing to coexistence with the heavy duty and light duty in the site of the Chŏn-gok site.

Jia Lanpo, a Chinese palaeolithic archaeologist, noted. "The palaeolithic cultures in north China have at least two traditions: The Kehe—Tingsun and the Choukoutien Locality—Zhiyu. The two traditions shown in the chart seem to have developed independently. Take, for instance, the stone balls. Bolas, as hunting gear, were common in the Kehe—Tingsun tradition, but this weapon has

5) Pei Wen-Chung, *Ibid.*, pp. 110—111.

not been found in Choukoutien Locality I—Zhiyu transition".⁶⁾

The implements of the Chŏn-gok palaeolithic site consist of the heavy duty (tool), so-called handaxes, picks, and light duty (tool), side-scrapers, end-scrapers, notches, denticulates and borers. The latter is more numerous than the former. It includes also many bolas.

From a geographical point of view, Korean Peninsular is relatively close to Choukoutien Locality I—Zhiuy, microlithic tradition north China (Hopei and Honan province).

Moreover, Jia Lanpo thinks that North China is the origin of the microlithic culture of East Asia, North Asia and North America.⁷⁾

After J.D. Clark, an american palaeolithic archaeologist, briefly visited the site of Chŏn-gok in 1982, he noted there is no evidence that the levallois technique was used.⁸⁾ But there is evidence of the use of the levallois technique. Clark also noted "The Chŏn-gokni occurrences are certainly not a typical Acheulian but they show some affinities with the kinds of Assemblages found in Africa at the time range where Heavy Duty core—axes and picks grouped under the term 'Sangoan facies' are believed to be special activity components of terminal lower or early Middle palaeolithic. The stratigraphy and inferred sequence of events at the locality 1km downstream makes it likely that the artefactbearing clays were deposited prior to the incision of the buried channel which would equate with the global lowering of sea-level during the Last Glacial maximum. If this is so, then the artefactbearing clays probably formed during the warmer climate of the Last Interglacial 125,000 to 80,000 year ago".⁹⁾

The northern Korean implements indicate few types and are crude in workmanship. They hardly form an adequate basis for dating. I think, therefore, that the site of Chŏn-gok should be a central place for the research of the palaeolithic culture in Korean Peninsular. This culture may have spread into the Ming O-ri and Sŏkchangni area.

Recently Yi Seonbok (a student, Arizona State University, at Dept. of Anthropology) reconfirmed the K/Ar age of $2.9^{+/-0.3}$ M.Y. (million) (sample A), $0.3^{+/-0.1}$ M.Y. (sample B), $0.6^{+/-0.2}$ M.Y. (sample C) for the bed-rock, basalt (site of the Chŏn-gok) on which the artefact-bearing clay rest.¹⁰⁾

What I present in this paper represents only the level of understanding attained up to the present, and many problems await to be settled by more discoveries and further research.

6) Jia Lanpo, *Early Man in China*, Foreign Languages Press (China), 1980, pp. 58—59.

7) Jia Lanpo, *Ibid.*, pp. 59—60.

8) J.D. Clark, "Report on a Visit to Palaeolithic Sites in Korea," *Cultural Properties*, Vol. 15, 1982, p. 136.

9) J.D. Clark, *Ibid.*, p. 138.

10) See a copy.

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POTASSIUM-ARGON AGE DETERMINATION**REPORT OF ANALYTICAL WORK**

Our Sample No.	R-6647	Date Received:	9/6/83
Your Reference:	Letter of 9/1/83	Date Reported:	9/21/83
Submitted by:	Seonbok Yi Arizona State University Dept. of Anthropology Tempe, AZ 85281		

Sample Description & Locality: Sample B, vesicular basalt.

Material Analyzed: Whole rock, —80 mesh. Treated with dilute HF and HNO₃ to remove alterations and glass.Ar⁴⁰*/K⁴⁰ = .000016

AGE = 0.3 ± 0.1 M.Y.

Argon Analyses:

Ar ⁴⁰ * ppm.	Ar ⁴⁰ */Total Ar ⁴⁰	Ave. Ar ⁴⁰ * ppm.
.000021	.025	.000034
.000047	.028	

Potassium Analyses:

%K	Ave. %K	K ⁴⁰ ppm.
1.728	1.731	2.112
1.734		

Constants Used:

$\lambda_\beta = 4.72 \times 10^{-10} / \text{year}$

$\lambda_e = 0.585 \times 10^{-10} / \text{year}$

$K^{40}/K = 1.22 \times 10^{-4} \text{ g./g.}$

$$\text{AGE} = \frac{1}{\lambda_e + \lambda_\beta} \ln \left[\frac{\lambda_\beta + \lambda_e}{\lambda_e} \times \frac{\text{Ar}^{40*}}{\text{K}^{40}} + 1 \right]$$

Note: Ar⁴⁰* refers to radiogenic Ar⁴⁰.

M.Y. refers to millions of years.