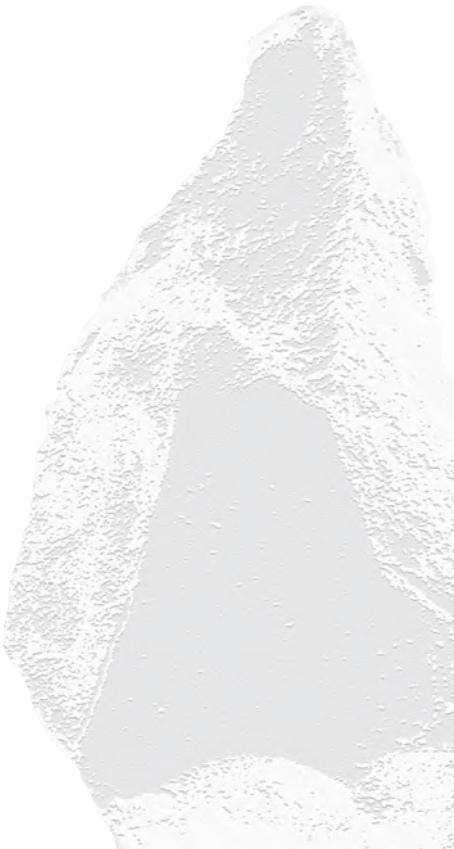
The Paleolithic



Preface

In order to provide opportunities for unifying terms used by archaeologists in Korea and to introduce the significant archaeological sites excavated in Korea, the National Research Institute of Cultural Heritage published "Dictionary of Korean Archaeology", which marked a milestone of the Korean archaeological societies, in 2001. Since then, the institute has published a series of "Specialized Dictionary of Korean archaeology: Paleolithic Age, Neolithic Age, Bronze Age, Burials, and Fortifications and Signal Fires, and Burial Goods" to date.

Along with an article "Research Trends of the Paleolithic Archaeology in Korea" that introduces the achievements of the studies on the Paleolithic archeology in Korea, this English version of "Dictionary of Korean Archaeology: Paleolithic Age" contains the significant topics of the specialized dictionary published in 2013 written by Korean for sharing the representative research achievements of the Korean archaeology with foreign academia and for heightening the understanding of the Paleolithic studies in Korea for the non-Korean native researchers.

It is my hope that this publication will serve as an momentum for 'the globalization of the Korean archaeology' and be used to be an essential reference book for institutions, researchers and even the public who have interests in the Paleolithic Age of Korea.

October 2018
Choi Jongdeok
Director-General of the National Research Institute of Cultural Heritage

Notes to Readers

This book aims to introduce the achievements of the Paleolithic studies conducted in Korea to foreign researchers. The editorial committee selected sixty nine sites contained in the Dictionary of Korean Archaeology: Paleolithic Archaeology (2013), and other five remarkable sites excavated by 2017. The contents of each original article written in Korea were revised by the specialists for providing more accurate information to the readers. Along with chosen Paleolithic sites, this book contains an article "Research Trends of the Paleolithic Archaeology in Korea" for providing the detailed information to the Paleolithic Age in Korea to the readers.

| Editorial Committee |

Han Changgyun (Yeonsei University)
Seong Chuntaek (Kyung Hee University)

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Kim Hwan-il (Central Institute of Cultural Heritage)
Kim Eun-jeong (Chosun University)

| Translator |

Park Haewoon (Sungkyunkwan University)

| Supervisor |

Seong Chuntaek (Kyung Hee University)

| Editorial Principles |

1. The lists of topics are arranged in alphabetical order.
2. Notations and English titles of the chosen sites are as follows:
   1) The title of the site is marked in the order of the name of Dong or Village (proper nouns) and site. Proper nouns are marked according to the Revised Romanization of Korean System (2000).

[ex]

Bongmyeong-dong Site

2) The sites in the Democratic People's Republic of Korea are marked according to the Revised Romanization of Korean System promulgated in the Republic of Korea in 2000. In order to prevent the confusion of the readers, this book includes the table of the Romanized Korean system in the Democratic People's Republic of Korea.

3) The city or county where the site is located is marked above line mentioning the site.

[ex]

Cheongju
Bongmyeong-dong Site

4) The site whose administrative district was reorganized from 2013 onwards follows the present name.

[ex]

Cheongwon → Cheongju

5) Administrative units (such as the do, si, gun, eup, myeon, and dong, ri) are hyphenated from the place name proper.

[ex]

Gyeonggi-do, Bupyeong-ri

6) Except the authors who have their own English names, it is an principle that the name of author is marked based on the Revised Romanization of Korean System. The name is marked in the order of his/her family name and given name.

7) The institute who has not its English name, the book marks it based on the Revised Romanization of Korean System.

3. The principles to the illustrations

1) This book contains illustrations including actual measurements

and photographs selected from the Dictionary of Korean Archaeology: Paleolithic Archaeology (2013); but illustrations of the sites in the Democratic People's Republic of Korea are not included, because of the law of the Republic of Korea.

2) Primary sources of the illustrations are not cited. Please see the references.

3) The scale of illustrations is not uniformed.

4) The providers of illustrations and photographs are hold copyrighters. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording or any other information storage and retrieval system, without prior permission of copyright holders.

| Appendices and Index |

1. Appendices include the site distribution map and a table comparing the Romanization system of Korean between South and North Korea.
2. Along with the Paleolithic sites contained in the Dictionary of Korean Archaeology: Paleolithic Archaeology (2013), other five sites chosen by the editorial committee are marked on the map.

contents

DICTIONARY OF KOREAN ARCHAEOLOGY

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THE PALEOLITHIC

Research Trends of the Paleolithic Archaeology in Korea

Archaeological studies on Korea's Paleolithic Age records has a relatively short history. In the 1930s, the excavation of the loess deposits at the Gangan-ri site (the past-day Donggwanjin site) in the riverside of the Dumangang River in Hamgyeongbuk-do Province revealed animal bone remains including *Mammuthus primigenius, Coelodonta antiquitatis, Hyaena* sp., *Bos primigenius,* along with few pieces of obsidian artifacts. However, these materials were not recognized as Paleolithic remains for a long period of time. After the liberation of Korea from Japan in 1945, a few surveys were conducted for finding the Paleolithic sites in the 1950s but these attempts did not yield definite evidence for proving it. Immediately after the discovery of bones of a Mammuthus primigenius from the peat deposits at the Jangdeok-ri site in Hamgyeongbuk-do Province in 1962, the excavations of the Gulpo-ri site (1963-1964) in the Hamgyeongbuk-do Province and the Seokjangni site in Chungcheongnam-do Province, which was first excavated in 1964, exposed the Paleolithic cultural layers laid in the paleosols in the Pleistocene. The two excavations conducted during the early 1960s finally proved the existence of Paleolithic sites within the modern-day Korean Peninsula.

While most lithic materials have been unearthed from the open-air sites in South Korea, most Paleolithic remains have been excavated at sites in limestone caves in North Korea. Excluding the loess or peat deposits, animal bone remains have not been found at the open-air sites

to date, and this is because the high acidity of Paleolithic deposits in the Korean Peninsula does not provide favorable conditions for preservation of animal bones and other organic material. In contrast, sediments at the limestone cave sites in North Korea have yielded skeletal remains of *Homo sapiens* as well as bones of the diverse animal species. However, the excavated numbers of the stone artifacts from the sites in North Korea are considerably fewer than those from South Korean sites. Due to the division of Korea into North and South, archaeologists from both the North and South are not able to compare and analyze the Paleolithic artifacts unearthed from the opposite sides through direct observations. The current political circumstance has been a major obstacle for comprehensive understanding of the Paleolithic culture in the entire area of the Korean Peninsula.

More than 200 sites belonging to the Paleolithic have been excavated to date in Korea. On the basis of the excavation results and studies that have been achieved since the 1960s, the Paleolithic archaeology in Korea has witnessed a dramatic increase and development. These results have provided invaluable archaeological information for establishing the framework of the Paleolithic culture in Korea. Nevertheless, there are some important remaining tasks left. They include establishing a more accurate and detailed chronological sequences of the cultural layers exposed in the Paleolithic sites, further understanding of the environmental change pattern during the Paleolithic Age, and developing a transition pattern of the stone tool industry. In addition, it is also important to conduct a spatial analysis in order to reveal the functions and characteristics of the excavated sites.

No remains of *Homo erectus* have been found in Korea. On the basis of biostratigraphic dating results, North Korean archaeologists insisted that the Geomeunmoru Cave in Hwanghaebuk-do Province, which was excavated in the 1960s, could have been formed one million years ago. In order to establish a more accurate chronology of this site, this date should be taken critically without available absolute date. Moreover, it is necessary to further conduct the typological analysis of lithic materials from this site in order to determine whether they were human made objects or not.

In North Korea, skeletal remains of archaic *Homo sapiens* were unearthed from the sites dating to the Middle Paleolithic including Seokseong-ri in Hamgyeongbuk-do province, Seungnisan Cave in Pyeongannam-do Province, and Daehyeon-dong Cave in Pyeongyang but these sites did not yield any stone artifact. Fossil remains of *Homo sapiens* became uncovered from the cave sites in North Korea including Yonggok-ri, Jung-ri, Geumcheon-dong, Daeheung-ri, Cheongpadae in Hwanghaebuk-do Province, Naengjeonggol in Hwanghaenam-do Province, Seungnisan in Pyeongannam-do Province, and Mandal-ri in Pyeongyang, and from the Sangsi Rock Shelter in Chungcheongbuk-do Province, South Korea. Samples collected from Yonggok-ri and Naengjeonggol produced the Uranium-series dates of between 50-45 ka BP. These determined absolute dates suggested the period when *Homo sapiens* first appeared in the modern-day Korean Peninsula.

Many stone artifacts have been uncovered from the open-air sites in South Korea. Although zooarchaeological remains have not been unearthed from such sites, South Korean archaeologists have used various absolute dating techniques, e.g., radiocarbon dating, thermoluminescene

dating, optically stimulated luminescene dating, K-Ar dating, fission track dating, $^{26}Al/^{10}Be$ burial dating, and tephrochronology, in order to determine the age of sediments and charcoals deposited in cultural layers and layers on and under the cultural layer for establishing the forming date of each site and the chronological orders of the cultural layers. Excluding the determined radiocarbon dates of charcoal samples, the results of other absolute dates are not entirely reliable. Under the present conditions, it is difficult to elucidate the accurate absolute dates of paleosols deposited earlier than the lower limit that the radiocarbon dating method can measure and the chronological changes of the geological, environmental and cultural patterns during the Paleolithic.

While there are considerable disagreements, many South Korean archaeologists have agreed that the Paleolithic Age in Korea dates from 300 ka BP (upper limit) to 10 ka BP (lower limit). In general, they classified the Paleolithic Age of Korea into three-stage sequences: the Lower, the Middle, and the Upper. Recently, however, a few researchers have attempted to divide it into two stages, the Early Paleolithic, which classify the Lower and the Middle in three-stage sequences into a chronological stage, and the Late Paleolithic by adopting the Chinese archaeologist's opinion.

Irrespective of the application of each stage model, stone objects from the sites dated before 40,000 BP, the Late Paleolithic, were mainly made of vein quartz and quartzite. Large tools were mainly made up of choppers, chopping tools, polyhedrons, handaxes, and picks and a handful of cleavers became unearthed. The cultural layers formed before the Late Paleolithic yielded few retouched stone tools including notches,

denticulates and scrapers. The typical scrapers were not many. No cores and flakes created by the Levallois technique have been found; and no Mousterian point types were observable. Nevertheless, many flakes and retouched flakes were unearthed from various cultural layers dating before 40,000 BP.

Many handaxes and picks were collected at the Jeongok-ri site located in the Hantangang River basin, which has been excavated since 1979. The discovery of the handaxes from this site in Yeoncheon, Gyeonggi-do Province, Korea, was evaluated as the definite archaeological evidence against the Movius Line. By comparing typological characteristics of handaxes in Korea with those in Europe, these objects were classified into the Acheulean type or Acheulean-like. Moreover, a few archaeologists attempted to assess the chronology of handaxes and other stone objects associated with handaxes in cultural layers in Korea was dated back to the Early Paleolithic by asserting that the stone tool industry of the Jeongok-ri site shared the Acheulean context in Europe, while it is evident that the manufacture of handaxes persisted until the Late Paleolithic in Korea.

After the first excavation of the Jeongok-ri site, handaxes were uncovered from the Paleolithic sites in the Imjingang and Hantangang River basins, and even from the coastal area of Gangwon-do Province. While handaxes in the Imjingang and Hantangang River basins were made of vein quartz and quartzite including gravels and large flakes, those in the Wolso site in the eastern coast of Korea were made of various raw materials including sandstone, gneiss, rhyolite, and silicified shale.

Most handaxes at the open-air sites in South Korea were buried in

the reddish brown paleosol layers with the typical soil crack structure. The magnetic susceptibility of these layers containing hematite particles was higher than that of the dark brown paleosol layers with the first second soil-wedge structure. According to the report, Kikai-Tozurahara volcanic ashes erupted in Kyushu in 95-90 ka BP were uncovered from the Jeongok-ri site. Such evidences suggest that the reddish brown paleosol layers were deposited in MIS (Marine Isotope Stage) 5. In these layers, handaxes were associated with picks, polyhedrons, choppers, chopping tools, and discoids. Polyhedrons outnumbered handaxes at most sites. This assemblage pattern of the stone artifacts was distinguishable from the Acheulean or Mousterian of Acheulean traditions of Europe.

It has been noted that endscraper, burins, borers, and tanged points represent stone tools in the Late Paleolithic Korea. Compared to the prior period, the number of handaxes and polyhedrons dramatically decreased in the Late Paleolithic sites. The stone tool assemblage of this period has been characterized by the chronological increase pattern of the double and composite tools. It can be assumed that some microblades, which show the regular typological characteristics, were the components of the composite tools. Tanged points and regularized endscraper from the Late Paleolithic site suggest that the people during this period produced and used composite tools.

During the transitional phase to the Late Paleolithic, blade techniques evidently spread widely and microblade techniques newly appeared. The emergence of blade and microlithic technologies was associated with the change of the raw materials that were more suitable for making effective tools, such as hornfels, silicified shale, and tuff. Lithic

materials made of obsidian collected from outside of the Korean Peninsula began to appear in the middle phase of the Late Paleolithic.

Tanged points and microblade cores from the Seokjangni site in Chungcheongnam-do Province and the Suyanggae site in Chungcheongbuk-do Province received significant attention from South Korean archaeologists. Layer No. 3 at the Hopyeong-dong site in Gyeonggi-do Province yielded crucial stone artifacts for understanding the stone tool making technology in the Late Paleolithic Korea. Tanged points made of blades became unearthed from its lower level, which was radiocarbon dated to 30-27 ka BP and its upper level, which was radiocarbon dated to 24-16 ka BP, contained blades and microblades. On the basis of these determined radiocarbon dates, the chronological order of these two stone tools can be established. It has been recognized that tanged points, microblades, and microblade cores are the representative stone artifacts in the Late Paleolithic Korea.

Cultural Layer No. 4 at the Hajin-ri site located close to the Suynggae site yielded about 70 stone artifacts made up of tanged points, blade cores, scrapers, endscraper, burins, and borers. In Cultural Layer No. 3 (40-35 ka BP) that was laid on Cultural Layer No. 4, tanged points were associated with blades, microblades, endscraper, and borers. By comparing the stone tool assemblage pattern between two cultural layers, tanged points evidently appeared earlier than microliths. Moreover, the cultural layer dating to the late phase of the Middle Paleolithic at the Yongho-dong site in Daejeon yielded tanged points. Recently, tanged points were found with blades in the layer formerly assumed to be the cultural layer of the Middle Paleolithic.

The fact that tanged points and blades began to appear in the Middle Paleolithic suggests the necessity for the establishment of new chronological sequence of the stone tool industry during the transition phase from the Middle to Late Paleolithic. On the basis of the accumulated research results, the advent of the tanged points and the microblade technology in Korea was far earlier than other regions, such as China and Japan. This hypothesis, however, should be testified. Nevertheless, this fact may have important implications for shedding new light on the origin and diffusion of tanged points and the microblade technology in Northeast Asia.

The Korean Late Paleolithic was characterized by the use of fine-grained raw materials, the specialization of the standardized blade and microblade technologies, and the chronological increase of the sites. These phenomena suggest the increase of population and the development of the social network between the groups.

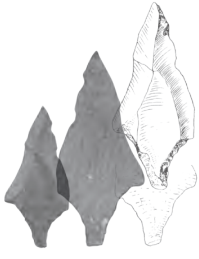
Obsidian is one of the representative raw materials in the Late Paleolithic Korea. Obsidian artifacts have been unearthed in many sites within South Korea. For example, the determined absolute dates of samples collected from the Hopyeong-dong site in Gyeonggi-do site and the Sinbuk site on Jeollanam-do Province from which obsidian artifacts were uncovered ranged between 24 and 16 ka BP, and between 25 and 18 ka BP respectively. There have been several attempts to indentify the provenance of the obsidian, the raw material of the stone objects in the Late Paleolithic, because its source has not been discovered in the southern Korean Peninsula. Trace element analyses of obsidian objects from the Hahwagye-ri in Gangwon-do Province and the Sinbuk site

show the following results. The artifacts from the former site were made of raw materials obtained from Baekdusan Mountain; and the latter site yielded objects made of obsidians from Baekdusan Mountain and Kyushu. Nevertheless, obsidian samples whose provenance became identified in Baekdusan Mountain were not fully reliable because their accurate buried locations in the sedimentary layers were not clearly known. In order to identify the long distance trade networks of the obsidian during the Late Paleolithic, further studies should be complemented by the analysis results of the obsidian objects from the northern region of the eastern coast of Korea including Myeongcheon and Gilju Counties in Hamgyeongbuk-do Province where the obsidian nodules and blacks are distributed.

At the Yongho-dong site in Daejeon, the level dating to the late phase of the Middle Paleolithic yielded a pebble tool of which the most portion of surface is finely and smoothly ground. Stone artifacts with ground edges began to appear in the middle phase of the Late Paleolithic. Edge ground axes from the Sinbuk site (25-18 ka BP) and the Jangheung-ri site in Gyeongsangnam-do Province are the representative examples. Use-wear analyses of edge ground axes from both sites and tanged stone tools from the Jangheung-ri site will provide invaluable data for reconstructing the daily life of the Late Paleolithic people in Korea. One of the remarkable facts is that the time-span of the edge ground axe and obsidian artifact corresponded to the time period of the Last Glacial Maximum.

Only a few art or symbolic art objects were reported at the Paleolithic sites in Korea. A small animal face-shaped bone figurine was recovered from the upper layer dating to the Late Paleolithic at the Yonggok-ri site. A graphite pebble with artificially worn surfaces was

unearthed from the lower level in Layer No. 3 at the Hopyeong-dong site. No pigmented object has been found yet. A side of the flat pebble from the Hajin-ri site is engraved with short lines in parallel. Its function has not been identified. While it has been reported that animal bone figurines were unearthed from the sediments deposited before the Late Paleolithic at the Durubong Cave and Jeommal Cave in Chungcheongbuk-do Province, a close observation showed that most objects were created by carnivores. Further detailed taphonomic studies of these artifacts should be conducted to provide clues to decide whether they were human made art objects or not. [Han Changgyun]



THE PALEOLITHIC

Dictionary of
Korean Archaeology

B

Cheongju
Bongmyeong-dong Site
봉명동 유적

This site is located at Sinbong-dong San 10, Heungdeok-gu, Cheongju City, within the Chungcheongbuk-do Province. The Paleolithic site is situated in the area with a slope and a valley of a low hill (88-102 meters) rising next to the Musimcheon River. This river runs through the Mihocheon River and down through the downtown of Cheongju. The excavators divided the site into two sectors. Sector A covers the area with the south-facing steep slope; and Sector B covers the area with the north-facing gentle slope.

A stratigraphic profile of the site shows thirteen strata including two layers formed with soil wedges. Artifacts were found in Cultural Layer No. 2, a yellowish brown clay layer of which its upper part is formed with soil cracks, and Cultural Layer No. 1, a dark brown sandy clay layer laid on a bedrock layer. A stratigraphic profile in Sector A shows the re-deposited pattern of sediments along a slope. Artifacts from the Sector B were mainly collected from the lower horizon, or the Cultural Layer No. 1.

The uncovered artifacts from this site consist of stone artifacts including picks, choppers, chopping tools, polyhedrons, scrapers and notches, cores, and flakes. Most were made of vein quartz and quartzite. The flakes chipped from pelite, however, were unearthed from Cultural Layer No. 2, which was presumably a stratum deposited after Cultural Layer No. 1. Judging from the stratigraphic profile, the stone artifacts making techniques, and the determined radiocarbon dates (49,860 BP, 48,450 BP, and 12,260 BP) of charcoal samples, it can be assumed that Cultural Layer No. 1 was deposited in the late phase of the Middle Paleolithic and that Cultural Layer No. 2 was a stratum formed in the late phase of the Late Paleolithic. [Woo Jongyoon]

Pick

Polyhedron

Artifacts from Bongmyeong-dong

| Reference |

Lee, Yungjo, and Miyoung Hong, 1999. Brief Excavation Report on District A at the Bongmyeong-dong Site. *Chungbuk National University Museum Annual Report* Vol. 8.

Inje
Bupyeong-ri Site
부평리 유적

This site is located to the south of the eastern shore of Soyangho Lake at Bupyeong-ri, Nam-myeon, Inje County, within the Gangwon-do Province. The stratigraphic profile of the site shows the chronological deposition pattern the following order from the top: a light brown clay layer, a dark brown clay layer, a colluviums layer, a silt layer, and a pebble layer. The upper part of a dark brown clay layer (Cultural Layer No. 2), in which cracks were formed, yielded large quantities of the stone artifacts. Two samples collected from this stratum produced the AMS radiocarbon dates of 24,710±130, and 29,580±190 BP respectively. A light brown clay layer measuring between 10 and 15 centimeters in thickness also yielded a number of artifacts. The determined absolute dates of this layer are 7,670±50 BP (AMS radiocarbon date), and 7,740±840 BC (OSL date).

It was reported that an area in which vein quartz and obsidian artifacts were densely clustered in Cultural Layer No. 2. A total of 2,144 stone artifacts including 555 andesite objects (25.9 %), 499 vein quartz objects (23.3 %), 406 obsidian objects (18.9 %), 303 tuff objects (14.1 %), and 218 silicified shale objects (10.2 %), and objects made of other lithic raw materials were recovered from Cultural Layer No. 1.

Blade cores were recovered along with microblade cores, blades and crested bladesfrom the site. Some blade cores show heavily flaked surface, while others were used to produce blades without notable preparation. A few cores were refitted with a platform rejuvenating flake or blades. By considering the dense clusters of the artifacts made up of cores,

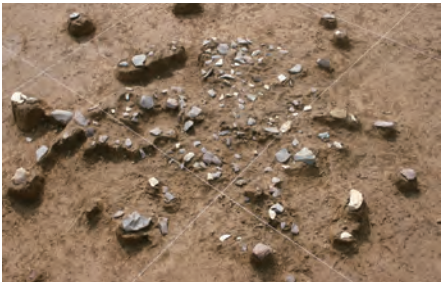
flakes, and chips, and the existence of the refitted artifacts, it can be supposed that the Bupyeong-ri group actively produced stone tools.

Many microliths made of silicified shale, tuff, and obsidian were also unearthed from the site. In addition, this site yielded about 10 microblade cores and about 90 microblades. While many microblade cores bear traces of deliberate preparation, known as the Yubetsu technique, while some specimens show no such preparation using flakes for blanks. Most obsidian microblade cores are the latter case. Microdrills with finely retouched edges, which were made of obsidian microblades, were also unearthed.

Flakes were made of various lithic raw material types; and most of them were elongated objects. Retouched tools were made up of scrapers, endscrapers, burins, and awls. The uncovered obsidian artifacts included microblades and large flakes. In addition, this site yielded hammerstones, anvils, and artifacts with polished surfaces.

While the excavator recognized two distinct horizons where artifacts were unearthed. Therefore, it is possible that these stone artifacts were produced by a certain Paleolithic group without an interruption of the chronological order. Further studies on the distribution pattern of the stone artifacts and on the refitted artifacts will contribute to the reconstruction of the cultural behavior of the hunter-gatherers who occupied the site.

[Seong Chuntaek]



Stone tool making workshop (Grid C3)

Blade core and refitted pieces

Endscraper refitting to the core

Artifacts from Bupyeong-ri

| Reference |

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PALEOLITHIC
DICTIONARY OF
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C

Chungju
Changnae Site
창내 유적

This site is located at Sagi-ri, Dongnyang-myeon, Chungju City, within the Chungcheongbuk-do Province. The area in which the Paleolithic site is located is a depositional landform (88 meters above sea level) formed at a confluence of the Namhangang River and its tributary, the Changnae Stream. Of seven strata, the cultural layer dated to the Late Paleolithic was identified in Stratum II (sand layer) that is laid on a river gravel layer. Charcoal and pollen analyses of samples collected from this layer demonstrate that the layer was deposited in the period where the climate was relatively warm and arid. The excavation of this cultural layer yielded more than 5,000 artifacts. Stone artifacts found at this site were made of 24 raw materials including vein quartz (47 %) and sedimentary rocks (37 %), such as sandstone and silicified shale, which are found locally around the site. Moreover, tools made of obsidian that would have been obtained through long-distance trades were also found. A total of seven obsidian objects including scrapers, flakes and debris were unearthed.

The numbers of retouched artifacts were 514 pieces and it adds up to about ten percent of the total excavated tools. Retouched tools consist of 389 flake tools (75.69 %) and 125 core tools (24.32 %). Most flake tools are scrapers and endscrapers. Along with handaxes, stone artifacts unearthed from the site include choppers, chopping tools, cleavers, denticulates, burins and notches.

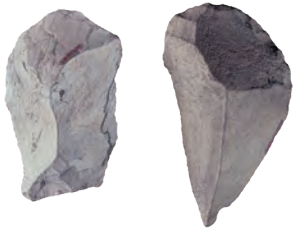
Rounded endscrapers are the most common artifact types from the Changnae site. A total of seventy endscrapers were recovered from the site, and about 30 percent of them are rounded endscrapers. As with the Aurignacian-type, their edges were retouched with rounded areas from ventral to dorsal faces.

The excavator reports that a circular-

Fireplace

Denticulate

Scraper



Endscraper

Artifacts from Changnae

planed house floor laid with flat stones was also identified at this site. Post holes and a hearth heaped with several layers of pebbles were additionally discovered around this house.

By examining the production techniques of the stone tool and the sedimentary layers, the excavator assumes that the site was formed during the middle phase of the Late Paleolithic. Judging from the assemblage pattern of stone artifacts and the structure of a dwelling, this site would most likely have been a seasonal hunting camp near the riverside. [Kong Sujin]

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Park, Huihyeon, 1984. *The Excavation Report of the Area under Water by Construction of Chungju Dam*. Chungbuk National University Museum.

Park, Huihyeon, 1990. The Structure and Reconstruction of a Late Paleolithic Dwelling at the Changnae Site. *Bakmulgwangiyo* Vol. 6, pp. 1-28.

Hwangju
Cheongpadae Cave
청파대 동굴 유적

This site is located at Cheongpadae Village, Hwangju-eup, Hwangju County, within the Hwanghaebuk-do Province. Kim Il-sung University conducted the excavations of this cave site seven times from 1998 to 2004. The excavators classified the sedimentary layers of the site into the lower Cultural Layer No. 1 (Layer Nos. 3 and 7), and the upper Cultural Layer No. 2 (Layer Nos. 8 and 14). About 30 stone artifacts including choppers,

handaxes, points, and scrapers, endscrapers, burins, and blades were recovered from Cultural Layer No. 1 dating to the Middle Paleolithic. Cultural Layer No. 2 dates to the Late Paleolithic. The excavation of this layer revealed more than 2,000 stone objects including choppers, handaxes, points, scrapers, endscrapers, burins, and blades. Most stone artifacts from both layers were made of quartzite and vein quartz. Both layers contained handaxes.

Homo sapiens fossils were unearthed from Cultural Layer No. 2. An upper jawbone of a male adult aged 35-40 was unearthed from Layer No. 8. The excavators named him, the Hwangju Man No. 1. Along with human fossils, a number of animal bones were uncovered from this site. Cervidae and *Equus przewalskii* occupy the majority of the excavated large mammal fossils. The ratio of other species was in the following order: *Sinomegaceros* sp., *Dicerorhinus kirchbergensis*, *Cervus elaphus*, *Capreolus capreolus*, and *Sus scrofa*. The ratio of the extinct species was 21.2 percent.

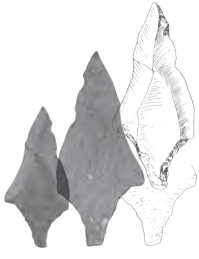
The measured results of the absolute dates of samples collected from the site are as follows:

1. Layer Nos. 3 and 4: 125,000-117,000 BP (Archaeomagnetic Date)
2. Layer No. 5: 113,000±11,200 BP (Uranium Series Date)
3. Layer Nos. 6 and 7: 90,000-80,000 BP (Archaeomagnetic Date)
4. Layer No. 8: 69,000-61,000 BP (TL Date); 61,500±9800 BP (Uranium Series Date); 74,200±10,800 BP (Archaeomagnetic Date)
5. Layer Nos. 9 and 11: 60,000-40,000 BP (Archaeomagnetic Date)

[Han Changgyun]

| Reference |

Han, Changgyun, 2011. Paleolithic Sites in Hwanghae Province, North Korea. *Journal of the Korean Archaeological Society*, Vol. 81, pp. 217-244.



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Korean Archaeology

D

Pyeongyang
Daehyeon-dong Cave
대현동 동굴 유적

This is the limestone cave site located at Yeokpo District, Daehyeon-dong, within Pyeongyang. The site was discovered in a limestone mine and was excavated in 1977 by the Institute of Archaeology, the Academy of Social Sciences of the Democratic People's Republic of Korea. Of three sedimentary layers deposited on the cave floor, the lower part of Layer No. 2, the middle layer, yielded parts of the skull of a child (the Yeokpo Man named by North Korean archaeologists) aged between 7 and 8 years old as well as animal bones. On the basis of the anatomical features of the Yeokpo Man, faunal remains and stratigraphy, North Korean archaeologists suggested that this layer was deposited in the early phase of the Middle Paleolithic. The Yeokpo Man has pronounced brow ridges.

This layer contained animal bones including *Dicerorhinus kirchbergensis*, *Coelodonta antiquitatis*, *Myospalax* sp., *Megaloceros flabellatus*, *Panthera spelaea*, *Crocuta ultima*, *Bos primigenius*, *Cervus elaphus*, *Bubalus* sp., *Bison priscus*, *Equus* sp., and *Castor fiber*. The excavated number of large mammals was 95 individuals and many of them were *Equus* sp., *Megaloceros flabellatus*, *Dicerorhinus kirchbergensis*, *Cervus elaphus*, *Bubalus* sp., and *Bison priscus*. The ratio of the extinct species (50.0 %) was lower than that of the Geomeunmoru Cave (62.0 %), but was higher than that of the Seungnisan Cave (34.9 %). This layer contained bones of the animals lived in the warm climate including *Dicerorhinus kirchbergensis*, and *Bubalus* sp. as well as species adapted to the relatively cool climate, such as *Panthera spelaea*, *Bison priscus*, and *Castor fiber*.

Pollen analysis of soil samples collected from Layer Nos. 2 and 3 indicated that the area was the warm temperate mixed woodland zone; and *Pinus* and Cupressaceae

were dominant species during that time. The rate of the pollens of *Abies* and *Picea* adapted to the cold climate was low and the layers contained plant fossils lived in the warm climate, e.g., *Lygodium*, *Gleichenia*, *Keteleeria*, and *Magnolia*. With respect to the climate when the site was formed, floral remains do not correspond to fauna. Such inconsistency perhaps reflects the difference in capabilities for animals and plants to adapt to climatic change, and the topography of the site. [Han Changgyun]

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Hwasun
Daejeon Site
대전 유적

This site is located at Daejeon Village, Sasu-ri San 15, Nam-myeon, Hwasun County, within the Jeollanam-do Province. The site is situated on a terrace rising 30 meters higher than the bed of the Dongbokcheon River, a tributary of the Boseonggang River. Twelve strata, including a pebble layer (Layer I and the fluvial deposit of the paleo-channel), fine sand layers (Layers II a-c), colluvum layers (Layers III a-b, Layers IV a-b, and Layers V a-b), and surface layers (Layers VI and VII), were laid on a bedrock layer from the bottom.

Artifacts from Layer IVa (the cultural layer deposited in the Middle Paleolithic), were made of vein quartz, sandstone, and quartzite. Also, several hammerstones and refitted pieces provide important data for studying stone tool production sequences. Furthermore, various stone tools including handaxes, points, choppers, chopping tools, endscrapers, and scrapers were uncovered from this layer.

Layer V, a belonging to the Late Paleolithic, was deposited in a wide area of the site. Stone artifacts uncovered from this layer include choppers and scrapers, which were made of vein quartz, and porphyry. In particular, three microblade cores unearthed from this layer show similar typological characteristics to objects usually grouped into *Yubetsu* and *Togeshita* techniques in Japan.

The microblades and other associated artifacts show that the lithic assemblage was produced during the final stage of the Pleistocene. [Yun Yonghyen]

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An artist's view of reconstruction of a camp from Daejeon

Microblade core from Daejeon

Hampyeong
Danghasan Site
당하산 유적

The Danghasan site is located at Jangnyeon-ri, Hampyeong-eup, Hampyeong County, within the Jeollanam-do Province. Mountains surround the north, east, and south sides of this site. Hampyeongman bay is located to the northwest of the site. The Paleolithic site is located on the slope ranging from 22 to 26 meters above sea level.

The sediments laid on this site were materials transported from slopes. The stratigraphic profile of the site shows the chronological deposition pattern in the following order from the bottom: a brown sandy clay layer mixed with coarse sands and pebbles (Layer No. 1), a brown clay layer with mottling (Layer No. 2), a brown sandy clay layer (Layer No. 3), and a dark yellowish brown sandy soil layer (Layer No. 4). Of these four layers, the Paleolithic artifacts were uncovered from Layer Nos. 1 (Cultural Layer No. 1) and 3 (Cultural Layer No. 2). Features and artifacts belonging to the Neolithic Age and the Iron Age were unearthed from Layer No. 4.

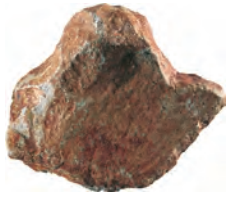
Cleavers made of large andesite flakes are the most notable artifacts from Cultural Layer No. 1. In addition, large tools including heart-or oval-shaped handaxes and chopping tools, tools made of andesite flakes and chips, such as notches, and denticulates and scrapers were recovered from this layer.

Along with microblade cores with striking platforms and irregular-planned platforms, and small blades, stone artifacts uncovered from Cultural Layer No. 2 include points, scrapers, notches, denticulates and large transversal scrapers mostly made of vein quartz and quartzite. In addition, polyhedrons, hammerstones, and small chopping tools, which were made of various raw materiasl, were unearthed from this cultural layer.

From the technological perspective of the stone artifacts from the Cultural Layer No. 1, the excavator suggested that this layer was deposited during the later phase of the Middle Paleolithic. Such typological characteristics of the artifacts from Cultural Layer No. 2, which include the absence of large tools, microblade cores made of flakes, microblade cores with no wedge-shaped platform, and small flake tools and blades, reveal the typical stone tool industry during the latest phase of the Late Paleolithic in the Korean Peninsula. Judging from the quantity and distribution pattern of the excavated artifacts, this site may have been used as a temporary shelter by the Paleolithic people.

[Lee Heonjong]

Handaxe Point



Scraper

Artifacts from Danghasan

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Namyangju
Deokso Site
덕소 유적

This site is located at Deokso-ri 70, Wabu-eup, Namyangju City, within the Gyeonggi-do Province. High mountains rising between 500 and 700 meters above sea level, which extend towards southwestward, surround the north and east sides of the site; and an alluvial plain is formed to the west of the site. The site is located on a gentle valley slope situated between 30.0 and 34.5 meters above sea level. The Wolmuncheon River, a tributary of the Hangang River, runs about 350 meters south of the site.

At this site, slope deposits were laid on gravel layers along with the river bed deposits. The stratigraphic profile of the site shows the chronological deposition pattern the following order from the top soil: a surface layer (Layer No. 1), a disturbed layer by archaeological features (Layer No. 2), a dark red clay layer (Layer No. 3), a dark brown clay layer (Layer No. 4), a yellowish sandy clay layer (Layer No. 5), a fulvescent sandy clay layer (Layer No. 6), and a fluvial

deposit layer. A line of soil wedges was formed in Layer Nos. 3, 4 and 6 respectively. The upper level of Layer No. 3 was found to be eroded. Paleolithic artifacts were uncovered from Layer No. 3, the cultural layer, and a pit feature in Layer No. 2.

The excavation of the site yielded a total of 1,136 artifacts, including 87 objects from Layer No. 3 (Cultural Layer), and 896 items from a pit feature in Layer No. 2. Artifacts from Layer No. 3 consisted of 79 flake or blade tools, and three core tools including choppers and polyhedrons. The artifacts were made of various raw materials including vein quartz (40.0 %), quartzite (24.0 %), sandstone, tuff, and silicified shale. Cores and flake tools were made of vein quartz and quartzite and other raw materials were used for producing blade tools. As with stone tool assemblage pattern of Layer No. 3, the excavation of Layer No. 2 yielded cores, flakes, and blade artifacts; but microblade cores and microblades (0.6 %) were found in this disturbed layer. In addition to core tools (0.4 %), including choppers, chopping tools, polyhedrons, and large scrapers, this layer yielded retouched tools (5.0 %), such as scrapers, notches, endscrapers, burins, awls, and refitted tools. All of the excavated refitted tools included notches. Compared to the prior Layer No. 3, the tools uncovered from Layer No. 2 were made of more various raw materials, such as vein quartz (56.0 %), quartzite (33.0 %), sandstone, tuff, rhyolite, hornfels, and silicified shale. No blade tool made from vein quartz and quartzite was unearthed.

Seven samples collected from Layer Nos. 3 and 2 produced absolute dates. The radiocarbon date of two charcoal samples and a soil sample were dated to 37,300±200 BP, 36,800±200 BP, and 26,020±200 BP respectively. Two samples from this layer produced the OSL dates of 25,400±1400 BC, and 24,500±1400 BC respectively. The determined radiocarbon dates of a charcoal sample and a soil sample collected from a pit feature in Layer No. 2 were 18,400±400 BP, and 16,700±100 BP respectively. Judging from the determined absolute dates of the collected samples, Layer No. 3 was presumably deposited during the Last Glacial Maximum dating from the mid-MIS 3 to MIS 2.

The stone tool industry uncovered from these two layers shows the common aspects characterized by densely flaked vein quartz and quartzite artifacts, and blade artifacts made of raw materials with homogenous compositions. Moreover, refitted artifacts provide important information for studying stone tool making technique. In addition, microblades and microblade cores unearthed from Layer No. 2 demonstrate that this layer was mixed with stone artifacts produced in two different chronological phases, the early

spanning from 40,000 to 24,000 BC, and the late ranging between 24,000 and 16,000 BC.

[Hong Miyoung]

Artifacts from Deokso

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Yongin
Dongbaek-ri Site
동백리 유적

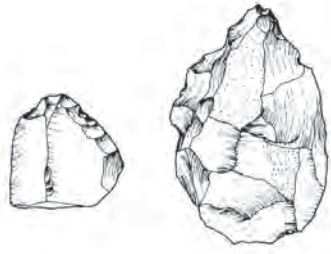
This site is located at the area of Dongbaek-ri 574 and 234-4, Guseong-eup, Yongin City, within the Gyeonggi-do Province. It is situated in the upper valley of the Singalcheon River and on a foot of a gentle hill extending northwestward from Seokseongsan Mountain. The surroundings are characterized by mountains rising between 300 and 400 meters above sea level.

Sedimentary layers measuring about 5.0 meters in depth were laid on a bedrock layer at the site. The stratigraphic profile of the site shows the chronological deposition pattern the following order from the top soil: a surface layer (Layer I), a brown clay layer (Layer II and Cultural Layer No. 1), a dark brown sandy clay layer (Layer III and Cultural Layer No. 2), a light brown and reddish brown clay layer (Layer IV and Cultural Layer No. 3), a grayish blue silt layer (Layer V), a brecciaed sediment layer (Layer VI), a reddish brown sandy clay layer (Layer VII), a brecciaed sediment layer (Layer VIII), and a weathered bedrock layer (Layer IX). Lines of soil cracks were observable in Layer III.

The excavation of Cultural Layer No. 1 yielded a total of 892 stone artifacts made vein quartz, quartzite, and sandstone. About 90 percent of the excavated objects were by-products of stone tool making process, including chips, cores and flakes, and stone tool production implements, namely hammerstones. With the exception of two large artifacts, all of the excavated stone artifacts were small in size. The excavation of Cultural Layer No.2 yielded a total of 1,366 artifacts made from vein quartz and quartzite. About 87 percent of the unearthed artifacts were debitages. Most artifacts classified into tools were small implements including scrapers and notches, a few large tools (2.0 %), such as choppers, chopping tools, and polyhedrons, were uncovered from this cultural layer. A total of 1,759 artifacts were recovered from Cultural Layer No. 3. Most were made of quartzite (51.7 %) and

vein quartz (47.6 %) and a few artifacts made of other raw materials including sandstone rhyolite were uncovered. About 87 percent of the excavated objects were debitages. About 48 percent of the excavated stone tools consisted of choppers, chopping tools, and polyhedrons. Compared to tools uncovered from Cultural Layer Nos. 1 and 2, scrapers and notches from this layer were made from even larger chips or flakes.

Soil samples collected from the site were AMS dated to around 25,000 BC. Based on the absolute dates and typological characteristics, the excavator suggests that the Cultural Layer 3 was formed during the early phase of the Late Paleolithic, from 35,000 to 30,000 BC, and Cultural Layer 2 was formed around 20,000 BC. [No Seonho]



Artifacts from Dongbaek-ri

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Hwasun
Dosan Site
도산 유적

This site is located at Dosan Village, Mosan -ri, Hancheon-myeon, Hwasun County, within the Jeollanam-do Province. The site is situated on the western side of Bihosan Mountain (129.5 meters), where two tributaries of the Yeongsangang River, Jiseokcheon and Hancheoncheon, meet together. High-quality raw materials including vein quartz, quartzite, tuff, and andesite were found to be distributed in the riverside in front of the site. A total of 18 Paleolithic sites were located in the upper and lower valleys from the site.

The stratigraphic profile of Terrace No. 2 of the site rising 15 meters higher than the river bed shows the chronological deposition pattern the following order from the top soil: a plough layer (Layer No. 1), a light brown clay layer (Layer No. 2), a dark brown clay layer (Layer No. 3), a yellowish brown sandy clay layer (Layer No. 4), a reddish brown clay layer (Layer No. 5), a reddish brown silty sand and clay layer with rock fragments (Layer No. 6), and a bedrock layer. Stone artifacts were uncovered from Layer No. 6 (Cultural Layer No. 1), No. 4 (Cultural Layer No. 2), No. 3 (Cultural Layer No. 3), and No. 2 (Cultural Layer No. 4).

1,860 stone artifacts were excavated

from Cultural Layer No. 1, including various choppers and polyhedrals made of vein quartz, quartzite, schist, sandstone, and andesite. In addition, a stone tool making workshop contained with an andesite flake weighing 2.8 kilograms, refitted artifacts consisting of cores and flakes, hammerstones, and a stone assumed to be a chair measuring 40 centimeters in length, 38 centimeters in width and 30 centimeters in thickness, and fired stones became exposed in this layer.

About 1,830 artifacts were unearthed from Cultural Layer No. 2, the largest stratum in the site. In addition to handaxes, and picks, this layer contained the same tools with Cultural Layer No. 1. A large pick unearthed from this layer weighed 3.2 kilograms. About 50 artifacts including picks, choppers and chopping tools were recovered from Cultural Layer No. 3. The stone tool industry of this layer was close to those of Cultural Layer No. 4. No andesite tool was uncovered from this layer. About 70 artifacts represented by andesite blade cores and tuff scrapers were unearthed from Cultural Layer No. 4.

On the basis of the determined OSL dates of samples collected from cultural layers and the typological characteristics of the unearthed artifacts, the chronology of the site can be summarized as follows:

1. Cultural Layer No. 1: the late phase of the Middle Paleolithic (61,380±3040 BC)
2. Cultural Layer No. 2: the late phase of the Middle Paleolithic (53,000±4110 BC)
3. Cultural Layer No. 3: the early phase of the Late Paleolithic (46,000±1720 BC)
4. Cultural Layer No. 4: the late phase of the Late Paleolithic (28,100±1950 BC)

Artifacts from Dosan

Four cultural layers remained in deep sediments measuring about 5 meters in thickness contained the artifacts representing the chronological change from the handaxe to blade tool industries. The excavated materials from the site provide significant data for understanding systematic development of the Paleolithic culture and for establishing the distribution sphere of the handaxe industry in the Yeongsangang River basin. [Lee Gikil]

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Cheongju
Durubong Cave
두루봉 동굴 유적

This site, which is the cluster of limestone caves, is located at Nohyeon-ri, Munui-myeon, Sangdang-gu, Cheongju City, within the Chungcheongbuk-do Province. This area is the meta-sedimentary belt of the Okcheon system intruded by igneous rock. According to the excavator, Cave Nos. 2, 9 and 15, and Saegul, Cheonyeogul, and Heungsugul Caves in Durubong Peak yielded numerous animal bones, bone and antler tools, stone artifacts, and fossils of hominins.

The excavation of Cave No. 2 exposed a cultural layer (Layer No. 7), which contained faunal remains classified into 3 phyla, 7 classes, 15 orders, and 28 families, 37 genera, and 46 species, and floral remains classified into 3 classes, 10 orders, 13 families, 12 species. This layer included extinct species, such as *Dicerorhinus* sp., *Crocuta crocuta*, *Hyaena* sp., *Macaca robustus*. The excavator reported that an oval-shaped hearth measuring 90 centimeters in length and 65 centimeters in width was found in this cave.

Faunal remains from two layers of Cave No. 9 classified into 2 phyla, 4 classes, 9 orders, 22 families, 27 genera, 1 sub-genus, and 31 species, which include *Macaca robustus*, *Panthera leo*, and *Pseudaxis grayi*.

View of the Durubong Cave

Pick Handaxe Cleaver

Artifacts from the Durubong Cave

Reconstructed *Ursus spelaeus*

Mandible (*Panther cf. Leo*)

Ivory (*Elephas antiquitas*)

Skull (*Crocuta crocuta*)

Mandible (*Crocuta crocuta*)

Animal fossils from the Durubong Cave

Limestone artifacts were manufactured by simple flaking and retouching techniques.

The excavator also reported that several lithic artifacts were uncovered from Cave No. 15, situated on the higher level than Cave No. 2.

Saegul Cave is situated on the relatively steep and high cliff close to the summit of Durubong Peak. The excavation of this cave revealed about 1,770 animal bones consisting of 11 species, and 37 vein quartz artifacts including choppers, chopping tools, scrapers, burins, cores, and flakes. From them, an ivory of *Elephas antiquitas*, which measures 61.8 centimeters in length and 7.6 centimeters in diameter, was collected, which is the first time in Korea.

A perfectly preserved (as whole) *Ursus spelaeus* bone fossil was unearthed from Cheonyeogul Cave.

The excavation of Heungsugul Cave exposed 12 layers, from which fossils of two children were collected. [Lee Yungjo]

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G

Chuncheon
Galdun Site
갈둔 유적

The Galdun site is located at Geumsan-ri 906-5, Seo-myeon, Chuncheon City, within the Gangwon-do Province. The site is situated on the east-facing slope of Janggunbong Peak (150 meters). Two rivers, the Geumsancheon River and the Bangdongcheon River, flow by the north and by the south of this site respectively running eastwards to the Bukhangang River.

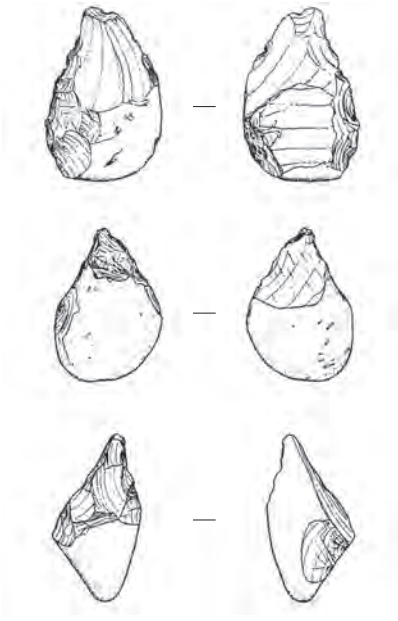
The excavation of the area covering about 495㎡ revealed four artifact bearing layers of the Paleolithic Age deposited in clay layers measuring about 1.80 meters in depth. While Artifact Bearing Layer Nos. 1 and 2 in the upper yielded few stone artifacts, the upper part of a dark reddish-brown clay layer (Cultural Layer No. 3) and the lower part of a dark reddish-brown cultural layer (Cultural Layer No. 4) yielded 543 and 1,377 stone artifacts respectively. In addition to tools including choppers and chopping tools, polyhedrons, scrapers, and notches, large quantities of cores, flakes and chips unearthed from the site provide invaluable data for studying the stone tool making process. The site is assumed to have been used for stone tool production judging from the assemblage pattern of the stone artifacts and the existence of hammerstones and refitted artifacts.

In addition to a handaxe collected from the surface, 17 handaxes and picks dated to the Middle Paleolithic were recovered from Cultural Layer No. 4. They are relatively small artifacts made of various raw materials including quartzite.

Handaxes and picks unearthed from the site provides important data for conducting comparative studies with other Middle Paleolithic sites found in the area of tributaries of the Bukhangang River, such as Sangmuryong-ri located in the place at a confluence of the Suipcheon and Seocheon Rivers in Yanggu County, Geodu-ri (the Gongjicheon River) in Chuncheon, and in the

Jakeunsolbat and Baegi site at Hahwagye-ri (the Hongcheongang River) in Hongcheon.

[Choi Seungyup]



Artfacts from Galdun

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Onseong
Gangan-ri Site
강안리 유적

This site (Natural Monument No. 334 of the Democratic People's Republic of Korea) is located at Gangan-ri, Onseong County, within the Hamgyeongbuk-do Province. The site has also been called the Donggwan-jin site, as the excavation was carried out in 1933-1935. Paleolithic deposits were located at the Pleistocene river terrace, some 10 meters higher than flood plain of the present-day Dumangang River. The stratigraphic profile of the site shows the chronological deposition pattern the following order from the bottom: a river gravel layer, a river sand layer with small pebbles, Loess II, Blackish Loess, Loess I, and a colluvial layer.

Animal bones were uncovered from the Blackish Loess and Loess I layers. The former contained *Cervus elaphus*, *Myospalax* sp., and *Citellus* sp., and the latter included *Mammuthus primigenius*, *Coelodonta antiquitatis*, *Hyaena ultima*, *Megaceros* sp., *Cervus* sp., *Bison exguus*, *Bos primigenius*, *Equus przewalskii*, and *Ovis* cf. *ammon*. The excavated animal bones from this site belong to *Mammuthus-Coelodonta* Fauna representing the cold climate in the northeastern Korean Peninsula during the Late Paleolithic. In addition, two obsidian flakes were unearthed from Loess I.

It was the first Paleolithic site to have been excavated in the Korean Peninsula. This site was excavated during the Japanese Colonial Era; but Japanese researchers during this time did not classified this site as a Paleolithic site. Fossils of *Mammuthus primigenius* uncovered from the Jangdeok-ri

site in the early 1960s had an essential role in the reestablishment of the chronology of this site. This was the sole Paleolithic site with animal bones yielded from the typical loess layer to have been excavated in the Korean Peninsula to date. [Han Changgyun]

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Paju
Gawol-ri and Juwol-ri Site
가월리와 주월리 유적

This site (Historic Site No. 389) is located at the area of Gawol-ri and Juwol-ri, Jeokseong-myeon, Paju City, within the Gyeonggi-do Province. The Paleolithic artifacts were collected on the river terrace of the Imjingang River that runs westwards through the mountainous topography. Lava plateaus have been discovered in some areas close to the main river channel. The lava plateau is laid under a sedimentary layer 22.0 meters above sea level at Juwol-ri close to the river channel and a thick river terrace deposit layer was accumulated at Gawol-ri at the same level. This topographical pattern reveals the fact that lava flowed into the lower surface and thus little pieces of lava reached to the area of Juwol-ri. In contrast, the basalt layer covers the entire area of the river valley at Jeongok-ri.

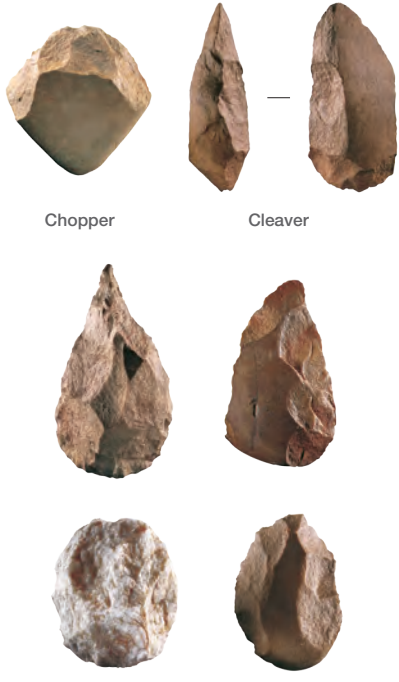
As with the Jeongok-ri and Namgye-ri sites in Yeoncheon County, and the Geumpa-ri site in Paju City, the chronological deposition pattern of this site shows the following order from the bottom: a basalt plateau, a pebble layer, a sand layer, a silt layer, and a clay layer. A pebble layer is deposited from 21 to 27 meters above sea level. A sand layer measuring up to 29 meters above sea level is laid on a pebble layer. A silt layer covers a sand layer. The colors of silt vary, such as light brown, dark yellow and red. As with other Paleolithic sites in the Imjingang River basin, the color of the clay layer that covers the silt layer is red.

The first excavation of the site yielded approximately 600 stone artifacts including handaxes, choppers, chopping tools, large scrapers, notches, cores, and small flake tools. The second excavation of the site revealed about 800 stone tools including refitted pieces. Such artifacts demonstrated that it was the place used for making stone tools.

The first excavation report stated that the date of this site is 50,000-40,000 BP, based on the stratigraphic profile according to the results of the OSL dates of the samples collected at Jeongok-ri, tools manufactured were relatively late in dates. Three soil

samples collected in the second excavation produced the IRSL dates of 78,000±24,000 BP in the lower layer, and 51,000±23,000 and 47,000±11,000 BP in the upper layer respectively. However, recent measurements of the absolute date to the basalt plateau have indicated that this landform was formed at around 40,000 BP. Therefore, the chronological date and stone tool industry of the site may have to be re-considered.

[Yi Seonbok]



Artifacts from Gawol-ri and Juwol-ri

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Sangwon
Geomeunmoru Cave
검은모루 동굴 유적

This site (National Treasure No. 27 of the Democratic People's Republic of Korea) is located at Heuku-ri, Sangwon County (the past-day Pyeongyang), within the Hwanghaebuk-do Province. Excavations collectively became conducted by the Institute of Archaeology, the Academy of Social Sciences of the Democratic People's Republic of Korea, throughout 1966-1970. The excavation team divided the sedimentary layer remained on the cave floor into five sectors. The stratigraphic profile of the west wall in Sector 3 shows the following chronological deposition pattern: Layer 1, the lowest stratum, was a bimrock layer mixed with sands yielding animal bones. Layer 2 was a bimrock layer with fine sands that did not yield animal bones. Layer 3, a reddish brown bimrock layer with fine sands, yielded a few animal bones. Layer 4 was a red bimrock layer that contained large quantities of animal fossils. Layer 5, the uppermost stratum, was the deposits contained with stalactites. Stone artifacts from Layer 4

in Sector 4 include handaxe looking stone artifacts, pointed stone tools, retouched debris, and hammerstones, while some of them might have been naturally cracked.

Animal bones classified into different species were recovered from each sector. Sector 1 contained large bones, such as the lower jawbones and humerus of *Dicerorhinus kirchbergensis*. Sector 2 included teeth of *Dicerorhinus kirchbergensis*, and bones of *Sinomegaceros* sp., *Cervus gray*, *Bubalus* sp., *Ochotona* sp., and *Myospalax tingi*; and fossils of *Rattus rattus*, and *Apodemus sylvaticus* were buried in Sector 5. Most small mammal fossils were uncovered from the boundary between Sectors 3 and 4. Of the large mammal fossils, bones of *Ursus spelaeus*, *Pachycrocuta licenti*, *Elephantidae* gen. sp., *Dicerorhinus kirchbergensis*, *Equus sangwonensis*, *Sus lydekkeri*, *Cervus gray*, *Sinomegaceros* sp., and *Macaca* sp., were particularly remarkable.

From 27 species of animal fossils uncovered from this site, 17 species (62.9 %) have become extinct. Considering composition of the faunal remains, the chronology of this site seems to have been earlier than fauna in Locality 1 at the Zhoukoudian site in China, and similar to fauna in the Gongwangling site dating to the Lower Pleistocene. A recent report from North Korea suggested that the ESL dates of animal bones at the site is about 1 million BP. Fauna from the site consisted of species that lived in warm climates thus we can assume that the climate when the site was formed was warm and close to the subtropical climatic conditions.

Pollen analysis revealed that there would have been more trees than plants and spores. Coniferous trees (70 %) being dominant features during the early phase of this site. Therefore, we can estimate that the climate during this time would have been relatively cooler. Pollens from coniferous tree dominated Layer 3. Towards the upper level of Layer 4, we can trace an increase in pollens from the deciduous trees, plants and spores and this was presumably due to the warm climate. [Han Changgyun]

G

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Sangwon
Geumcheon Cave
금천 동굴 유적

This site is located at Jung-ri, Sangwon County (the past-day Pyeongyang), within the Hwanghaebuk-do Province. The site was excavated by Kim Chaek University of Technology and it yielded five individual skeletal remains of which became classified as *Homo sapiens*. These remains were named the Geumcheon Man and they included lower jawbones, teeth, and axial skeletons. They have been presumed to have been skeletons of male adults between the ages 30-35.

Chins, which are a unique trait of *Homo sapiens*, were observed while less developed than those from the Seungnisan Man. Anatomical characteristics of human skeletal remains and teeth from this site suggest that they were *Homo sapiens* who lived before the Seungnisan Man. [Han Changgyun]

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Danyang
Geumgul Cave
금굴 유적

The Geumgul Cave (Monument No. 102 of the Chungcheongbuk-do Province) is located at a limestone cliff in Dodam-ri San 4-18, Danyang-eup, Danyang County, within Chungcheongbuk-do Province. The Namhangang River runs from the west to the east in front of the mouth of a cave. River terraces are distributed in a hill ranging from Dodam-ri Village to a cave. An alluvial plain measuring about 100 meters in width was deposited in the riverside in front of the cave before the construction of Chungju Dam.

This is a large cave, measuring 85 meters in length, 10 meters in width at the widest point, and 8 meters in height at the highest point, formed in a place measuring 5.4 meters in height from the river channel and 135 meters above sea level. The mouth of a cave faces the south and the rays of the sun straightly reach to the point 30 meters from the mouth. The cave has four floors that become deeper towards the end. The deepest floor is relatively larger than other floors. The stratigraphic profile of the site is more complex toward the mouth of a cave. Layers IV and VII are deposited in the entire floor of the cave. From the bottom, cultural layers are deposited in the order of Cultural Layer No. 1 (Layer VIII), Cultural

Layer No. 2 (Layer VII), Cultural Layer No. 3 (Layer IV), and Cultural Layer No. 4 (Layer II-4).

Mainly large simple style artifacts, such as choppers, chopping tools, handaxes, scrapers, and cleavers were recovered from Cultural Layer No. 1. About 65 percent of the excavated artifacts from this layer were choppers and chopping tools. Additionally, bones of *Cervus gray* were uncovered from this layer. Along with stone artifacts including choppers, chopping tools, points, scrapers, planes, and awls, animal bones of five families including five species, which include deer, aurochs, cave lions, hyenas, and rhinoceros, were excavated from Cultural Layer No. 2. Moreover, deer bones which were presumably use-wears formed by hitting from stone artifacts were uncovered from this layer. A sample collected from this layer produced the ESR date of 180,000 BP.

Stone artifacts yielded from Cultural Layer No. 3 include handaxes, cleavers, choppers, chopping artifacts, points, scrapers, endscrapers, planes, notches, and denticulates. Compared to the stone artifact assemblage of the precedent Cultural Layer No. 2, the ratio of choppers and chopping tools decreased but the ratio of scrapers and flake artifacts, which include endscrapers, notches, and denticulate, increased in this layer. Animal bones of 20 families including 37 species, for example, deer, aurochs, hyenas, rhinoceros, monkeys, lion, roe deer, boar, and mountain goat, were unearthed from this layer. Along with deer bones, animal bones with cut-marks were unearthed from this cultural layer. Samples collected from this layer produced the ESR date of 150,000-140,000 BP. The excavation of Cultural Layer No. 4 revealed the typical stone artifact industry of the Late Paleolithic such as: denticulates, points, endscrapers, choppers, chopping tools, cleavers, and blade artifacts including burins, endscrapers, and awls. These artifacts were made of various raw materials. Of animal bones of 10 families including 14 species which were uncovered from this layer, most of them were deer bones as with other cultural layers.

[Choi Samyong]

Artifacts from the Geumgul Cave

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Paju
Geumpa-ri Site
금파리 유적

This site is located at the area of Geumpa-ri San 5-1 and 158-3 (Localities A and B) and at the area of Geumpa-ri and Jangpa-ri (Localities C, D and E), Papyeong-myeon, Paju City, within the Gyeonggi-do Province.

The topographical feature of Paju City consists of the highland in the east and the lower basin in the west. The site is on the river terrace deposit that was formed along the Imjingang River that runs from the north to the south. The river channel demarcates boundary between steep slopes to the west and a basalt plateau to the east. Basalt cliffs measuring between 4.0 and 5.0 meters in thickness were formed to the east side of this river. The Geumpa-ri site is located to the east of the Imjingang River. Localities A and B are about 4-5 meters higher than nearby wet rice paddies. Localities C, D and E located close to basalt cliffs are about 200 meters west of Localities A and B.

The sedimentary layers containing Paleolithic stone artifacts are laid on the basalt plateau, the bedrock layer at the area of Geumpa-ri. Thick sand layers, which are the fluvial deposits, cover the basalt plateau and clays eroded by wind blow and river flow are laid on sand layers. The sediments are deposited in the order of boulders in the lowest, sand layers containing pebbles in the middle, and fine clays in the uppermost.

The stratigraphic profile of Localities A and B reveals the chronological deposition pattern the following order from the bottom: a basalt layer, a yellow sand layer, a reddish brown clay layers, a yellowish brown clay layer, and a surface layer. Excluding a few stone artifacts unearthed from a reddish brown clay layer, most artifacts were yielded from a yellowish brown clay layer laid beneath the surface layer. Pit features were found in these localities. These features provide significant data for reconstructing the natural environment of the Paleolithic Age in the Imjingang and Hantangang River basins.

Including artifacts collected on a surface layer, the number of stone artifacts uncovered from Localities A and B is 2,477. Only a few retouched pieces were recovered from the excavation.

The stratigraphic profile of Localities C, D and E reveals the chronological deposition pattern in the following order from the bottom: a basalt layer, a yellow sand layer, a reddish brown clay layer, and a disturbed

surface layer. Soil cracks and horizontal beddings were also observed in this layer. The color of particles in a reddish brown clay layer becomes lighter from the top as the ratio of sands increases gradually downwards. Soil cracks were also observed in this layer. In this layer, stone tools were buried from the middle to lower parts of the soil wedges.

The preliminary excavations and excavations of these localities revealed a total of 2,492 stone artifacts including 927 from a disturbed surface layer, and 1,544 from a reddish brown clay layer and the place under the reddish brown clay later. In these localities, most artifacts were unearthed from two horizontal levels. The first level is the zone between 10 and 20 centimeters lower than the top of a reddish brown clay layer. This level is about 20 meters above sea level. The second level is the boundary between a reddish brown clay layer and a yellowish brown sandy clay layer.

Most artifacts uncovered from these localities were small cores, flakes, and debris. Most were made of vein quartz and quartzite; but a few granite and basalt artifacts were also unearthed. The numbers of medium and large artifacts were relatively small. The retouched artifacts consist of large artifacts including handaxes, choppers, chopping tools, and small artifacts, such as scrapers. Vein quartz and quartzite were the main raw materials and several artifacts were made from granite and basalt. Of about 30 stone artifacts distributed in an area within 2 meters in radius, 12 objects were flakes chipped from a large raw material measuring about 30 centimeter in length.

There are no established absolute dates available from the Localities A and B. Nevertheless, the typological characteristics of the stone artifacts uncovered from these localities show the typical stone industry belonging to the Early Paleolithic in the Korean Peninsula. Three charcoal samples collected from the upper part of a reddish brown clay layer in Localities C, D and E produced the radiocarbon dates of 30,800±400 BP, 31,400±400 BP, and

View of the excavation

Cleaver

Handaxe

Artifacts from Geumpa-ri

31,500±1300 BP respectively. The Geumpa-ri site is an important site that provides invaluable data for studying the transition phase from the Early to Late Paleolithic in this region. [Bae Kidong]

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Donghae
Gigok Site
기곡 유적

The Gigok site is located at Mangsang-dong 408-7, Donghae City, within the Gangwon-do Province. It is situated on the lower terrace rising between 17 and 25 meters above sea level. Pebble layers and fluvial deposits have been found about 20 meters above sea level (Low Level Terrace I) in Locality A and those in the Lower Level II is laid about 14 meters above sea level in Locality B.

The stratigraphic profile of Locality A shows the chronological deposition pattern the following order from the top soil: a surface layer (23 meters above sea level), a light brown clay layer (Cultural Layer No. 1), a dark brown clay layer with soil wedges (Cultural Layer No. 2), a reddish brown clay layer with soil wedges (Cultural Layer No. 3), and a pebble layer (sediments in the paleo-channel depositing 20 meters above sea level). The dates of the OSL sand layer intruding into a pebble layer in Locality A is 116,000±6000 BP. The stratigraphic profile of Locality B shows the chronological deposition pattern the following order from the top soil, a disturbed layer (15-17 meters above sea level), a light brown clay layer (Cultural Layer No. 1), a dark brown clay layer with soil wedges (Cultural Layer No. 2), and a sandy pebble layer (sediments in the paleo-channel depositing 13 meters above sea level). It seems that a sandy pebble layer in Locality B was deposited some time later than a pebble layer in Locality A. Stone artifacts were uncovered from Culture Layer No. 1 and paleosol layers (Culture Layer Nos.

2 and 3), which were deposited in the last glacial period, were laid on a pebble layer deposited in the last interglacial period.

An organic sample collected from Artifact Cluster B-1 in a light brown clay layer (Cultural Layer No. 1) at Locality B produced the AMS radiocarbon date of 10,200±60 BP. Three organic samples collected from Artifact Cluster B-3 in a dark brown clay layer (Cultural Layer No. 2) produced the AMS radiocarbon dates of 32,100±1100 BP, 33,500±1200 BP, and 36,070±380 BP respectively. The determined absolute dates demonstrate that Cultural Layer No. 1 was deposited from the latest period of the Pleistocene to the earliest period of the Holocene; and Cultural Layers No. 2 was formed in the period between 36,000 and 32,000 BP. Cultural Layer No. 3 seems to have been deposited before 45,000 BP. Due to the erosional process, the excavation of Cultural Layer No. 3 dating to the Middle Paleolithic yielded few stone artifacts. Most unearthed artifacts from this site have been dated to the Late Paleolithic ranging between 36,000 and 10,000 BP.

The excavation of Cultural Layer No. 1 yielded small artifacts made of various raw materials, which include obsidian, porphyry, pelite, crystal, volcanic rocks, and vein quartz. Uncovered vein quartz artifacts include scrapers, endscrapers, notches, awls, and points. Most tools were prepared by retouching usable flakes. Crystal artifacts, which include cores, flakes, scrapers and endscrapers, were distributed in the entire area of this layer; but most were densely clustered in Locality B-3 estimated to be a stone tool making workshop. A few obsidian scrapers and flakes were found in Artifact Clusters B-1 and B-3. Tools made of volcanic rocks, such as scrapers, notches, and burins, were densely clustered in Locality B-1. Stone tool assemblage in Cultural Layer No. 1 show the typical cultural patterns of the latest period of the Late Paleolithic dated to 10,000 BP. The distinct characteristics can be pinpointed to the smaller sizes of tools which were evidently made from a wider range of raw materials with homogenous compositions.

All stone tools yielded from Cultural Layer No. 2 have been dated to 30,000 BP and they were made of vein quartz. This layer contained the large tools, such as choppers, chopping tools, planes, and polyhedrons. Cores from this layer are larger than those from Cultural Layer No. 1.

This is the first found Paleolithic site that yielded obsidian tools in the eastern coast of Korea. Moreover, crystal tools including three arrowheads uncovered from the site provide important data for studying the transition pattern from the Late Paleolithic to the Neolithic cultures in this region.

[Choi Seungyup]

View of the excavation

Stone arrowheads from Gigok

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Seoul
Godeok-dong Site
고덕동 유적

This site is located in the south-facing slope of a low hill at Godeok-dong, Seoul. It is close to the Neolithic site at Amsa-dong, and is situated about 3 kilometers east from the Hangang River.

A brecciated sand layer is laid on an uneven surfaced bedrock layer and a brown layer with soil wedges covers a brecciated sand layer on the site. The artifacts dated to the Paleolithic were yielded from the layer characterized by sand and angular rocks. Judging from the fact that this layer contained angular boulders, pebbles and sands, these artifacts were likely transported and deposited by flow of braided streams. The fact that the layer yielded mainly large artifacts including handaxes, cores, and flakes, and few small flakes and chips in many respects proves this view.

The excavation of the site revealed about 40 artifacts including five handaxes, seven artifacts assumed to be cores or polyhedrons, two large flakes, and two scrapers. The excavated handaxes included objects with long edges, which were made of large

Handaxes from Godeok-dong

quartzite flakes, and palm-sized pointed objects. Types of the polyhedrons vary, such as ball-shaped and tetrahedral objects. Soil samples collected from a brecciated sand layer produced the OSL dates of 40,000-19,000 BP. Considering the typological characteristics and the buried contexts of stone artifacts, however, these artifacts can be understood to have been produced before the Late Paleolithic. [Seong Chuntaek]

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Miryang
Gorye-ri Site
고례리 유적

This site, which is located at Gorye-ri, Danjang-myeon, Miryang City, within the Gyeongsangnam-do Province, is situated on the summit of a hill that rises about 20 meters above sea level. The excavation of the site revealed seven strata on the bedrock layer. From them, Paleolithic artifacts were unearthed from a light yellowish brown, which was re-classified into Layer II (the upper cultural layer), and Layer III (the lower cultural layer). The lower part of Layer III contained Aira-Tanzawa, or AT volcanic ashes.

A total of 7,908 stone artifacts were yielded from this site. Most of them were made of raw materials including silicified shale and hornfels, which are distributed in the Danjangcheon River, and the area within 1 kilometer radius of the site. It is predictable that stone tool makers selected raw materials based on the functions and types of stone tools. In addition, vein quartz artifacts were identified.

Along with extra-large blades that measures about 20 centimeters in length, blade cores and tools, which included blades, denticulates, notches, tanged points, awls, knives, and whetstones, were recovered from the upper cultural layer (Layer II). Although extra-large blades were unearthed from the lower cultural layer (Layer III), most of the blades unearthed from this layer were middle or small objects measuring less than 10 centimeters in length. In addition to a dozen of tanged points, the excavation of this layer revealed tanged artifacts, blade cores, scrapers, denticulates, and notches. Most of the excavated blades were retouched for making scrapers and denticulates. Large quantities of blades were collected; but most of them were unfinished products. Tanged points were scattered in several areas of the site. Some of them seem to have been discarded items that were broken in the manufacturing process.

Blades manufactured by crest technique

and non-crest technique were uncovered from the site. Large quantities of crested blades and rejuvenation core tablets, which were made by crest technique, were collected. Various styles of blade cores, including the prism, crest, conical, parallel crossed types, the flake core types, and the blades flaked in the lateral side and wide surface of core were collected. From them, blades having single or symmetrical striking platforms were the main types. A few pieces were flaked from striking platforms of natural cortex but most blades were manufactured by trimming flaking technique.

Considering the manufacturing techniques and typological characteristics of stone artifacts (and Aira-Tanzawa, or AT volcanic ashes) this site was presumably formed during the Late Paleolithic around 25,000 BP. A few tanged points show the similar typological characteristics to items uncovered from the Iwato D site in Japan. These objects provide important data for studying the origin and diffusion of points made from flakes and the cultural exchange pattern of the Paleolithic people who lived in the Korean Peninsula and the Japanese archipelago during the Late Paleolithic. Along with the Suyanggae, Jingeuneul, and Yongsan-dong sites, the Gorye-ri site have provided valuable Paleolithic materials such as tanged points and blade cores that can be used to study the establishment of blade technique in the modern-day Korean Peninsula. [Chang Yongjoon]

Refitted cores

Tanged point and refitted pieces

Artifacts from Gorye-ri

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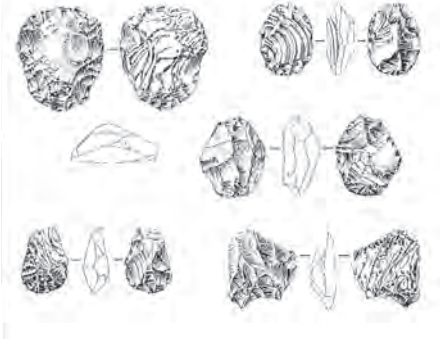
Naseon
Gulpo-ri Site
굴포리 유적

This site (National Treasure No. 27 of the Democratic People's Republic of Korea) is situated on the slope of a hill rising northeast of Seopohang-dong village, Gulpo-ri, Naseon City (the past-day Seonbong), within the Hamgyeongbuk-do Province. The place on which the site is situated is about 300-400 meters distance from the eastern coast of Korea. Three excavations were conducted on this site in 1963 and 1964 by the Institute of Archaeology and Ethnography, Academy of Social Sciences of the Democratic People's Republic of Korea. The stratigraphic profile of District No. 5 shows the following chronological deposition pattern from the top soil: Layer ㄷ-1 (surface), Layer ㄷ-2 (a dark brown fine sand layer), Layer ㄷ-III (a bluish dark brown sandy clay layer), Layer ㄷ-IV (a dark yellowish brown layer with oxidized iron particles), Layer ㄷ-V (a dark yellow clay layer), Layer ㄷ-VI (a clay layer mixed with angular and rounded pebbles), and Layer ㄷ-VII (an angular pebble and clay layer).

The excavators designated Layers ㄷ-V and ㄷ-VI, which contained Paleolithic artifacts, to the Gulporian 2 and 1 respectively. With a stone facility assumed to be a semi-subterranean pit house, vein quartz objects including choppers, chopping tools, cores, and flakes were recovered from Gulporian 2.

Marble endscrapers and chert artifacts were uncovered from Gulporian 1. Based on the typological characteristics and manufacturing techniques of stone artifacts, North Korean archaeologists proposed that the chronology of Gulporians 1 and 2 could be dated to 100,000 BP and 40,000-30,000 BP respectively. The Gulpo-ri site was the formally excavated Paleolithic site in the Korean Peninsula following the liberation of Korea from Japanese colonial rule. While only a few stone artifacts were uncovered, the excavation results confirmed that there were people living in the Korean Peninsula during the Paleolithic Age. [Han Changgyun]



Stone artifacts in the Gulporian 2

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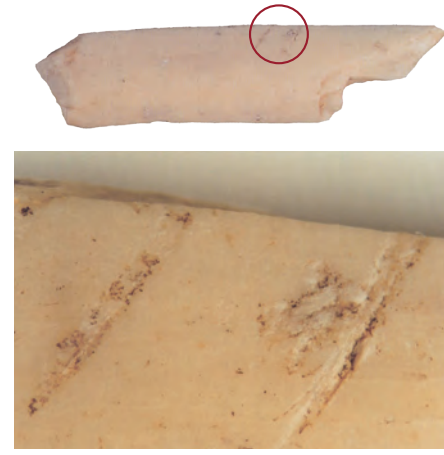
Danyang
Gunanggul Cave
구낭굴 유적

This site (Monument No. 103 of the Chungcheongbuk-do Province) is located at Yeocheon-ri, Gagok-myeon, Danyang County, within the Chungcheongbuk-do Province. This is a limestone cave site measuring about 140 meters in length. The widest space of the cave, which was named Gwangjang (plaza), measured 10 meters in length and 6 meters in width. This area was located 11 meters inside from the mouth of the cave. Nine layers were identified from the excavation. Excluding a surface layer (Layer No. 1), the stratigraphic profile of this site shows three travertine layers (Layer Nos. 2, 5 and 7), four sedimentary layers (Layers Nos. 3, 6, 8 and 9), and a thin yellow intruding layer (Layer No. 4).

Large quantities of artifacts were excavated from Layer Nos. 3 and 6. Layer No. 3, which was re-divided into Layers a-e, as the thickest stratum measuring between 1.4 and 1.7 meters in depth. This layer contained fossils of hominids, animal bones, and stone objects. About 30 stone artifacts uncovered from this layer were scrapers, burins and knives.



Cut marked bone

Animal bones whose species can be classified consist of two phyla, four classes, 11 orders, 17 families, and 21 species. These includes carnivores (*Meles* sp., *Panthera tigris*, *Ursus arctos*, *Felis lynx*, *Martes melampus*), herbivores (*Bos taurus*, *Cervus elaphus*, *Cervus* sp., *Moschus moschiferus*, *Nemorhedus goral*), and *Macaca* sp. MNI analysis revealed 72 animals in this layer. From them, 60 individuals (84 %) were Cervidae (*Cervus* sp., *Cervus elaphus and Moschus moschiferus*).

Human bones collected from Layer 3 in Gwangjang consist of two phalanges, a metacarpal bone, a cuneiform, and a calcareous. The excavator suggests that all were bones in the left side of an adult man.

[Lee Yungjo]

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H

Imsil
Haga Site
하가 유적

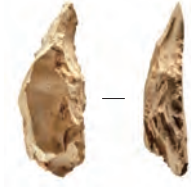
This site is located at Haga Village, Gadeok-ri, Sinpyeong-myeon, Imsil County, within the Jeollabuk-do Province. It is situated on a hill rising between 210 and 230 meters above sea level in the area of confluence where a small stream converges the Seomjingang River. High-quality raw materials, including rhyolite pebbles, were distributed near the river channels in front of the site.

The stratigraphic profile of the site shows the chronological deposition pattern the following order from the top soil: a plough layer (Layer No. 1), a light brown clay layer (Layer No. 2), a light brown clay layer with soil wedges (Layer No. 3), a dark brown sandy clay layer (Layer No. 4), a yellowish brown sandy clay layer (Layer No. 5), a reddish brown gravel and silty sand layer (Layer No. 6), and a weathered bedrock layer (Layer No. 7). Of these strata, artifacts belonging to the Paleolithic were uncovered from the lowest part of Layer No. 4 (the Upper Cultural Layer). In addition, Layer No. 4 (the Lower Cultural Layer) yielded a polyhedron.

Along with more than 27,000 stone artifacts, the excavations of the Upper Cultural Layer exposed stone tool making workshops containing cores, blade cores, blades, chips, retouched tools, hammerstones, anvils, ground stones, and fired stones. More than 70 percent of the artifact collection unearthed from this layer were made of silicified shale, and tuff and rhyolite. The ratio of vein quartz and quartzite artifacts of the total number of the excavated objects was about 20 percent. Other tools were made of sandstone, gneiss, silicified shale, and crystal. Most artifacts were microblade cores, microblades, blade cores, flakes, and chips. The ratio of the finished goods, such as tanged points, trihedral points, Haga-type knife-shaped tools, leaf-shaped points, endscrapers, burins, notches, denticulates,

View of the Haga site

Tanged point



Point(Gakchusang-seokgi)

Ground stone

Artifacts from Haga

mortar-shaped tools, and ground pebbles was small. Of 28 tanged points, a large item measures 13 centimeters in length.

Two charcoal samples collected from the Upper Cultural Layer produced the radiocarbon dates of 19,700±300 BP, and 19,500±200 BP respectively. The site dates to the late phase of the Late Paleolithic and it produced large quantities of rhyolite blades. In addition to hearths, various types of artifacts uncovered from this layer, including tanged points for hunting animals and tools for processing materials, e.g., scrapers, endscrapers, polished pebbles, and mortar-shaped implements provide crucial information for studying the daily life of the Paleolithic people who lived near the Seomjingang River basin. In this site, tanged points were associated with Japanese-type artifacts including knife-shaped stone implements, and trihedral points. [Lee Gikil]

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Hongcheon
Hahwagye-ri Site
하화계리 유적

Numerous Paleolithic sites have been excavated in the Hongcheongang River basin. Many of them were clustered around the area of Hahwagye-ri, Bukbang-myeon, Hongcheon County, within the Gangwon-do Province. This area is a basin surrounded by mountains including Bulgeumbong Peak (498.8 meters) and Paemyeongsan Mountain (147.4 meters) in the north, Kkakgeunbong

Peak (385.8 meters) in the west, Dunjisan Mountain (287.3 meters) in the south, and Bonghwasan Mountain in the northeast (338.9 meters). The Hongcheongang River meanders in front of Hahwagye-ri Village and many tributaries flow into this river in the area. A wide alluvial plain is formed from the slip-off slope.

Many river terraces formed in different periods are distributed in this area. The Paleolithic sites in Hahwagye-ri are situated on these river terraces: the low level some 12 to 14 meters, the middle level some 23 to 33 meters, and the high level terrace some 40 to 50 meters higher than the current river bed. Excavations were conducted in the Sadunji, Dodun and Dolteogeori sites (the low level), the Jageunsolbat and Susamsumaejang Buji nae sites (the middle level), and the Baegi site (the high level)

The sediments deposited in the paleo-channel, which were made up of pebbles and sands, were laid on the bottom. A sample collected from a sand layer at the Jageunsolbat site (the middle level) produced the OSL date of 79,000±4000 BP.

A reddish brown clay layer, the uppermost stratum of the sediments filled in the paleo-channel, was only laid in the middle and high level terraces. Red sands gradually increase towards the low level. The Baegi site had a thick reddish brown clay layer that can be subdivided into several strata. A sample collected from a reddish brown clay layer (the middle level terrace) in the Jageunsolbat site produced the OSL date of 66,000±3000 BP. This stratum yielded large stone tools, such as handaxes, picks, choppers, polyhedrons, and rabots.

A dark brown clay layer covered the paleo-channel of the low level terraces, and a reddish brown clay of the low and middle level terraces. This stratum is characterized by a dark brown color, the dense and hard soil fabrics, the accumulation of manganese particles, the foliated structure, and one or two lines of soil cracks. Samples collected from this layer at the Jageunsolbat site produced the AMS date of 40,600±1500 BP and the OSL date of 39,000±2000 BP respectively. This layer contained small objects including flakes tools made up of retouched notches and scrapers, and vein quartz cores.

A light brown clay layer without soil cracks was laid in between a surface layer and a dark brown clay layer. Samples collected from this layer in the Jageunsolbat site produced the AMS date of 13,390±60 BP. This layer, the latest stratum, which was laid in the low, middle and high terraces, yielded microblade cores, endscrapers, scrapers, awls, and burins that were made of various types of raw materials including obsidian.

[Choi Bokkyou]

(1) Sadunji Site
사둔지 유적

This site is located at Hahwagye1-ri. This area is a low level terrace rising between 12 and 13 meters higher than the river bed. The Hongcheongang River runs to the south and west of the site and a wide plan extends eastwards from this terrace. Paleolithic stone artifacts were unearthed from a light brown clay layer (the upper paleosol layer), which measures between 30 and 50 centimeters in thickness, under a surface layer. Differently from the lower paleosol layer, soil cracks were not formed in this stratum and soil fabrics were loose. This layer yielded microblade cores, microblades, scrapers, endscrapers, burins and awls, which were made of different raw materials including vein quartz, obsidian, crystal, slate, and porphyry. In particular, large quantities of microliths excavated from the site led to the people's attention to the significance of the Paleolithic sites in the Hongcheongang River basin. As with this site, the same layer laid in the Jageunsolbat site yielded large quantities of the microblade cores and microliths. The determined AMS radiocarbon date of a sample collected from this stratum in the Jageunsolbat site is 13,390±60 BP. The excavation results of the site served as a starting point for the discussions of the cultural aspect to the latest phase of the Late Paleollithic in Korea. [Choi Bokkyou]

Scraper

Microblade core

Artifacts from Sadunji

| Reference |

Choi, Bokkyou, 1992. Excavation Report on the Mesolithic Site at Hahwagaye-ri in Hongcheon, In *Excavation Report of the Cultural Sites in the Jungang Highway Construction Site*. Gangwon-do Provincial Office.

(2) Dodun Site
도둔 유적

This site is located at Dodun Village, Hahwagye2-ri. The Paleolithic site is located on the lower level terrace rising 14 meters higher than the river bed.

The sediments of the site were deposited under the same environmental condition with nearby Sadunji site. The stratigraphic profile of the site shows the chronological deposition pattern the following order from the bottom: a sand and pebble layer, a sandy

clay layer, a dark brown clay layer, a light brown clay layer, and a surface layer. The excavator believes that a sand and pebble layer was formed in the last inter-glacial age and a line of soil cracks formed in a dark brown clay layer suggested that this stratum was deposited around 20,000 BP, a light brown clay layer (cultural layer) was formed between 13,000 and 10,000 BP.

Of 789 stone artifacts uncovered from a light brown clay layer, 114 (about 14 %) can be classified into tools and others were made up of flakes, chips, semi-finished products, and cores. Few large core tools including choppers, chopping tools, and rabots were unearthed. About 95 percent of the excavated tools were made of small flakes, such as scrapers, endscrapers, and awls. Most stone artifacts were made of quartz pebbles, which are extensively distributed in this area. In addition, a few slate tools were also uncovered. Most flakes produced by the indirect percussion technique are very small objects measuring between 1.0 and 3.0 centimeters in length, between 1.0 and 2.0 centimeters in width and less than 1.0 centimeter in thickness, and weighing less than 10.0 grams in weight.

[Choi Bokkyou]

| Reference |

Choi, Bokkyou, and Seungyup Choi, 1996. *Dodoon Mesolithic Site, Hongchon County*. Institute of Gangwon Archaeology.

(3) Jageunsolbat Site
작은 솔밭 유적

This site is located on the middle level terrace at Hahwagye-ri 140-3. The summit of the terrace rising 140 meters above sea level, the highest point among the Paleolithic sites distributed at Hahwagye-ri, covers about 500-600 meters in length.

The stratigraphic profile of the site shows the chronological deposition pattern the following order from the top soil: a surface layer (Layer No. 1), a light brown clay layer (Layer No. 2), a dark brown clay layer (Layer No. 3), a reddish brown sandy clay layer (Layer No. 4), a sand layer (Layer No. 5), a river gravel layer (Layer No. 6), and a weathered bedrock layer (Layer No. 7). A dark brown clay layer, in which the upper soil crack was formed, had foliated structure in its lower part. The lower soil crack was formed in a reddish brown clay layer. The excavator classified chronologically the layers containing the Paleolithic stone artifacts into Cultural Layer Nos. 1 (the lower part of Layer No. 2), 2 (the lower part of Layer No. 3), 3 (Layer No. 3), and 4 (a sub-stratum between Layer Nos. 5 and 6).

About 3,000 stone artifacts were recovered from this site. From them, most objects were uncovered from Cultural Layer No. 1. In addition to obsidian objects including microblade cores, microblades, endscrapers, awls, and burins, this layer

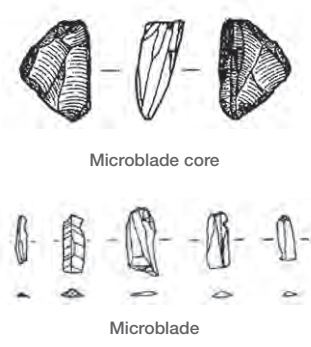
contained artifacts made of vein quartz, crystal, porphyry, and pelite. In particular, this layer yielded a total of 2,267 debitages including flakes, chips, and fragments. The assemblages of stone artifacts unearthed from this layer show the same pattern with the Sadunji site. A charcoal sample collected from this stratum was AMS dated 13,390±60 BP.

A total of 787 stone artifacts made up of choppers, chopping tools, scrapers, endscrapers, cores, flakes, and chips were unearthed from Cultural Layer No. 2. Most objects from this layer, which were slightly larger than stone artifacts from Cultural Layer No. 1, were made of vein quartz. Samples collected from this stratum produced the AMS radiocarbon date of 40,600±1500, and the OSL date of 39,000±2000 BP respectively.

A total of 226 stone artifacts including large choppers and planes, flakes, fragments, and chips were unearthed from Cultural Layer No. 3.

A total of 18 stone artifacts including handaxes and picks were excavated from Cultural Layer No. 4. The determined OSL date of a sample collected from this layer is 66,000±3000 BP. In addition, a sample collected from a sand layer (Layer No. 5) produced the OSL date of 79,000±4000 BP.

The excavation results of the Jageunsolbat site provide significant materials for studying the chronological change pattern of the stone tool industry of this area, because the sediments of this site include the artifacts dating from the Early Paleolithic including handaxes to the Late Paleolithic represented by the obsidian microliths. Component analysis of obsidians from Cultural Layer No. 1, conducted by Kuzmin, Y., indicates that the provenance of these objects was the north-facing slope of Baekdusan Mountain. Such result suggests that the inhabitants of the site may have been migrants, or perhaps could have obtained such raw materials through long-distance trade routes. [Choi Bokkyou]



Artifacts from Jageunsolbat

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(4) Dolteogeori Site
돌터거리 유적

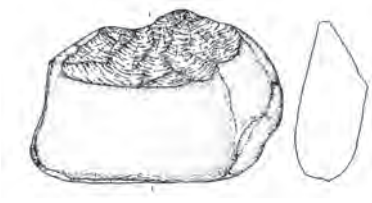
This site is located at Hahwagye-ri 360-3. This area is a foot of the hill extending

southwestwards from a mountain rising 155 meters above sea level. The site is located on an area between a small stream, which runs into the Hongcheongang River, and the low-lying agricultural plain.

The stratigraphic profile of the site shows the chronological deposition pattern the following order from the bottom: a weathered bedrock layer, fluvial deposits made up of sands and pebbles, a brown sand layer, a yellowish brown sand layer, a light brown clay layer, a dark brown clay layer, and a surface layer. Of these strata, stone artifacts were contained in a dark brown clay layer with soil cracks. The upper part of soil crack was severely cut during the paddy field development.

Including objects collected from the ground, this site yielded a total of 562 stone artifacts. Most objects were made of vein quartz. In the site, stone artifacts were densely clustered in two areas measuring 23.5 ㎡ and 33.63 ㎡ respectively. In these two spaces, the ratio of debitages including cores, chips, and flakes is 92.8 percent. In addition, hammerstones and anvils were also unearthed. In particular, the excavated numbers of the chips from these two areas are about 400 pieces (72.2 %). Moreover, these two spaces yielded refitted objects including 8 sets made up of 23 artifacts and 12 sets consisting of 105 artifacts respectively. Such evidences suggest that this site was the stone tool making place. Excluding artifacts mentioned above, this layer also yielded small vein quartz flake tools including scrapers, endscrapers, notches, denticulates, and awls.

Two samples collected from a yellowish brown sand layer produced the OSL dates of 41,700±2700 BC and 45,500±2000 BC respectively. The stone tool industry of the site is characterized by the simple tool composition made of a few types of raw materials. Moreover, all refitted pieces seems to have been made of just seven pebbles, which in turn indicates that the site was a temporary camp for making stone tools and knappers only used small quantities of the raw material. [Choi Bokkyou]



Artifact from Dolteogeori

| Reference |

Kim, Sunju, 2009. The *Excavation Report on the Baeki·Dolturgury·Songjung Sites, Hongcheon*. Gangwon Research Institute of Cultural Properties.

(5) Baegi Site
백이 유적

This site is located on the high revel terrace

(156 meters) at Hahwagye2-ri San 46-1. This terrace is situated between the Hongcheongang River and its tributary, the Busawoncheon River. The side facing the Busawoncheon River is a steep cliff and towards the Hongcheongang River, there is a gentle slope.

Due to the geographical features of the site characterized by the winding streams of two river channels, the repeated cycle of erosion and deposition of sediments, and the gradient of slopes, the sediments of the entire area of the site did not shows the regular deposition patterns. Nevertheless, the stratigraphic profile of the site shows the chronological deposition pattern the following order from the bottom: a bedrock layer (Layer No. 10), a fluvial deposit layer mixed with sands and pebble (Layer No. 9), a yellowish brown sand layer (Layer No. 8), a reddish brown sand layer (Layer No. 7), a light brown sand layer (Layer No. 6), a reddish brown clay layer (Layer No. 5), a dark reddish brown clay layer (Layer No. 4), a brown clay layer (Layer No. 3), a light brown clay layer (Layer No. 2), and a surface layer (Layer No. 1). The excavator designated Layer Nos. 7, 5 and 4 as Cultural Layer Nos. 1, 2, and 3.

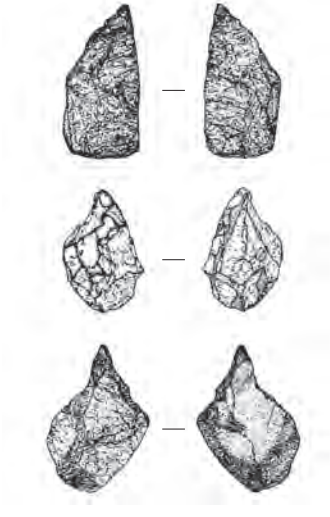
A total of 492 stone artifacts were recovered from Cultural Layer No. 1 that distributed in the entire area of the site. Most uncovered stone objects from this stratum were debitages including cores, flakes, and chips. In addition, medium and large core tools made up of handaxes, points, planes, choppers and polyhedrons, and six sets of composite tools were unearthed from this layer. Stone artifacts were made of quartzite (471 objects), vein quartz (115 objects), and acid volcanic rocks (4 objects).

Of 139 stone artifacts unearthed from Cultural Layer No. 2, most objects were densely clustered on the summit of the hill rising in the northwestern area of the site. The uncovered stone artifacts were made up of 17 cores, 23 flakes, 34 chips, 25 tools, and 40 pebbles. The tools consisted of nine planes, four choppers, two handaxes, and two polyhedrons. In addition, this stratum yielded small flake tools including seven scrapers and a notch, and eight sets of the composite tool. Stone artifacts were made of quartzite (110 objects) and vein quartz (29 objects).

A total of 340 stone artifacts were uncovered from Cultural Layer No. 3. As with Cultural Layer No. 2, stone objects from this stratum were densely clustered on the summit of the hill rising in the northwestern area of the site. The uncovered stone artifacts comprised 45 cores, 52 flakes, 122 chips, 45 tools, and 73 pebbles. The tools were made up of nine planes, eleven chopper, six handaxes, four points, and four polyhedrons. In addition, small flake tools unearthed from

this layer includes seven scrapers, three notches and a beak-shaped tool, and nine sets of the composite tool. Stone artifacts were made of quartzite (239 objects), vein quartz (89 objects), and acid volcanic rocks (nine objects).

The determined absolute dates of samples collected from the site are 84,000±6100 BP (Layer No. 7), 62,000±3200 BP (Layer No. 6), 42,000±1800 BP and 42,500±2600 BP (Layer No. 5), and 34,000±1200 BP (Layer No. 4). The relatively medium and large tools including handaxes, picks, rabots, choppers, and polyhedrons, which were excavated at the site, can be chronologically classified into the early stage in the Hongcheongang River basin. [Choi Bokkyou]



Artifacts from Baegi

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Choi, Bokkyou, 2009. *The Excavation Report on the Baeki·Dolturgury·Songjung Sites, Hongcheon*. Gangwon Research Institute of Cultural Properties.

(6) Susamsumaejang Buji nae Site
수삼 수매장 부지 내 유적

This site is located at Hahwagye-ri 535-1. This Paleolithic site is situated on the west-facing slope of a ridge of Masan Mountain (170 meters), extending towards the southeast area. The site is about 300-400 meters southeast of the Jageunsolbat Site.

The stratigraphic profile of the site shows the chronological deposition pattern the following order from the bottom: a pebble layer filled in the paleo-channel (Layer No. 7), a sand layer (Layer No. 6), a yellowish brown clay layer a dark brown clay layer (Layer No. 4), a yellowish brown clay layer (Layer No. 3), a dark reddish brown clay layer (Layer No. 2), and a surface layer (Layer No. 1). In particular, burrows, which are holes or tunnels formed by the animal activity to create a space suitable for habitation, or temporary refuge, were formed in Layer No. 6. The excavator classified Layer Nos. 5, 4 and 3 into Artifact Layer Nos. 1, 2 and 3 respectively.

A total of 58 stone artifacts were uncovered from the site. 26 objects including two cores, nine flakes, 14 chips, and a pebble were unearthed from Artifact Layer No.

1. Stone artifacts uncovered from Artifact Layer No. 2 were made up of a core, five flakes, and six chips. Along with a small chopper and a point, a core, ten flakes, and seven chips were excavated from Artifact Layer No. 3.

The measured OSL dates of samples collected from the sediments in the main profile are 95,000±6000 BP (Layer No. 7), 52,000±3000 BP (Layer No. 6), and 40,000±3000 BP (Layer No. 5) respectively. However, samples collected from other soil profiles produced different OSL dates. The determined OSL dates of samples collected from one soil profile are 71,000±4000 BP and 73,000±3000 BP (Layer No. 6), and 68,000±3000 BP (Layer No. 5). These dates are earlier than those of the main profile. The measured OSL date of the sample collected from a clay layer accumulated with manganese particles, which covered a sandy clay layer (Layer No. 6) in the other soil profile, is 59,000±3000 BP. [Choi Bokkyou]

| Reference |

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Namyangju
Hopyeong-dong Site
호평동 유적

This site is located at Hopyeong-dong Jeon 64-1, Namyangju City, within the Gyeonggi-do Province. During the excavation, the site was divided into four sectors where a large number of Paleolithic chipped stone artifacts were collected. The area in which the site is situated is an eroded basin surrounded with Cheonmasan Mountain (812 meters) and Baekbongsan Mountain from northeast to south. The sediments eroded from slopes of the mountains were deposited in this basin. The excavated sectors were located on the foots of three low hills that rise between 138 and 161 meters above sea level, which extend towards southwestward from Cheonmasan Mountain.

Excluding a grayish blue silty sand layer, which comprises fluvial deposits on the bedrock layer, all sedimentary layers deposited at this site are colluvium in origin containing particles transported from slopes. The stratigraphic profile of the site shows the chronological deposition pattern the following order from the top soil: a surface layer (Layer No. 1), a rock fragments layer consisting of brecciated pebbles, sands, and clays (Layer No. 2), a brown sandy clay layer with soil wedges (Layer No. 3), a rock fragments layer (Layer No. 4), a rock fragments layer with

sandy clays (Layer No. 5), a grayish blue silty sand layer (Layer No. 6), and a weathered granite gneiss bedrock layer (Layer No. 7). Layer No. 3, which yielded artifacts, was reclassified into the upper brown sandy clay layer (Layer No. 3a: Cultural Layer No. 1) and the lower dark brown sandy clay layer (Layer No. 3b: Cultural Layer No. 2). Layer No. 5 yielded a vein quartz core.

A total 10,561 stone artifacts including 9,298 excavated materials and 1,263 artifacts collected on the surface were collected from the site.

Most excavated artifacts were uncovered from Districts 1 (83 %) and 2 (15 %). The excavation of Cultural Layers Nos. 1 and 2 in Districts 1 and 2 yielded 3,168 and 5,889 artifacts respectively. Most artifacts from Cultural Layer No. 1 were made of vein quartz (96 %); and other artifacts, which were made from various types of pebbles collected in rivers, such as tuff (2 %), rhyolite, silicified shale, granite gneisses, and quartzite, were also unearthed from this cultural layer. Most of the uncovered artifacts were flakes; and few blades were recovered. Stone implements were made up of core tools (0.1 %) including choppers, chopping tools, and polyhedrons, retouched tools (3.5 %) consisting of scrapers, notches, endscrapers, and tanged points, and stone tool making implements comprising anvils and hammerstones (0.2 %). Endscrapers made of thick vein quartz flakes and tanged points made of tuff and rhyolite flakes were the representative tools of Cultural Layer No. 1. Along with stone artifacts, a pebble-shaped graphite with sharpened edges was recovered from Cultural Layer No. 1.

Artifacts from Cultural Layer No. 2 were made of various raw materials, such as vein quartz (54 %), obsidian (22 %), hornfels (16 %), rhyolite (7 %), tuff, silicified shale, chert, chalcedony, sandstone, granite, and quartzite. Colors of the obsidian artifacts can be classified into green (76 %), black (15 %), and gray (9 %). Most of the excavated obsidian artifacts were microblades and by-products produced during the microblade manufacture. Microblades were made of obsidian, hornfels, rhyolite, and high-quality milky-white quartz. Most microblades seem to have been components of composite tools. Excluding a quartz polyhedron, all of the excavated stone implements were retouched items, while they only account for four percent of the total number of the excavated stone artifacts from this layer. As with Cultural Layer No. 1, most quartz tools were scrapers and endscrapers. Along with a few burins, endscrapers made of blades and thumbnail ends were also collected. Use-wears formed by perforation and screw were observed in awls made of obsidian microblades.

As many as 32 absolutes dates were

obtained from the excavation. Of them, 23 samples collected from Districts 1 and 2 produced the radiocarbon dates and the OSL dates of 46,400±2000 BP in Layer 6, 34,500±800-31,000±500 BP in Layer No. 5 (8 samples), 30,000±500-27,500±500 BP in Cultural Layer No. 1 (4 samples), 24,100±200-16,190±50 BP in Cultural Layer No. 2 (10 samples). These dates suggest that the main occupational phases span from the latest phase of MIS 3 (Cultural Layer No. 1) to the Last Glacial Maximum in MIS 2 (Cultural Layer No. 2). Analysis of carbonated trees collected from the site indicates that this area was the coniferous woodland represented by the genus *Larix* when the site was occupied by Hominids.

The stone tool industries of Cultural Layer Nos. 1 and 2 were represented by the blade tool-making technique (the early phase of the Late Paleolithic) and the microblade tool-making technique (the middle phase of the Late Paleolithic) respectively. The appearance of obsidian artifacts and microblades in Cultural Layer No. 2 might be closely related to the cold climate. The excavated materials from this site provide invaluable data for studying the cultural formation process in the Late Paleolithic in the central region of Korea. [Hong Miyoung]

Blade, tanged point, and endscraper

Microblade core and microblade

Microdrill

Artifacts from Hopyeong-dong

| Reference |

Hong, Miyoung, and Jongheon Kim, 2008. *Hopyeong-dong Paleolithic Site* (*Namyangju, Gyeonggi-do Province*). Gijeon Institute of Cultural Properties.

Seungho
Hwacheon-dong Cave
화천동 동굴 유적

This site is located at Hwancheon-dong, Seungho County (the past-day Seungho District in Pyeongyang), within the Hwanghaebuk-do Province. The Institute of Archaeology, the Academy of Social Sciences of the Democratic People's Republic of Korea, conducted the excavation of this limestone cave site in 1977. The site is made up of six pit caves and two lateral caves connecting between pit caves. Most animal fossils were uncovered from Pit Cave No. 2 where scores of bones of the family Cervidae including *Dicerorhinus kirchbergensis* were densely clustered around a fireplace. Pit Cave No. 3 where parts of the sedimentary layers were remained yielded jawbones and leg bones of *Dicerorhinus kirchbergensis*. Animal fossils from Cave No. 1 were found to be poorly preserved.

Animal fossils exposed in this cave site were mainly composed of *Cervus nippon*, *Capreolus capreolus*, and *Hydropotes inermis* and no bone of *Crocuta ultima*, *Equus* sp., and *Sinomegaceros* sp. were found. The ratio of the extinct species of this site was 13.6 percent, lower than those from Geomeunmoru Cave (62.9 %), the Daehyeon-dong Cave (50.0 %), and the Seungnisan Cave (34.9 %). On the basis of the faunal remains, the date of the site has been established in the middle Upper Pleistocene, which was later than the Seungnisan Cave belonging to the early Upper Pleistocene. However, North Korean archaeologists first suggested that this was the site formed during the late Middle Pleistocene prior to the Seungnisan Cave. The faunal remains from the site indicate that this area was the warm temperate zone when animals that fell down the pit caves were fossilized in the sedimentary layers. [Han Changgyun]

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Pocheon
Hwadae-ri Swimteo Site
화대리 쉼터 유적

This site is located at Hwadae-ri 386-3, Ildong-myeon, Pocheon City, within the Gyeonggi-do Province. The site is situated to the south of the Suipcheon River, a tributary of the Hanatangang River, which runs through Ildong-myeon. The site is situated on a hill close to the river channel, which is 15 meters high from the river bed, is extended from the mountain. The coarse clay sediments deposited in the site seem to

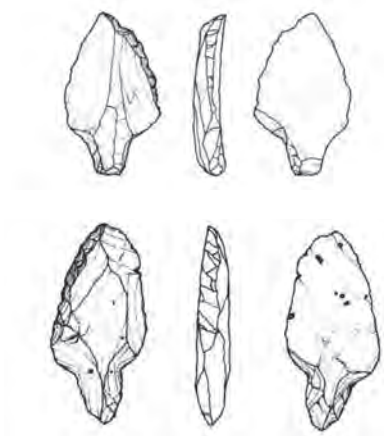
have been transported from weathered bedrock of mountain.

Paleolithic deposits measuring about 70 centimeters in thickness cover on a pebble layer (Layer No. 4), which is estimated to be the paleo-channel measuring more than 4 meters in depth, in this site. The stratigraphic profile of the site shows the chronological deposition pattern the following order from the top soil: a surface layer (Layer No. 1), a light brown clay layer (Layer No. 2 and Cultural Layer I), a dark brown clay layer (Layer No. 3 and Cultural Layers II and III), a pebble layer (Layer No. 4), and a weathered granite gneiss bedrock layer.

A soil sample collected from Cultural Layer I produced the OSL date of 22,000± 1000 BC. From the excavated artifacts from Cultural Layer I, an obsidian projectile point and a polished projectile point made of a rhyolite flake were the notable stone tools.

The excavators named the upper level of Layer No. 3 characterized by soil cracks Cultural Layer II. The excavator reported that two vein quartz artifact concentrations were recognized in the layer. Each concentration consist of 50 to 100 flake fragments and four hammerstones were unearthed, indicating that the features were likely stone tool workshops. A total of 3,709 chipped stone artifacts were collected and most were made of vein quartz. Along with scrapers and choppers, three tanged points made of porphyry or tuff were also uncovered. A charcoal collected from this layer produced the radiocarbon date of 31,200±900 BP, while it was OSL dated to 30,000±1700 BC.

Cultural Layer III was deposited in boundary between Layer Nos. 3 and 4. Typological studies on choppers, chopping tools, and spheroids suggest that this layer is dated to the early phase of the Late Paleolithic, as the layer was OSL dated to 39,000±1400 BC. [Choi Bokkyou]



Tanged points from Hwadae-ri Swimteo

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Choi, Bokkyou, 2005. *The Hwadae-Ri Shimteo Palaeolithic Site*. Kangwon National University.

J

Hwadae
Jangdeok-ri Site
장덕리 유적

This site is located at Bbaelneupgol, Jangdeok-ri, Hwadae County, within the Hamgyeongbuk-do Province. In 1962, an excavation of this site became conducted jointly by the Institute of Archaeology and Ethnography, the Academy of Social Sciences of the Democratic People's Republic of Korea. A brownish black peat layer yielded plain remains, grass seeds, and weathered fruits and trees and the layer under a brownish black peat layer contained morals, leg bones, backbones and ribs of a *Mammuthus primigenius.*

The pollen analysis of samples collected from a brownish black peat layer resulted in spores (23.5 %), coniferous trees (28.5 %), deciduous trees (22.0 %), and herbal plants (26.0 %). Spores consisted of Bryales, fungi, and Polypodiaceae. Pollens of *Pinus sibirica* like species were found. Pollens of the family Cupressaceae were made up of *Juniperus* aff., *dahurica*, and *Thuja*. From pollens of the deciduous trees, *Quercus*, *Betula*, and *Salix* were dominant. Saxifragaceae, Cyperaceae and Gramineae were dominant among pollens of herbal plants. In addition, pollens of *Oxytropis*, an alpine plant lived in Baekdusan Mountain and Gwanmobong Peak, were also found. To conclude, this layer contained a considerable amount of pollens from the coniferous trees but no pollen of the families Taxodiaceae and Juglandaceae whose habitat was the warmest climate zones were found. Such result suggests that the flora when the peat layer was deposited was similar with the present-day flora of the northern part of the Korean Peninsula, specifically, the high reaches. The climate can be understood to have been slightly cooler and more humid compared to the present-day condition.

Fossils of a *Mammuthus primigenius* became definite evidence to establish the chronology of this site (the Pleistocene).

This was the first Paleolithic site to be conducted by the pollen analysis that provided invaluable information to study the climatic change during the Upper Pleistocene in Korea. [Han Changgyun]

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Kim, Singyu, 1962. The Discovery of bones of a *Mammuthus primigenius at Hwadae County in* Hamgyeongbuk-do Province. Munhwa yusan 1962-2.

Gimpo
Janggi-dong Site
장기동 유적

This site is located at Janggi-dong 1050-1, Gimpo City, within the Gyeonggi-do Province. The area on which the site is situated is on the lower valley where the Hangang River which runs into the Yellow Sea. The Paleolithic layers were formed in low hills about 20 meters above sea level and alluvial plains about 10 meters above sea level in this area. A relatively wide alluvial plain was formed to the southeast of the site and row hills rise to the west of the site. A small stream running into the Hangang River flows in both sides of the site respectively.

The depth of the sedimentary layers deposited in the site varies from 1 to 4-5 meters. From the top, the stratigraphic profile of the site is broadly composed of an upper paleosol layer with soil cracks (Layer IV), an upper clinothem bed (Layer V), a lower paleosol layer with soil crack structure (Layer VII) and a lower clinothem bed (Layer VIII).

Some 1,500 stone artifacts were unearthed from four localities. Most artifacts were made of vein quartz (88 %) and quartzite (5 %) and a few were sandstone and tuff objects. Presumably, the Paleolithic people who lived in the site might have acquired raw materials in the vicinity of the site including channel of the Hangang River. Most artifacts were uncovered from Layers V and VIII, and Layer IV yielded a few artifacts. The lowest Artifact Containing Layer No. 3 (Layer VIII) contained many cores. This stratum was the clinothem bed; and thus stone artifacts buried in this layer seem to have been transported items. Handaxes, picks and scrapers were recovered from Artifact Containing Layer No. 2 (Layer V). As with Layer VIII, this layer was the clinothem bed. However, particles of this layer were finer than those of Layer VIII. Some items from this layer were refitted, but they seem to have been redeposited.

Locality 5 is located on a foot of a low hill that rises from 12 to 35 meters above sea level. From the four charcoals collected from Layer V in Localities 5, three samples AMS dated to earlier 50,000 BP and a sample was dated to 43,000±3500 BP. However,

Stratigrapic profile of the Janggi-dong site

Handaxe

Pick

Artifacts from Janggi-dong

a soil sample collected from Layer V was OSL dated to 30,100±1600 BP. The results of the OSL dates of samples collected from Locality 5 are 48,000±3300 BC in Layer VII, 30,800±2600 BC in Layer V (Artifact Containing Layer No. 2), and 30,200±2000 BC in Layer IV (Artifact Containing Layer No. 1).

This site shares the common depositional pattern of artifact with other Paleolithic sites at the lower Hangang River basin, including the Wondang-dong and Bullo-dong sites in Incheon, the Deogi-dong site in Goyang, and Unjeong District in Paju. These sites show that stone artifacts were mixed with angular rocks of colluvial origin in the layer deposited right on the weathered bedrock.

[Jeon Bumhwan]

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Cheorwon
Jangheung-ri Site
장흥리 유적

This site is located at Jangheung4-ri 10-8, Dongsong-eup, Cheorwon County, within the Gangwon-do Province. More specifically, this site is situated on a river terrace in the upper or middle course of the Hantangang River. The excavation of the site revealed two Paleolithic cultural layers. The upper Cultural Layer No. 1 (brown clay layer) shows a limited distribution, which measured 70 meters in length and 30 meters in width, close to the riverside of the Hantangang

River. Mostly small chipped stone artifacts include scrapers, endscrapers, microblades, and microblade cores. They were made of various raw materials such as obsidian, porphyrite, pelite, crystal, and jasper. Cultural Layer No. 2 deposited beneath Cultural Layer No. 1 was identified across the entire area where soil cracks have been formed.

Two charcoal samples collected from the upper Cultural Layer No. 1 produced the AMS radiocarbon dates of 24,200±600 BP and 24,400±600 BP. In addition, the lithic assemblage in Cultural Layer No. 1 consists of typical stone artifacts of the last phase of the Late Paleolithic in the Korean Peninsula, such as scrapers, tanged points, microblade cores, and microblades. Before Jangheung-ri, excavations of the Paleolithic locations in the Imjingang and Hantangang River basin only produced Paleolithic materials of earlier phase, such as handaxes, picks, polyhedrals, and choppers. For this reason, the Jangheung-ri site is the first excavated Late Paleolithic site in this region. [Choi Bokkyou]

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Tanged point

Microlith

Artifacts from Jangheung-ri

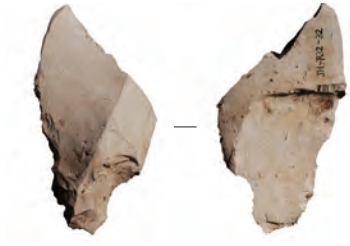
Jinju
Jangheung-ri Site
장흥리 유적

This site, also known as Jipyeon, is located at Jangheung-ri, Jipyeon-myeon, Jinju City, within the Gyeongsangnam-do Province. The area in which the site is situated is the alluvial plain about 19 meters above sea level close to the Namgang River. The preliminary excavation, which was conducted in 2000, revealed microblade cores made of silicified

shale or hornfels from the Paleolithic culture layer in the upper level of the clay layer with the characteristic soil crack structure. In addition to an obsidian microblade, various chipped stone artifacts made of vein quartz, silicified shale and mudstone were uncovered. Stone artifacts collected from the excavation include microblade cores, microblades, burins, endscrapers, axes with polished edge, and ski-spalls. The site contained various styles of endscrapers, and microblade cores made by various techniques.

The unearthed ski-spalls (the second spalls) prove that blanks of microblade core were manufactured by the similar techniques to those used at the Suyanggae site in Danyang County, and the Sinbuk site in Jangheung County. Microblades were manufactured by the Yubetsu technique, as these type of microblades have been discovered in many sites in Northeast Asia. A whetstone, three tools with polished edge, including two small axes with bifacial ground edge, and a ploughshare-shaped implement, were also unearthed. It seems that these tools may have been used for processing plants and wood working. Given the used-wear, however, the polished stone artifacts may have been used for skinning; and radiocarbon dates (18,730±80, and 22,170±120 BP) of collected charcoal samples from the cultural layer correspond well with the characteristics of lithic technology. The excavation results of the site demonstrate that polished stone artifacts appeared in the late phase of the Late Paleolithic in the present-day Korean Peninsula. [Chang Yongjoon]

Endscraper



Tanged burin

Polished stone artifact

Artifacts from Jangheung-ri

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Paju
Jangsan-ri Site
장산리 유적

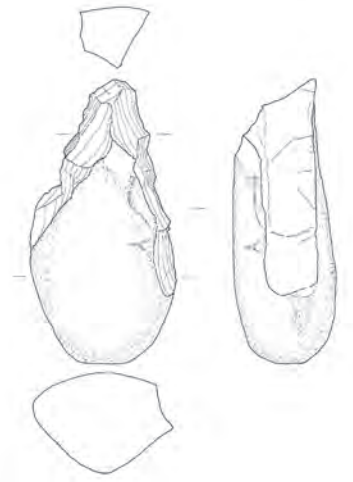
This site is located at Jangsan1-ri, Munsan-eup, Paju City, within the Gyeonggi-do Province. The Paleolithic site was formed in the period before the formation of plateau in the Imjingang River basin by lava eruption at Apsan Mountain in Pyeonggang County, North Korea. The site is situated on the hilly area rising between 30 and 40 meters above sea level to the south of the Imjingang River.

A thick gravel layer was exposed by the excavation around 36.7 meters above the mean sea level, and the layer was deposited 4 to 5 meters thick on the bedrock. The sedimentary sequence of gravel, sand, silt and clay shows decreasing particle diameters.

The excavated collection includes a hammerstone, flakes and fragments produced during the stone tool manufacture. Several cores and flakes may have been produced by the bipolar technique using small pebbles to start with. Picks, choppers and a denticulate were unearthed from the excavation.

Paleomagnetic dating suggests that the deposits were formed later than 780,000 years ago, while OSL dates of 100,000-90,000 BP, TL dates between 280,000 BP and 160,000 BP and IRSL dates of 230,000-130,000 BP indicate much younger dates. The excavator believes that the site was formed during the late phase of the Middle Pleistocene and early phase of the Upper Pleistocene based on the interpretation of stratigraphic sequence of river terrace deposits along the Imjingang River.

[Yi Seonbok]



Pick from Jangsan-ri

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Jecheon
Jeommal Cave
점말 동굴 유적

The Jeommal Cave (Monument No. 116 of Chungcheongbuk-do Province) is located at Pojeon-ri San 68-1, Songhak-myeon, Jecheon City, within the Chungcheongbuk-

do Province. This cave is situated on the southeast-facing slope (430 meters) of Yongdusan Mountain (873 meters). The entrance of the cave is located in the lower part of a rock face measuring 30 meters in height facing east.

The sediments laid on the cave floor were classified into seven layers and each layer became reclassified into two or five sub-strata. The results from the analysis of sediments revealed the climate layers accordingly:

1. Layer III (white sand layer): cold climate
2. Layer IV (reddish brown saline soil layer): warm and humid climate
3. Layer V (brown saline sand layer): cold climate
4. Layer VI (grayish saline soil layer): cold climate

The excavations of the four strata (Layers III, IV, V and VI) yielded numerous materials for conducting geological, paleontological, and archaeological studies. Most of the excavated objects from the site were animal bones. From the 177 individuals of the bones of the family Cerviade, which were classified into 6 species, 124 individuals were *Cervus nippon*. Bones of the order Chiroptera, which include *Rhinolophus* sp., *Plecotus* sp., *Miniopterus* sp., and *Murina* sp., unearthed from the sedimentary layers provided important data for studying the ecological environment of this cave during the Pleistocene. Most bones do not have trace of human use, but some, if any, show evidence of deliberately broken traces made on *Cervus* sp.

An artist's view

Scraper, and a cut marked bone

Bone tool

Artifacts form the Jeommal cave

There have been controversies concerning the fitness of this cave for human inhabitance. Given no stone artifacts were recovered from

the site. Moreover, a few scholars have suggested that artifacts found at the site were not human products. [Jang Hosu]

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Yeoncheon
Jeongok-ri Site
전곡리 유적

The Jeongok-ri site (Historic Site No. 268) is located at the area of Jeongok-ri, Jeongok-eup, Yeoncheon County, within the Gyeonggi-do Province. Stone objects seemingly belonging to the Paleolithic were collected in the riverside of the Hantangang River in 1978, and they sent Professor, Kim Won-yong at Seoul National University for authentifying. Professor Jeong Yeonghwa at Yeungnam University finally confirmed that they were Acheulean-type handaxes. The first excavation of this site was conducted by a joint excavation team comprising academic staffs of Seoul National University, Kyung Hee University, Konkuk University, and Yeungnam University in 1979. The National Research Institute of Cultural Heritage published a report containing the results of this excavation in 1983. Since then, the excavations of Jeongok-ri have been carried out 19 times to date. In particular, Jeongok Prehistory Museum was opened in 2011 for exhibiting the achievements of the archaeological investigations and the daily life of the Paleolithic people occupied in this area.

The Jeongok-ri site is located at the center of the even ground where the Hantangang River curves towards the south. The area is situated on the Chugaryeong rift valley that extends 180 kilometers in length. Lava erupted at the area of Pyeonggang County and Cheorwon County in the Middle Pleistocene filled this structural valley. As a result of this, the basalt plateau was formed in the both sides or one side of the Hantangang River. The basalt plateau on which the site is situated was formed in 0.5 million years ago and the basalt plateau in the north of Jeongok-eup Town Hall was formed in the 0.17 million years ago. This area is a flat ground where the highest spot is 61 meters above sea level. The red or yellowish brown clay layers, which contain vein quartz and quantize tools, cover on the entire area of the basalt plateau.

The overall pattern of the stratigraphic profile of the excavated areas shows that sand layers made up of hydrogenous sediments cover on the basalt plateau and the clay layers, fluvial or aeolian sediments are laid on sands. Sand layers were not

found in several excavated places. The stratigraphic profile of Pit E55S20-IV in District 2, which happens to be the highest area in the site, shows the chronological deposition pattern the following order from the bottom: a basalt bedrock layer, a grayish blue silt layer, a grayish yellow silt layer, a light yellowish brown silty clay layer, a light yellowish brown fine sandy clay layer, a brown fine sandy clay layer, a brown clay layer, a yellowish brown clay layer, a brown clay layer, and a surface layer. Five cycles of soil cracks were observed in clay layers. According to the excavator, Aira-Tanzawa, or AT volcanic ashes, were yielded from the lower levels of the uppermost soil crack, which was formed 30 centimeters below the surface, and Kikai-Tozurahara, or K-Tz volcanic ashes, were unearthed from the sediments deposited 70 centimeters below from the sediments, in which Aira-Tanzawa, or AT volcanic ashes were yielded.

The Jeongok-ri industry is characterized by Acheulean tools, which were first recognized in East Asia. Moreover, sedimentary layers have been well preserved in this area. Therefore, the stone tool industry including Acheulean tools enables archaeologists to reconstruct human behaviors.

Excluding stone artifacts collected from the ground, 17 different excavation campaigns conducted on the site yielded more than 6,400 artifacts. In spite of the appearance of the Acheulean industry, the stone tools were poorly processed and they do not show the standardized forms. Most tools were made of river gravels of vein quartz and quartzite, which are distributed in the Imjingang and Hantangang River basins. A few tools made of basalt and gneiss had been unearthed. Large tools were made up of Acheulean-type handaxes, cleavers, picks, choppers, scrapers, and polyhedrons. There are few sharp-edged small tools; and most small tools have edges touched by several percussions. The excavated small tools consisted of scrapers, denticulates, and notches. They were made of flakes, irregular-shaped stone fragments, and cores.

Most flakes are irregular-shaped long vertical items. Cores manufactured by the developed knapping technique were produced from the early stage onwards. Cores in the early stage include river gravels and irregular-shaped large stones having several flake scars, and quasi-conical-shaped cores. Given that quasi-conical-shaped cores are too small, the developed flaking making techniques were adopted to make stone tools.

It is not easy to detect the chronological change of the stone tool making techniques in terms of layers. The upper layers contained small tools manufactured by the developed stone tool making techniques but it is difficult to observe the technological changes. Although the upper layers yielded

Aira-Tanzawa, or AT volcanic ashes, tools made by the blade techniques had not been unearthed from these layers. This is the further task that remains to establish the chronological change patterns of the stone tool making technology.

The studies on the dates of the basalt plateaus and sedimentary layers have actively been conducted. It was assumed that basalt at Jeongok-ri was formed in the same period with basalts in several spots along the Imjingang riverside in Paju. However, samples collected from two locations in the lower channel of the Hantangang River produced different absolute dates. Recent studies have revealed that basalt at Jeongok-ri was formed in 0.50 million years ago but basalt at Eundae-ri 2-3 kilometers distant from Jeongok-ri produced the absolute date of 0.17 million BP.

Samples collected from sediments transported from the slopes in Jeongok-ri and the vicinity of the Yeongpyeongcheon River in Pocheon City produced the TL dates of around 50,000 BP. The TL dates of samples collected at the Gawol-ri and Juwol-ri site in Paju City are up to 0.2 million BP. Although the reliability of the TL dating method has been questionable, it is an undeniable fact that sedimentary layers in this area were formed at least in the late phase of the Middle Pleistocene. [Bae Kidong]

View of the Jeongok-ri site (1980s)

View of the excavation

Stratigraphic profile of the Jeongok-ri site

Handaxes from Jeongok-ri

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Jinan
Jingeuneul Site
진그늘 유적

This site is located at Jingeuneul Village, Mojeong-ri, Jeongcheon-myeon, Jinan County, within the Jeollabuk-do Province. The site is situated on a low hill neighboring the Jeongjacheon River in the Jinan Plateau, the source of the Geumgang River. Rhyolite pebbles were distributed near the riverside.

The stratigraphic profile of the site shows the chronological deposition pattern the following order from the top soil: a plough layer (Layer No. 1), a light yellowish brown clay layer (Layer No. 2), a dark brown clay layer (Layer No. 3), a reddish brown sandy clay layer (Layer No. 4), a dark brown sandy clay layer contained with angular stones (Layer No. 5), a reddish brown sandy clay layer (Layer No. 6), a sandy pebble layer (Layer No. 7), and a bedrock layer. Of these strata, the lower part of Layer No. 2 formed in the Late Paleolithic, and the uppermost part of Layer No. 5 deposited before the Late Paleolithic. Layer No. 5 contained four stone objects including a core, a chopper, a polyhedron, and a ball-shaped tool, which were likely made before the Late Paleolithic.

Along with more than 12,000 stone artifacts, the excavation of the Late Paleolithic cultural layer revealed about 20 stone tool making workshops for producing mainly tanged points, and two hearths. Most artifacts uncovered from workshops were bladecores, blades, flakes, and chips. The number of tools found was only few in number. Hearths were built of angular stones that were cracked by fire. Hearth No. 1 was a circular-planed feature measuring 0.7 meters in diameter. Hearth No. 2, which was 66 meters distant from Hearth No. 1, was

View of the Jingeuneul site

Tanged point

Microblade core

Artifacts from Jingeuneul

destroyed.

Uncovered stone artifacts from this layer included blade cores, microblade cores, blades, tanged points, scrapers, endscrapers, notches, denticulates, awls, and polyhedrons. Particularly, this cultural layer yielded 99 tanged points, and a large endscraper measuring between 10 and 11 centimeters in length. Most artifacts were made of rhyolite; and a few vein quartz and quartzite tools were also unearthed. Charcoal samples collected from hearths produced the radiocarbon dates of 22,850±350 BP (Hearth No. 1) and 17,310±80 BP (Hearth No. 2), the late phase of the Late Paleolithic.

This was the site that yielded the largest tanged point to have been found in northeast Asia to date. Stone tool making workshops and hearths in this site provide important data for studying space utilization patterns of the Paleolithic people. In addition, bladecores, blades and chips uncovered from the site are invaluable materials for reconstructing the blade production technique in the Late Paleolithic. [Lee Gikil]

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Suncheon
Jungnae-ri Site
죽내리 유적

This site (Monument No. 172 of Jeollanam-do Province) is located at Jungnae-ri Jeon

26-2, Hwangjeon-myeon, Suncheon City, within the Jeollanam-do Province. It is situated on a hill, which rises 70 meters above sea level, deposited in a confluence of the Bongseongcheon and Hwangjeoncheon Rivers, tributaries of the Seomjingang River. High-quality raw materials, including tuff, rhyolite, and vein quartz, were distributed on the river channels in front of the site. Seven Paleolithic sites including the Jungnae-ri site have been found in the Hwangjeoncheon River basin to date.

The stratigraphic profile of the site shows the chronological deposition pattern the following order from the top soil: a plough layer (Layer No. 1), a light brown clay layer (Layer No. 2), a sand layer contained with angular stones (Layer No. 3), a dark brown clay layer (Layer No. 4), a reddish brown clay layer with soil wedges (Layer No. 5), a yellowish brown sandy clay layer (Layer No. 6), a grayish white sandy silt layer (Layer No. 7), a yellowish brown coarse sand layer (Layer No. 8), a yellowish brown pebble layer (Layer No. 9), and a bedrock layer. The excavators classified Layer No. 2 into Cultural Layer No. 4, the upper part of Layer No. 4 into Cultural Layer No. 3, the lower part of Layer No. 4 into Cultural Layer No. 2, and Layer No. 6 into Cultural Layer No. 1.

596 artifacts made of vein quartz and tuff, which include large long flakes, choppers, chopping tools, ball-shaped implements, scrapers, notches, and denticulates, were recovered from Cultural Layer No. 1. The excavation of Cultural Layer Nos. 2 and 3 revealed 340 and 95 objects made of vein quartz respectively. 3,126 stone tools made of high-quality rhyolite, vein quartz, and tuff, such as blades, endscrapers, notches, and backed knife were unearthed from Cultural Layer No, 4. In addition, composite tools were uncovered from all cultural layers and a set of anvil and hammerstone was laid between composite tools in Cultural Layer No. 4.

While large flakes and tools in Cultural Layer No. 1 were manufactured by direct percussion technique, long flakes in Cultural Layer No. 4 were made by blade technology

Blade and microblade

Core and refitted pieces

Artifacts from Jungnae-ri

and anvil hurling technique. The chronology of Cultural Layer Nos. 1 represented by choppers, chopping tools, large flakes and Cultural Layer No. 4 characterized by rhyolite blades have been estimated to have been formed around 40,000 years ago, and the early phase of the Late Paleolithic respectively. [Lee Gikil]

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Gokseong
Jusan-ri Site
주산리 유적

This site is located at Jusan-ri 461-10 and 463, Okgwa-myeon, Gokseong County, within the Jeollanam-do Province. The site is situated on the summit of a terrace measuring 2 kilometers in length and two kilometers in width. Pebbles, sands and silts were successively deposited on granite gneiss bedrock and a light brown clay layer (cultural layer) covered on a silt layer. A total of 177 artifacts were uncovered from the site. While only four artifacts were recovered from a dark brown layer beneath the top horizon, most artifacts collected from the surface and disturbed context were likely originated from the upper part of the dark brown silt.

Most tools were made of silicified shale pebbles. Of 177 artifacts, three microblade cores, three endscrapers, and a denticulate are important objects. These artifacts show the typical typological characteristics of the microlithic industry in the late phase of the Late Paleolithic. Judging from the fact that the typical-style mircoblade cores were contained in the uppermost layer in a terrace in the Sumjingang River basin, the excavator suggests that this site was formed during the final Pleistocene. [Yi Seonbok]

| Reference |

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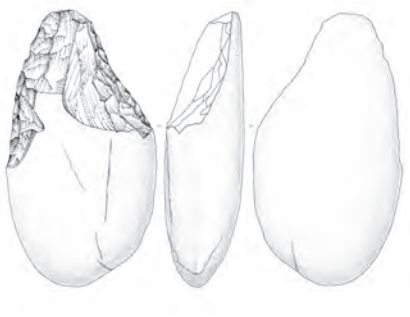
M

Andong
Maae-ri Site
마애리 유적

This site is located at Mae-ri 40-1, Pungsan-eup, Andong City, within the Gyeongsangbuk-do Province. The site is situated on a river terrace (70-80 meters above sea level) to the north of an U-shaped meander and the foot of the south-facing ridge of Hajisan Mountain. The site consists of two sectors. The excavation of the site revealed a total of 368 stone artifacts, and most were recorded from the Sector I. Artifacts which were contained in Stratum II included a dark brown sandy clay layer with soil cracks in this sector. The unearthed artifacts comprised pebble artifacts including choppers, chopping tools, polyhedrons, picks, cleavers, handaxes, and retouched artifacts including scrapers and endscrapers.

Artifacts were made of vein quartz and quartzite which are available locally. And the tool making technique is dominated by the expedient strategy. Three soil samples collected from Strata II and VI produced the OSL dates of 56,400±3600 BC and 58,900±2400 BC (Stratum II), and 64,700±4600 BC (Stratum VI) respectively. The Maae-ri site is one of the few Paleolithic sites to have been discovered in the upper Nakdonggang River basin to date. The excavation results of the site provide invaluable data for studying the Paleolithic culture in the central inland region of Korea.

[Lee Sangmok]



Pick from Maae-ri

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Seungho Mandal-ri Cave

만달리 동굴 유적

This site is located at Mandal-ri, Seungho County (the past-day Seungho District in Pyeongyang), within the Hwanghaebuk-do Province. Three river terraces were formed in this area and the sediments of the Mandal-ri Cave were composed of the similar fluvial deposits with the second terrace. The sedimentary layers were made up of 9 strata in this cave. From the uppermost, the strata of this cave can be broadly classified into the Neolithic culture layer (the upper layer), the Late Paleolithic culture layer (the middle layer), and the Upper Pleistocene layer (the lower layer). The middle layer yielded a set of fossil of *Homo sapiens* named the Mandal Man, and they consisted of skull, lower jaw, humerus, femur, and pelvis, and stone artifacts, bone and antler tools, and animal bones.

Based on anatomic features of skull and coronal suture, the Mandal Man has been classified into an adult man aged between 25 and 30 years old. Compared to contemporary Korean, his skull shows dolichocephaly and protruded supraorbital foramen. However, North Korean scholars have insisted that he shares important anatomical features with the contemporary Korean, given that his skull also has a forehead with a steep slope as well as the frontal bone from ethmoid bone to anterior fontanelle having high resemblances. Artifacts unearthed from this layer were made of obsidian, quartzite, and vein quartz. Obsidian artifacts are characterized by microblade cores, less than 5 centimeters in length. With respect to the striking patterns and angles of platform, wedge-shaped cores can be divided two types. The first type has the surface of the platform carefully prepared and covered with flake scars. The second type has the surface of the platform that has been smoothed. Striking angle of it is between 70 and 80 degrees. Presumably, the blades were flaked from cores by indirect percussion and pressure flaking. In addition, this layer yielded several pieces of bone and antler tools.

Fauna of the middle layer consisted of mammals in the temperate zone, including Cervidae (*Moschus moschiferus, Hydropotes inermis, Capreolus capreolus, Cervus nippon*) and carnivores (*Meles meles, Crocuta ultima, Vulpes vulpes*). The ratio of the extinct species was low, and it is assumed that this layer was deposited about 20,000 years ago. Pollen analysis of samples collected from this layer indicate

that plants (67.2 %) were dominant, with the next dominant being trees (24 percent consisting of 12.1 percent of coniferous trees and 12.7 percent of deciduous trees), and the least frequent features being scores (8.0 %). This area contains mixed hardwood and also glasses which grew when this later became formed.

118 individual animal bones from the lower layer mainly consisted of *Crocuta ultima*, *Lepus* sp., *Capreolus capreolus*, *Cervus nippon*, *Nyctereutes procyonoides*, which lived in the warm temperate zone. In addition, this layer yielded a few bones of *Equus* sp., *Dicerorhinus kirchbergensis*, *Macaca* sp. The ratio of extinct species (33.3 %) was higher than that of the middle layer. Based on faunal remains, this layer is assumed to have been deposited during the early Upper Pleistocene. [Han Changgyun]

Obsidian artifacts from the Mandal-ri Cave

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M

Anseong
Manjeong-ri Site
만정리 유적

This site is located at Manjeong-ri 358-14, Gongdo-eup, Anseong City, within the Gyeonggi-do Province. The Paleolithic site is situated on the foot of the south-facing slope located about 5 kilometers north of the Anseongcheon River. The Seungducheon River, a tributary of the Anseongcheon River, which flows to the southwards, is about 300 meters west of the site.

The stratigraphic profile of the site shows that Paleolithic deposits covered on a brecciated vein quartz layer, which was deposited on the vein quartz bedrock. Clay layers (paleosols) were made up of sediments transported from the slope, and had two lines of soil cracks. Stone artifacts were buried in a reddish brown clay layer, the lowest paleosol. The excavator re-divided this stratum into the upper Cultural Layer No. 1

and the lower Cultural Layer No. 2.

Stone artifacts were made of vein quartz and chert; but the excavated numbers of the chert objects were very little.

The majority of stone artifacts were unearthed from Cultural Layer No. 1. In particular, stone objects were densely clustered at the area measuring 30 meters in length and 15 meters in width. Of 732 stone artifacts from this layer, chips, cores and pebbles occupied the majority. The unearthed numbers of the flakes area about half of the cores. According to the report, retouched pieces account for about 11.0 percent of the total uncovered stone artifacts. The use-wear analysis of the scraper demonstrates that many were used for processing hide. This result suggests that scrapers replaced endscrapers. In addition to scrapers, notches, planes, and handaxes were unearthed along with a few choppers. It can be assumed that hammerstones unearthed from the site were the tools for using daily activities rather than for producing stone tools. From the 56 stone artifacts from Cultural Layer No. 2, cores occupy majority.

Tools were manufactured by the simple technique, because vein quartz was the main raw material.

A sample collected from Cultural Layer No. 1 produced the OSL date of 58,381±2972 BP. It can be assumed that a brecciated vein quartz layer was formed under the cold climate in MIS 4 and paleosols laid on a reddish brown clay layer were deposited after MIS 3. Therefore, both cultural layers were deposited under the warm climate in the early phase of MIS 3.

Stone artifacts uncovered from this site,

Distribution of the artifacts

Artifacts from Manjeong-ri

which were buried in undisturbed strata, provide important information for studying the Paleolithic culture in the Anseongcheon River basin. [Kim Hwan-il]

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Cheongju
Mansu-ri Site
만수리 유적

The Paleolithic sites are distributed at the area of Mansu-ri, Ssangcheong-ri, and Yeonje-ri, Osong-eup, Heungdeok-gu, Cheongju City, within the Chungcheongbuk-do Province. Several institutions excavated several locations, while the names of the Paleolithic sites in areas were unified into the Mansu-ri site. The sites are situated on low hills, which rise 40-50 meters above sea level, and alluvial plains to the north of the Mihocheon River, a tributary of the Geumgang River. The bedrock of this area is the Jurassic porphyry granite. The mountainous area in the northwest is laid with gneiss and the southeastern part of this area is the alluvial plain formed in the Pleistocene.

The exposed stratigraphic profiles in each locality show the identical depositional patterns of sediments. Several layers of sands are laid on a pebble layer and fluvial deposits, which cover a weathered bedrock layer. Silts cover sand layers and clays are laid on silt layers. From the bottom, the color of sediments changed in the order of brown, light brown, reddish brown, brown, and dark brown. Sands and silts were deposited by river flows; and clays were transported materials from slopes. The maximum depth of the sedimentary layers is 10 meters and more than six lines or cycles of the soil cracks were observed in some localities.

The number of the cultural layers in each locality varies from one to six. About 3,800 stone artifacts were recovered from Cultural Layer No. 3 in Localities 1 and 4, and the excavation of the Cultural Layer Nos. 1 and 2 in Locality 12 yielded about 1,900 and 1,000 stone artifacts respectively.

Most stone artifacts were made of vein quartz and quartzite and few artifacts made of other raw materials were also uncovered. Most artifacts were made of pebbles collected from river channels; and some of the excavated artifacts were made of angular vein quartz. Most artifacts were large implements including choppers, chopping tools, polyhedrons, and planes. The number of small tools, such as scrapers, endscrapers, and notches, were relatively fewer. Stone tool industries identified in different cultural

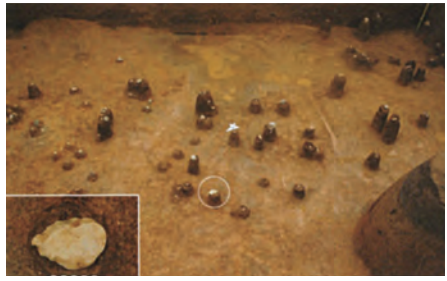
View of the Mansu-ri site

View of the excavation

Pick

Polyhedron

Chopper



Pick

Artifacts from Mansu-ri

layers and localities suggest that artifacts uncovered from this site became produced around the same period.

There is no consensus over the chronology of this site. Based on the development process of topography, the analysis of sediments, and the OSL dates, one group insists that the paleosol layer deposited on Terrace No. 2 was formed later than 50,000 BP. Scholars who support this view consider that several layers of the soil cracks and variations of the magnetic susceptibility value can be compared to the Heinrich events. The other group, who accepts the measured Beryllium 10 dates of samples collected from this site, suggests that soil cracks were formed in MIS and the lowest layer may have been as old as 0.5 mya.

This is the largest site dating before

the Late Paleolithic to have been found in the Geumgang River basin to date. Many scholars have tried to reveal the formation of the Pleistocene layer in Korea by analyzing soil cracks formed in this site. In spite of detailed measurements of absolutes dates and other scientific analyses of soil samples collected from this site, we still do now know exactly when the site was formed. [Lee Yungjo]

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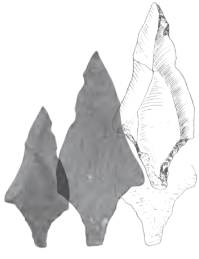

THE PALEOLITHIC

Dictionary of
Korean Archaeology

N

Taetan
Naengjeonggol Cave
냉정골 동굴 유적

This limestone cave site is located on the southeast-facing slope of Anjangsan Mountain rising at Gwasan-ri, Taetan County, within the Hwanghaenam-do Province. It was discovered in a limestone mine, and became excavated by Kim Il-sung University from 1982 to 1985. The sediments deposited in the Paleolithic Age were made up of 12 strata in this site. The lowest Layer Nos. 1 and 2 were mainly composed of fluvial deposits including sand and pebble. Layer Nos. 3 and 12 consisted of cave deposits and transported materials from the slope including clay and sand. Samples collected from the sedimentary layers produced the TL dates of 98,000 BP (Layer No. 9) and of 43,000 BP (Layer No. 10), the ESL date of 52,000 BP (Layer No. 10), and the Uranium series date of 46,000±1000 BP (Layer No. 10). The excavators classified Layer Nos. 3 and 9 into Cultural Layer No. 1 and Layer Nos. 10 and 12 into Cultural Layer No. 2.

A middle-aged man's parietal fragment and jawbone were recovered from Cultural Layer No. 1. The chronology of these skeletal remains is estimated to be the same stage with the Yonggok Man (the fossil of the early members of *Homo sapiens*). This layer contained quartzite artifacts including points, choppers, chopping tools, hammerstones and endscrapers, and bone and antler tools, such as points made from shinbone of bison. Along with an oval-shaped hearth, stone tools made up of choppers, chopping tools, and endscrapers, which were made of vein quartzite, and quartzite, were excavated from Cultural Layer No. 2.

With respect to fauna, the strata of this site can be classified into the Lower Layer (Layer Nos. 3 and 7), the Middle Layer (Layer Nos. 8 and 9), and the Upper Layer (Layer Nos. 10-12). The lower part (Layer Nos. 3 and 5) of the Lower Layer contained bones of *Coelodonta* sp., *Bison* cf. *priscus*,

Equus sp., which lived in the cool grassland zone, fossils of *Bubalus* cf. *teilhardi* that lived in the warm grassland zone were unearthed from the upper part (Layer Nos. 6 and 7) of this layer. The Middle Layer contained animal fossils which lived in the warm temperate woodland zone. They include *Pachycrocuta* cf. *sinensis*, *Crocuta ultima*, *Dicerorhinus kirchbergensis*, *Bison* cf. *priscus*, *Sus scrofa*, *Cervus nippon*, *Panthera spelaeus*, *Ursus spelaeus*, and *Sinomegaceros* cf. *pachyosteus*. The fossils of the Upper Layer were made up of animals that lived in the cool woodland and grassland zone, such as *Panthera pardus*, *Canis variabilis*, *Capreolus capreolus*, *Cervus nippon*, *Cervus elaphus*, *Equus przewalskii*, *Equus hemionus*, *Dicerorhinus kirchbergensis*, *Crocuta ultima*, *Bison* cf. *priscus*, and *Bubalus* cf. *teilhardi*. The excavated numbers of *Dicerorhinus kirchbergensis* and *Bubalus* cf. *teilhardi* were considerably lower than those from the Lower and Middle Layers. The ratio of the extinct species is about 50 percent, which is lower than that of the Geomeunmoru Cave (62 %), but is higher than that of the Seungnisan Cave (34.9 %) and Yonggok Cave No. 1 (about 20 %). [Han Changgyun]

Artifacts from Cultural Layer No. 2

Artifacts from Cultural Layer No. 1

Artifacts from the Naengjeonggol Cave

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Yeoncheon
Namgye-ri Site
남계리 유적

This site is located at Namgye-ri 265, Gunnam-myeon, Yeoncheon County, within the Gyeonggi-do Province. It is situated on an alluvial plain about 50 meters above sea level. Two rivers, Hantangang and Imjingang, meet

at a point about 2.5 kilometers southwest from the site.

The following sequence of deposits from the top to bottom was revealed from the excavation: a surface layer (Layer No. 1 measuring between 12 and 14 centimeters in thickness), a light brown clay layer (Layer No. 2 measuring between 12 and 26 centimeters in thickness), a yellowish red clay layer (Layer No. 3 measuring between 120 and 140 centimeters in thickness), a red clay layer (Layer No. 4 measuring between 180 and 186 centimeters in thickness), a darkish brown clay layer (Layer No. 5 measuring between 54 and 62 centimeters in thickness), and a bedrock layer (Layer No. 6). Of these six strata, Paleolithic artifacts were unearthed from Layer Nos. 3 and 4; and Layer No. 3 was also laid in Pits III, IV and V respectively.

Artifacts were made of quartzite, vein quartz, and basalt, while the majority were made of quartzite and vein quartz. Layer No. 3 in Pit I contained endscrapers, scrapers, small flakes and cores. Stone artifacts uncovered from Layer No. 4 include endscrapers, scrapers, point flakes, and cores. In addition, the excavation of Layer No.3 in Pits III and IV yielded a few cores and flakes, burins, scrapers, endscrapers, points, and chopping tools. Along with a core tool, a few flakes, cores, and scrapers were recovered from Layer No. 3 in Pit V. The excavator interprets that these objects were produced in the early phase of the Late Paleolithic.

Analysis from the soil samples collected from Pit V revealed pollens classified into two classes, three subclasses, nine orders, eleven families, and seven genuses. From the 18 pollens that were classified into trees, they included the genuses of *Pinus*, *Salix*, *Alnus*, *Coylus*, and *Astand*. Furthermore, 11 pollens (61 %) were classified into a genus of *Pinus*. Additionally, spores (11) and fungus spores (24) were found in all nine layers in Pit V.

[Choe Mujang]

Choppers from Namgye-ri

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Pocheon
Neulgeori Site
늘거리 유적

This site is located at Jung-ri 620, Gwanin-myeon, Pocheon City, within the Gyeonggi-do Province. The Hantangang River runs northwest-southeast along the site. The excavator divided the site into four sectors, Locality Nos. 1, 2 and 3 on the slope facing the Hantangang River and Locality No. 4 in a low hill rising 110 meters above sea level. The basalt is laid on the area along the channel of the Hantangang River. Volcanic rocks are distributed in the mountains rising to the north and west of the site. The Cretaceous tuff is the bedrock laid in Jongjasan Mountain rising to the east of the site.

The stratigraphic profile of the site shows the chronological deposition pattern of following order from the top: a surface layer (Layer No. 1), a light brown clay layer (Layer No. 2), a dark brown clay layer with the upper soil crack (Layer No. 3), a brown sandy clay layer (Layer No. 4), and a colluviums layer (Layer No. 5). Sand or sandy silt layers and brown clay layers were alternately deposited, or the basalt mass was laid under a colluviums layer made up with pebbles. The excavator designated Layer No. 2, the upper part of Layer No. 3, and Layer No. 3 as Cultural Layer Nos. 3, 2, and 1 respectively. This site yielded a total of 15,992 stone artifacts including 11,068 objects from three cultural layers and 4,924 objects from a disturbed surface layer.

Most stone artifacts were made of pebbles of various size, which were distributed in the river channels near the site, and a few tuff objects were made of raw materials collected from nearby mountains. The analysis shows that Baekdusan Mountain was the source of the obsidian artifacts of various colors including gray, green, black, and stripped pattern.

A total of 7,963 stone artifacts made of various types of the raw materials including vein quartz (57.3 %), tuff (27.7 %), obsidian (9.0 %), andesite, granite porphyry, quartzite, silicified shale, sandstone, and chalcedony were recovered from Cultural Layer No. 3. The ratio of the objects made of vein quartz from this layer was higher than that of other two cultural layers. Vein quartz objects were made up of 132 cores (2.9 %), 2,411 flakes (52.8 %), 1,868 chips (40.9 %), and 151 tools (3.3 %). Most of the excavated artifacts from this layer were made of large cores, flakes and splintered pieces. In addition, this layer yielded small tools including endscraper, notches, scrapers, and awls.

Tuff objects from this layer consisted of 186 cores (8.5 %), 578 flakes (26.2 %), 507 chips (23.0 %), 870 objects with the weathered surface (39.5 %), and 56 tools (2.5 %). Stone artifacts of which the surface area

became weathered seem to have been cores, flakes, or tools; but it is impossible to observe the accurate flaking patterns of these objects. The excavated cores were made up of generalized unprepared cores (71.5 %), blade cores (21.6 %), and microblade cores (12.9 %). The unearthed flakes comprised generalized unprepared cores (75.1 %), blades (21.6 %), and microblades (3.3 %). Based on their sizes, tuff tools can be classified into the large objects including handaxes, choppers, chopping tools, and planes, and small objects made up of scrapers, endscrapers, notches, denticulates, and awls. About 62.3 percent of the tuff tools were made of flakes; and tools made of chips occupy 21.4 percent.

Obsidian objects were composed of nine cores (1.3 %), 656 flakes (91.6 %), a chip (0.1 %), and 50 tools (7.0 %). Most cores and flakes were the debitages produced in the process of preparation and production of microliths. Blades, occupying 16.3 percent of the excavated obsidian objects, were not the objects manufactured by the systematic flaking technique. Burins and endscrapers account for occupied the majority of the excavated obsidian tools and other tools including scrapers, awls, notches, and composite tools were also uncovered from this cultural layer.

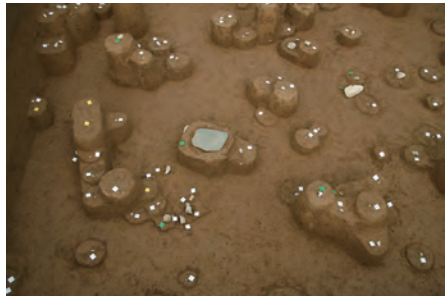
A total of 2,790 stone artifacts were unearthed from Cultural Layer No. 2. They include 1,908 vein quartz objects (68.4 %), 398 tuff objects (14.3 %), 281 obsidian objects (10.1 %), and items made of other raw materials, such as andesite, granite porphyry, and quartzite. Excluding obsidian objects, most artifacts were made of gravels distributed in the river channels nearby the site. Vein quartz objects were made up of 84 cores (4.4 %), 1,413 flakes (74.0 %), 302 chips (15.8 %), and 108 tools (5.7 %). Tuff objects consisted of 42 cores (10.55 %), 268 flakes (67.34 %), 58 chips (14.57 %), and 21 tools (5.28 %). The excavated tuff cores included unprepared cores (42.9 %), blade cores (16.7 %), and microblade cores (40.4 %). Tuff tools comprised handaxes, picks, scrapers, endscrapers, denticulates, awls, and tanged points. Obsidian objects were made up of seven cores (2.5 %), 258 flakes (91.8 %), three chips (1.0 %), and 13 tools (4.7 %). Most excavated cores were microblade cores. Among the excavated obsidian tools, the ratio of the burin occupied 61.5 percent. Other excavated obsidian tools included scrapers, endscrapers, and awls.

315 stone artifacts were recovered from Cultural Layer No. 1. They were made up of 214 vein quartz objects (68.0 %), 76 tuff objects (24 %), obsidian objects (4.5 %), and 11 objects made of other rocks (3.5 %). Blades and microblade core blanks were remarkable objects unearthed from this layer. While microblade cores from Cultural Layer No. 2 show partial preparation on the

surface, those from the Cultural layer 1 were prepared by deliberate flaking on the surface and ridges. Blades, which were flaked by the direct percussion technique, measured about 14.0 centimeters in length, which was larger than blades uncovered from other cultural layers. It is possible that stone artifacts in the upper layers were buried in this layer, because artifacts were only found in the area where Layer No. 3 (Cultural Layer No. 2) was disturbed and the excavated numbers of the stone artifacts in this layer were smaller than those from Cultural Layer Nos. 2 and 3.

Five charcoal samples collected from Layer No. 2 in which Cultural Layer No. 3 was AMS dated to 19,250±140 BP, 19,520±120 BP, 19,590±120 BP, 19,770±130 BP, and 21,240±150 BP respectively. Soil sample collected from Layer No. 3 (Cultural Layer No. 2) was dated to 25,150±150 BP. Samples collected from the points about 20 centimeters lower than the level in which stone artifacts were laid produced the AMS dates of 33,060±290 BP and 31,590±290 BP (charcoals) and 30,640±200 BP (soil). Considering these determined AMS Radiocarbon dates, this site can be understood to have been occupied from the Last Glacial Maximum (Cultural Layer No. 2) to the latest phase (Cultural Layer No. 3) of MIS 2.

The Hantangang River basin has been evaluated as the important region for studying the raw material use in the Paleolithic industries, because igneous rocks eroded from the bedrock formed in the Cretaceous and volcanic rocks are extensively distributed in this area. In



Distribution of the stone artifacts

Handaxe

Microblade

Endscraper and burin

Artifacts from Neulgeori

addition, obsidian objects from the site produced in different chronological stages in the Late Paleolithic provide significant data for studying the cultural exchange between the Late Paleolithic people and the spread of the microlithic tradition to the modern-day the Korean Peninsula. [Gwon Sujin]

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Donghae
Nobong Site
노봉 유적

The Nobong site is located at Nobong Village, Mangsang-dong San 189, Donghae City, within the Gangwon-do Province. The area in which the site is situated consists of high terraces ranging between 50 and 70 meters above sea level, and low terrace scarps ranging between 10 and 18 meters above sea level. It is assumed that these terrace scarps were formed during the last interglacial period. The Paleolithic sites have also been discovered in high terraces as well as in low terrace scarps. The site is situated in the peak of a ridge rising between 50 and 70 meters above sea level, which extends north from the Bonghwasan Mountain (185 meters). The final meeting point is at the seashore. Densely clustered artifacts at a plantation surface rising about 55 meters above sea level has been found within the grounds of the site.

The stratigraphic profile of the site shows the chronological deposition pattern the following order from the top soil: a light brown clay layer (Artifact Containing Layer I), a dark brown clay layer (Artifact Containing Layer II with the Upper Soil Wedge whose absolute date was determined in 33,300±1700 BP by the AMS dating technique), a reddish brown clay layer (Artifact Containing Layer III with the Lower Soil Wedge), a sand layer, a pebble layer, and a bedrock layer.

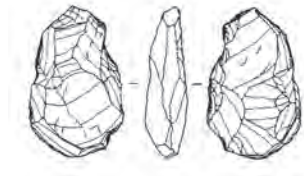
Artifact Containing Layer I is the stratum belonging to the Late Paleolithic. Small vein quartz cores and other stone artifacts were uncovered from this layer. Considering the fact that Artifact Containing Layer II has different colors and soil particles from Artifact Containing Layer III, these two layers can be understood to have been deposited in different environments. In particular, the upper part of the lower soil cracks was not remained and thus it can be assumed that a light brown soil layer was deposited after the long-term erosion of a reddish brown clay layer. Judging from the deposition pattern of the sedimentary layers, it can be inferred that Artifact Containing

Layer II was formed in the early phase of the Late Paleolithic, and the Artifact Containing Layer III was deposited before 60,000-50,000 BP, the Middle Paleolithic.

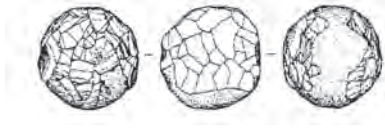
Small artifacts, which include cores, flakes, scrapers and endscrapers, were unearthed from Artifact Containing Layers I and II, whereas mainly large artifacts, such as choppers, chopping tools, and polyhedrons, were recovered from Artifact Containing Layer III. In addition, the excavation team was able to reconstruct three dwellings on the basis of postholes found in the lower part of Artifact Containing Layer I.

The recently excavated Mangsang-dong site is located in a low plantation surface formed in the northern foot of Bonghwasan Mountain. This place rises about 20 meters above sea level. The stratigraphic profile of the site shows the chronological deposition pattern the following order from the top soil: a black clay layer contained artifacts dating to the Early Neolithic, a light yellowish brown clay layer, a light brown clay layer with soil wedge, a reddish brown clay layer with the light gray colored horizontal cracks, which is the layer containing Paleolithic artifacts, a reddish brown sand layer, and a yellow sand layer containing Paleolithic artifacts. Of these strata, it seems that a reddish brown sand layer and a yellowish sand layer are the remains of the sand dune and beach formed in the Paleolithic Age. A yellow sand layer yielded a roughly made handaxe and a reddish brown clay layer yielded a core and a notch.

[Choi Bokkyou, Hong Seonghak]



Handaxe



Polyhedron

Artifacts from Nobong

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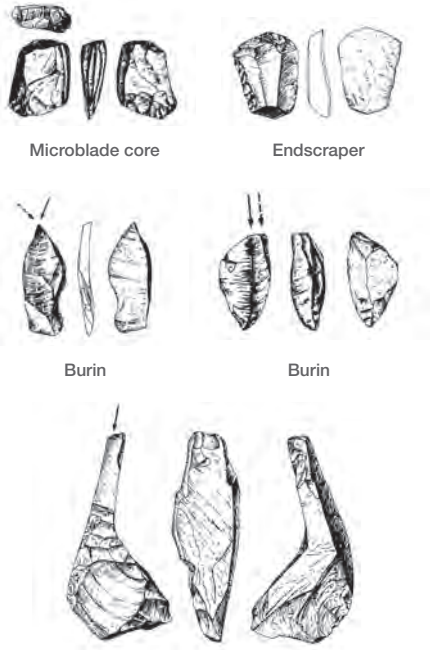
Daejeon
Noeun-dong Site
노은동 유적

This site is located at Noeun-dong, Yuseong-gu, within the City of Daejeon. The excavator divided the site located on a low hill rising between 60 and 70 meters above sea level into Districts A and B. Most of artifacts

dating to the Paleolithic were uncovered from District B (Locality 3). From the top, the stratigraphic profile shows the chronological deposition pattern of the artifact containing layers in the following order: Noeun-dong Stage 1 (brown clay layer), Noeun-dong Stage 2 (the upper part of a dark brown clay layer), Noeun-dong Stage 3 (the lower part of a dark brown clay layer), and Noeun-dong Stage 4 (colluviums transported from the slope). The layer classified into Noeun-dong Stage 1 contained Aira-Tanzawa volcanic ash, or AT. A charcoal sample collected from the layer classified into Noeun-dong Stage 3, can be characterized by soil cracks, which produced the radiocarbon date of 22,870±110 BC. The radiocarbon date of a charcoal sample collected from the lower part of the colluvium layer (Noeun-dong Stage 4) is presumed to have been formed before 54,720 BC. Comparative studies between the measured absolute dates and the depositional patterns of the sediments suggest the following chronological sequence of this site: the Middle Paleolithic (Noeun-dong Stage 4), the Middle or Late Paleolithic (Noeun-dong Stage 3), and the Late Paleolithic (Noeun-dong Stages 2 and 1).

Four stone artifacts including scrapers, notches, and polyhedrons were recovered from the layer classified into Noeun-dong Stage 4. They were made of vein quartz or tuffaceous sandstone. A vein quartz core was unearthed from the layer classified into Noeun-dong Stage 3, and a vein quartz core and a hornfels blade were excavated from the layer classified into Noeun-dong Stage 2. Of 400 stone artifacts unearthed from this site, 391 artifacts (97.8 %) were uncovered from the layer classified into Noeun-dong Stage 1. Most of artifacts yielded from this layer were hornfels items (63.3 %). The vein quartz artifacts occupy 25.1 percent. Artifacts made of vein quartz were uncovered from all cultural layers, and artifacts made of homogenous raw materials including hornfels began to appear in Noeun-dong Stage 2. The appearance of such raw material was closely related to the adoption of the flaking technique. The typical styles of blades and microblades were produced in Noeun-dong Stage 1. Raw materials including hornfels, granite, vein quartz, feldspar, and porphyry are distributed within 2 or 7 kilometers radius of the site. Retouched artifacts representing Noeun-dong Stage 1 were mainly endscrapers and burins. Moreover, burins made by various techniques were unearthed from the site. The excavator reports that this area seems to have been a stone artifacts making workshop. It measures to 20 meters in length and 20 meters in width found in Locality 3 in District B. Artifacts including artifacts for making blades and microblades, retouched artifacts, and flakes measuring less than 2

centimeters in length were densely clustered in this place. [Han Changgyun]



Artifacts from Noeun-dong

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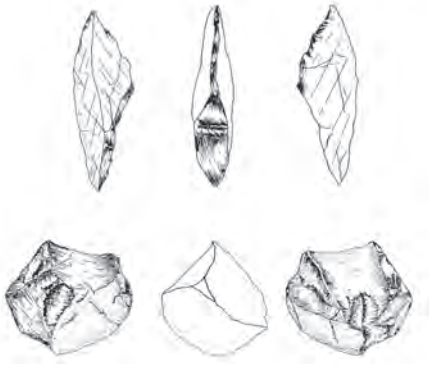
P

Yongin
Pyeongchang-ri Site
평창리 유적

The Pyeongchang-ri site, located at Pyeongchang-ri 106, Yangji-myeon, Yongin City, within the Gyeonggi-do Province, is surrounded by mountains rising about 300 meters above the mean sea level. The site is situated at the terrace formed at the southwestern corner of nearby mountains.

Six strata were recognized by the excavation conducted by the Seoul National University. Aira-Tanzawa, or AT volcanic ash samples were collected from the light brown silty clay layer. The volcanic ash was erupted from southern Kyushu 29,000-26,000 years ago, and the typical soil crack structure is observable in the layer.

Two cultural horizons were recognized: upper and lower. Typical Late Paleolithic materials, such as microblades and microcores made of silicified tuff or shale were unearthed from the upper horizon, limited to the upper part of the light brown silty clay layer. The lower horizon is characterized by small flakes and tools made on flakes made of quartzite and vein quartz. Various artifacts including scrapers, endscrapers, points and bifacially retouched pieces were uncovered. The presence of AT volcanic ashes and typological interpretation led the excavator to believe that the upper horizon was formed during the final Pleistocene, while the lower can be reached back to around 30,000 BP. [Yi Seonbok]



Artifacts from Pyeongchang-ri

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S

Seogwipo
Saengsugwe Site
생수궤 유적

This site is located at Seogwi-dong 795, Seogwipo City, within the Special Self-Governing Province of Jeju. It is primarily a rock shelter in the lower valley of the Sombannae River. The site facing to the south measures 8 meters in width, 4 meters in height, and 5 meters in depth.

The stratigraphic profile of the site shows the chronological deposition pattern the following order from the top soil: a humus layer (Layer I), a grayish dark sandy clay layer (Layer II), a gray and red clay layer (Layer IV), a yellowish brown sand layer (Layer V), and a dark brown clay layer (Layer VI). Of these strata, artifacts characterized by the microblade core industry, including microblades, scrapers, and denticulates were uncovered from Layers II, III, and IV. The tools fell from trachyte rocks from Cheonjiyeon Waterfall.

Total 257 artifacts were recovered from the excavation at Locality A, the inside of the rock shelter, and 117 artifacts from Locality B, the outside of the rock shelter. By closely examining the working surfaces and edges of 29 tools, use-wears created by trimming and cutting processes were detected in 11 samples.

Three samples collected from the sedimentary layers produced the OSL dates of 26,900±3300 BC, 17,500±1700 BC, and 10,300±1300 BC respectively. In addition, the uppermost layer contained shells and potsherds dating to the Neolithic. Presumably, therefore, this site can be understood to have been occupied by the people from the Late Paleolithic to the Neolithic. This was the first Paleolithic site to be found and excavated in Jeju. [Ko Jaewon]

| Reference |

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View of the Saengsugwe site

Artifacts from Saengsugwe

View of the excavation

Artifacts from Samok-ri

Yeongwol
Samok-ri Site
삼옥리 유적

This site is located at Samok-ri San 73, Yeongwol-eup, Yeongwol County, within the Gangwon-do Province. The area embracing Yeongwol, Pyeongchang, Jeongseon and Danyang Counties is known for the karst region and therefore, archaeologists have been able to conduct surface surveys and found archaeological remains on hills, caves and rock shelters. Artifacts dating to the Paleolithic were found in seven dolines, ranging between 244 and 281 meters above sea level, and 48-85 meters higher than the surface of the Donggang River.

The excavations conducted in the doline area yielded a total of 245 chipped stone artifacts. Most of them were medium-sized and large artifacts. They include polyhedrons, choppers, chopping tools, and vein quartz or quartzite cores. The determined absolute dates of samples and the assemblage pattern of stone artifacts suggests that the site dates to the Middle and Late Paleolithic. With the excavation results from the Ssanggul Cave at Yeondang-ri, the Gonggi Cave 2 at Gonggi-ri and the Rock Shelter at Bangjeol-ri in Yeongwol located near this site, the final results show that the Samok-ri site provides the important archaeological materials for

studying Paleolithic occupations in the region. [Kim Sunju]

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Gwangju
Sam-ri Site
삼리 유적

The Sam-ri site (Monument No. 188 of the Gyeonggi-do Province) is located at Sam-ri San 29-9, Silchon-myeon, Gwangju City, within the Gyeonggi-do Province. The site is divided into five sectors (Districts 1-5). From them, preliminary excavations were conducted in Districts 1 and 5. The west of the site is surrounded by high mountains rising over 500 meters above sea level. The site is situated on the lower hill slope rising between 75 and 85 meters above sea level. The hill in which the site is located extends northwestward from Ballibong Peak (514 meters). The Nogokcheon River, running north, converges with the Gonjiamcheon River to the southeast of the site. Fluvial deposits were laid on this area.

The stratigraphic profile of the site shows the following depositional sequence from the top to the bottom: a surface layer (Layer No. 1), a dark brown clay layer (Layer No. 2), a reddish brown clay layer with soil wedges (Layer No. 3), a sandy pebble layer (Layer No. 4), a reddish brown clay layer with soil wedges (Layer No. 5), a yellowish brown sandy clay layer (Layer No. 6), a fluvial layer consisting of sands and pebbles (Layer No. 7), and a weathered granite gneiss bedrock layer (Layer No. 8). Layer No. 3 is divided into a few sections with an upper dark brown clay layer and a lower reddish brown clay layer. The Paleolithic artifacts were uncovered from Layer No. 2 (Cultural Layer No. 1), the upper level of Layer 3 (Cultural Layer No. 2), and the boundary between Layer Nos. 3 and 4 (Cultural Layer No. 3).

The excavation of the site yielded a total of 3,900 chipped stone artifacts, including 1,807 pieces from Cultural Layer No.1, 1,785 pieces from Cultural Layer No. 2, and 308 pieces in Cultural Layer No. 3. Artifacts were densely clustered in some points within Cultural Layer Nos. 1 and 2. Most artifacts from Cultural Layer No. 3 were made of vein quartz (77 %) and quartzite (21 %). Stone artifacts from this cultural layer consist of flakes and by-products of stone tool making process (73 %), including cores, flakes and chips, core tools (11 %) made up of choppers, chopping tools, and polyhedrons, and retouched tools (3 %), such as scrapers, notches, denticulate, and composite tools.

Artifacts from Cultural Layer No. 2 were

made of vein quartz (78 %), quartzite (16 %), and many other raw materials, such as sandstone, granite, and tuff. Most of the excavated artifacts were flakes and by-products of stone tool making process (85 %). The systematic tool making techniques (such as centripetal removal) can be detectable. Stone tools from this layer consisted of core tools (3 %) including choppers, chopping tools, polyhedrons, and endscrapers, retouched tools (4 %), such as scrapers, notches, denticulates, endscrapers, and composite tools. All of the excavated composite tools consisted of scrapers and notches. With choppers, chopping tools and notches, scrapers and polyhedrons were the main implements yielded from Cultural Layer Nos. 1 and 2. Endscrapers appear from Cultural Layer No. 2.

Stone objects from Cultural Layer No. 1 were made of vein quartz (91 %), quartzite (5 %), and obsidian (4 %). Vein quartz and quartzite artifacts consisted of by-products including cores, flakes, and chips, core tools made up of choppers, chopping tools, polyhedrons, and endscrapers (1 %), and retouched tools, such as scrapers, notches, and endscrapers (3 %). Forty eight obsidian artifacts including flakes knapped from microblades were collected.

There were no samples measured by the absolute dating method in this site. Considering the depositional pattern of sediments, and the results of the absolute dates of other sites, it is estimated that Cultural Layer Nos. 1 and 2 were formed during the Late Paleolithic. [Hong Miyoung]

Obsidian artifacts from Sam-ri

| Reference |

Hong, Miyoung, and Kitae Kim, 2003. *The Gwangju Sam-ri Paleolithic Site.* Gijeon Institute of Cultural Properties.

Paju
Sangjiseok-ri Site
상지석리 유적

This site is located at Sangjiseok-ri 966-5, Gyoha-eup, Paju City, within the Gyeonggi-do Province. The Soricheon River that runs north to the west of the site meets the Gongneungcheon River, a tributary of the Hangang River, at a point 1.7 kilometer north of the site. Hwangnyongsan Mountain (135 meters) rises 2.5 kilometers south of the site. A row hill rising about 30 meters above sea level surrounds the west side of the site.

The average depth of the sediments is 205 centimeters and the deepest point is 450 centimeters in depth. Broadly, the paleosol can be classified into the upper and lower layers. A grayish blue silty sand layer is laid between two paleosol layers. This layer is assumed to have been fluvial deposits that was not laid in the eastern area of the site, and was deepest at the center of the site. This depositional pattern demonstrates that the central area of the site was a small marsh or pond before the deposition of the upper paleosol layer. The sediments can be reclassified into eight strata.

The excavation of this site revealed a total of 1,969 artifacts buried in a grayish blue silty sand layer (Stratum IV-A) and a reddish brown sandy clay layer (Stratum IV-B). A total of 12 handaxes and handaxe-like artifacts including nine objects from Stratum IV-B and three objects from Stratum IV-A were uncovered. Most of the unearthed handaxes were made of quartzite but a small oval-shaped handaxe from Stratum IV-A was made of vein quartz. Total 28 choppers were recovered from the excavation, nine from Stratum IV-A and 16 from IV-B. These artifacts can be reclassified into seven chopping tools and twenty one choppers.

A total of 45 sets of refitted artifacts, which consisted of a total of 178 flakes, were uncovered. In particular, flakes of a refitted tool were densely clustered at a point within 1 meter radius in a Stratum IV-B and the other set of flakes, which were parts of a refitted tool, were distributed about 5 meters from the former. These two refitted artifacts were made of a vein quartz pebble. The numbers of flakes compositing these two refitted pieces were 50. These objects demonstrate that this place was a stone tool making workshop.

A soil sample collected from the upper level of Stratum IV-B was OSL dated to 69,000±5000 BP and the other soil sample collected from the lower level of Stratum IV-B produced the OSL date of 72,000±5000 BP. The excavation of the site revealed more than 1,900 stone artifacts including refitted artifacts from thick sediments. The archeological contexts of the site provide important data for understanding the

Handaxes from Sangjiseok-ri

cultural characteristics of the Paleolithic sites excavated in the present-day Paju City, and for conducting comparative studies of the Paleolithic culture in the Imjingang and Hantangang River basins and the lower Hangang River basin. [Jeon Bumhwan]

| Reference |

Jeon, Bumhwan, 2012. *Dongpae-ri III, Sangjiseok-ri site, Paju.* Gijeon Institute of Cultural Properties.

Yanggu
Sangmuryong-ri Site
상무룡리 유적

This site is located at Sangmuryong-ri, Yanggu-eup, Yanggu County, within the Gangwon-do Province. This site is located near a river terrace formed at a confluence of the Suipcheon and Seocheon Rivers. More than fifteen Paleolithic sites are distributed around the site.

The stratigraphic profile of the sector excavated by Kangwon National University Museum shows the chronological deposition pattern the following order from the top soil: a surface layer (Layer I), a clay layer (Layer II), a sandy clay layer (Layer III), a pebble layer (Layer IV), and a weathered bedrock layer (Layer V). Soil cracks were observed in the border between Layers II and III. Manganese and other mineral particles were accumulated in Layers III and IV. These facts suggest that these layers were deposited under the warm and humid climate.

Artifact Containing Layer No. 1 was identified in a clay layer (Layer II) and Artifact Containing Layer No. 2 was discovered between a sandy clay layer (Layer III) and a pebble layer (Layer IV). In addition to 3,694 artifacts collected from the surface, a total of 2,718 artifacts including 868 pieces from Artifact Containing Layer No. 1 and 1,850 pieces from Artifact Containing Layer No. 2 were recovered from the site. Most of the artifacts yielded from Artifact Containing Layer No. 2 were large tools made from vein quartz, such as choppers, chopping tools, polyhedrons, planes, and handaxes. The chipped stone artifacts from Artifact Containing Layer No. 1 consist of blade cores, blades, retouched tools, microblade cores, points, and awls, which are made of granite, sandstone, porphyry, and obsidian.

The stratigraphic profile of the sector excavated by Kyung Hee University Museum shows the chronological deposition pattern the following order from the top soil: a surface layer (Layer 1), a light brown clay layer (Layer 2), a brown clay layer (Layer 3), a blackish red clay layer (Layer 4), a blackish brown clay layer (Layer 5), and a weathered bedrock layer (Layer 6). Amongst the six strata, a brown clay layer (Layer 3),

which corresponded to Artifact Containing Layer No. 1 in the sector excavated by Kangwon National University Museum yielded the large quantities of tools including microblades, burins, scrapers, endscrapers, and obsidian mircoblade cores. A blackish brown clay layer (Layer 4) contained various chipped stone artifacts made of vein quartz.

Judging from the typological charact eristics of the uncovered artifacts, Artifact Containing Layer No. 1 is estimated to date to the Late Paleolithic (50,000-20,000 BP) and Artifact Containing Layer No. 2 was presumably formed in the Middle Paleolithic (120,000-70,000 BP). The excavated materials of this site explicitly show the cultural differences between the latest phase of the Late Paleolithic identified in the sector excavated by Kyung Hee University Museum and the Middle Paleolithic found in the sector excavated by Kangwon National University Museum. In particular, the stone artifacts, classified into burins in the excavation report were identified as the Hirosato-type microblade cores produced in 14,000 BP. This type of microblade core has only been found in sites in Hokkaido in Japan and this was before the excavation of this site. [Choi Bokkyou]

Burins from Sangmuryong-ri

| Reference |

Choi, Bokkyou, and Yong-hoon Hwang, 1989. *A Study on the Prehistorical Relics of Prained Surface Areas of Paroho Lake.* Kangwon National University Museum.

Danyang
Sangsi I·III Rock Shelter
상시 1·3 바위그늘 유적

This site is located at Sangsi-ri San 39-2, Maepo-eup, Danyang County, within the Chungcheongbuk-do Province. The site is composed of three rock shelters. From them, the Paleolithic artifacts were uncovered from Rock Shelters I and III. Artifacts from Rock Shelter II belongs to the Bronze Age.

Rock Shelter 1 measures 6.0 meters in length from north to south and 2.0 meters in width from east to west. The sedimentary layer of this feature, which was 3.5 meters in depth, classified classified into 11 layers. Given the faunal remains and the results of pollen analysis, the excavator assumes that Layer Nos. 5-11 were deposited under the cool condition; and Layer Nos. 2 and 3 were formed in the warm phase.

Bone fragments of *Homo sapiens*

consisting of skull, scapula, radius, and ulna were recovered from Rock Shelter I, along with large quantities of animal bones, which were classified into classified into 12 orders, 21 families, and 35 species. Most of them were bones of the family Cervidae comprising *Cervus nippon hortulorum*, *Cervus elaphus*, *Capreolus capreolus*, *Moschus moschiferus*, and *Hydropotes inermis*. In addition, the excavation of this rock shelter revealed bones of *Lepus coreanus* and *Tetrastes bonasia*. Analysis of bones of Cerviadaes indicates that Layer No. 8 was occupied in winter; and Layer No. 7 was occupied in autumn and winter. Layer Nos. 5 and 2 were deposited in winter, and autumn and winter respectively. These results suggest that the Paleolithic people who hunted deer may have occupied the rock shelter mainly from autumn to winter.

Fossils of an individual of *Homo sapiens* from Layer No. 5 consisted of four fragments of the left frontal bone, a fragment of fonticulus of occipital bone, a left scapula, a left radius, and a right ulna, and teeth. Judging from the length of ulna and radius, the height of this fossil was about 156-158 centimeters tall.

Stone artifacts uncovered from Layer Nos. 5, 7 and 9 include choppers, chopping tools, denticulates, and hammerstones, which were made of limestone, schist, vein quartz, and pebble, and bone and antler tools including points, notches, and denticulates,

Animal bones collected from Layer No. 5 that contained fossils of *Homo sapiens* produced the uranium-series date of 30,000 BP. Based on this, the excavators suggested Layer No. 11 (the lowest stratum) and Layer No. 2 dating to 50,000 BP, and 20,000 BP respectively.

Rock Shelter No. 3 measures 9 meters in length and 14㎡ in dimension. Its entrance 4 meters in width. The width of this rock shelter became narrower from the entrance. The sediments of this rock shelter were classified into six layers from the surface to the excavated floor (303 centimeters in depth). Animal bones classified into 12 orders, 21 families, 32 species were recovered from Layer No. 5 (clay layer), the lowest stratum. Excluding bones of Hyaenadae, all

Sangsi Man's skull fragments

recovered animal bones were classified into species living during the Holocene. [Jang Hosu]

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Gongju
Seokjangni Site
석장리 유적

The Seokjangni site (Historic Site No. 334) is located at Seokjangni-dong 98, Gongju City, within the Chungcheongnam-do Province. This site was the first Paleolithic site to be discovered and formally excavated in the Republic of Korea in 1964. It is situated in the area where the Geumgang River meets its two tributaries running behind of the site.

From 27 layers deposited in this site, it was reported that chipped stone artifacts were unearthed from 13 layers. While the excavator reported that the lower horizons including Layer Nos. 21, 19, 15, 13, 12, and 8 belonged to the Early and Middle Paleolithic, skeptics have raised the possibility that many "artifacts" were in fact naturally cracked stones. The Seokjangni site, however, is well known for typical Late Paleolithic assemblages including blades and microblades from Cultural Layer Nos. 11 (Layer No. 7) and 12 (Layer No. 6). As the stone artifact assemblages chronologically progressed, the size of the stone artifacts became smaller and the types of stone artifacts became more diversified. The Late Paleolithic assemblages also include various artifacts made of such raw materials as obsidian used for making stone artifacts became imported through long distance trade.

The Early Paleolithic cultural layers contained choppers, chopping tools, picks, cleavers, and planes. According to the excavator, stone artifacts dating to the Middle Paleolithic include various large tools such as choppers and handaxes, along with small retouched pieces such as scrapers. In addition to choppers, chopping tools, and handaxes, cultural layers from this period yielded retouched blade tools, such as scrapers, endscrapers, picks, and awls. The Late Paleolithic cultural layers contained microblade cores, and various types of stone tools manufactured by blade flaking technique, such as scrapers, endscrapers, and leaf-shaped points. The excavator also reported the discovery of three habitation areas. Charcoal samples collected from the Upper Paleolithic cultural layers produced the radiocarbon dates of 30,000-20,000 BP.

The Seokjangni site was the first

archaeological site to have been excavated by systematic and scientific excavation methods (such as grid method) in South Korea. The scientific methods applied for interpreting archaeological contexts of this site, e.g., stratigraphy, absolute dating, and lithic analysis have contributed to the advancement of the Paleolithic archaeology of Korea.

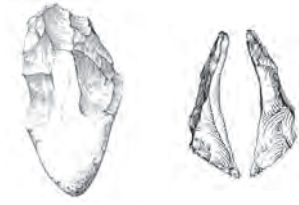
[Kong sujin]

View of the Seokjangni site

View of the excavation

Refitted core and flakes

Tanged point Microblade core Burin



Handaxe Ski spall

Endscraper Scraper

Artifacts from Seokjangni

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Hwadae
Seokseong-ri Site
석성리 유적

This site is located at Seokseong-ri, Hwadae County, within the Hamgyeongbuk-do Province. Workers found human skeletal remains from an eruptive rock measuring 2.8 meters in length, 2.0 meters in width and 1.5 meters in thickness during the quarrying process. The area was excavated in 2000 by the Institute of Archaeology, the Academy of Social Sciences of the Democratic People's Republic of Korea. It is reported that the dated samples collected from this rock produced the OSL date of 320,000±400,000 BP and the Paleomagnetic date of 300,000 BP. Three individuals became unearthed from this site including an adult aged between 30 and 40 years old, an adolescent, and a child. They were named the Hwadae Man. North Korean archaeologists suggested that they were archaic humans that lived during the early phase of the Middle Paleolithic. [Han Changgyun]

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Deokcheon
Seungnisan Cave
승리산 동굴 유적

This site is located on the foot of Seungnisan Mountain, Deokcheon County, within the Pyeongannam-do Province. The site, which was excavated twice in 1972-1973 by the Institute of Archaeology, the Academy of Social Sciences of the Democratic People's Republic of Korea, is situated 75 kilometers northeast of Pyeongyang. From the bottom, the stratigraphic profile of the frontal area was made up of a fine sand layer, a gravel and coarse sand layer, a yellow clay layer, a purplish brown gravel layer, a sand layer with angular limestone debris, and an angular limestone debris layer. However, the stratigraphic profiles of the site were not found to be identical in the entire area. Animal bones became unearthed from a clay layer with large angular limestone debris covered in the area 14 to 40 meters distance from the cave mouth. This layer contained fossils of the large mammals including the families Ursidae, Elephantidae, Equidae, and Bovidae.

A sand layer and a reddish brown gravel layer laying under a clay layer with angular limestone debris contained small bones and bone fragments. A reddish brown clay layer has been laid in the area between 17 and 29 meters distance from the

cave mouth contained bones of *Cervus* sp., *Dicerorhinus kirchbergenis*, *Equus* sp., and *Crocuta crocuta ultima*. Strata containing animal bones were the Lower Layers in the Paleolithic. fossils of archaic humans recovered from these layers include a lower first moral, an upper second moral, and a shoulder blade. North Korean scholars classified them into a set of fossil of a fossil human (translated by North Korean archaeologists) named the Deokcheon Man. Morals were co-buried with bones of *Crocuta crocuta ultima* in a place 18 meters distance from the cave mouth.

A mandible of *Homo sapiens* which became named the Seungnisan Man who died 40,000-30,000 years ago, became unearthed from the Upper Layer of the cave deposit. No animal bone was found in this layer. The Seungnisan Man was a male adult aged 35 and he was classified as *Homo sapiens*. The Deokcheon Man and Seungnisan Man were the first excavated Hominid fossils in the Korean Peninsula.

Faunal remains from the Lower Layer were made up of forest animals that lived in 100,000 BP, between the late Middle Pleistocene and the early Upper Pleistocene. Pollen analysis of samples collected from the layer containing the Deokcheon Man produced the following result: 55.4 percent of deciduous tree, 23.9 percent of coniferous tree, 10.1 percent of herbaceous plant, and 10.6 percent of spores. *Quercus* (25.8 %) and *Betula* (12.6 %) were dominant among deciduous trees. *Pinus* (17.6 %) was the dominant genus among the coniferous tress. Such results indicate that this area was mixed in terms of hardwood and was a warm temperate zone when the Deokcheon Man occupied this cave.

Pollen analysis on samples collected from the layer containing the Seungnisan Man indicates that this area was dominated by trees (84.2 %). Relatively smaller were pollen numbers of herbaceous plant (3.2 %) and spores (12.6 %). Coniferous trees (66.9 %) were especially dominant. The ratio of deciduous trees was 16.5 percent. *Pinus* (51.4 %), Cupressaceae (8.2 %) and *Larix gmelinii* (3.6 %) were dominant among the coniferous trees. From the deciduous trees, *Quercus* (9.7 %) and *Betula* (3.2 %) were found. Polypodiaceae (8.9 %) was the dominant spores. Overall, the climate was colder than the present-day when the Seungnisan Man occupied this area. [Han Changgyun]

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Jangheung
Sinbuk Site
신북 유적

This site (Monument No. 238 of the Jeollanam-do Province) is located at the area of Sinbuk Village, Bukgyo-ri, Jangdong-myeon, Jangheung County, within the Jeollanam-do Province. The site is situated on the northern slope of Jeamsan Mountain (778 meters). Small streams pass the basin that run into the Boseonggang River. In addition, to date, over 20 artifact scatters of the Paleolithic have been discovered in this area.

The stratigraphic profile of the site shows the chronological deposition pattern the following order from the top soil: a plough layer (Layer No. 1), a blackish brown clay layer (Layer No. 2), a brown clay layer (Layer No. 3), a yellowish brown clay layer (Layer No. 4), a sand layer with angular pebbles (Layer No. 5), and a bedrock layer. About 31,000 artifacts were yielded from Layer No. 3 and they were found to be deposited between 185 and 193 meters above sea level.

Artifacts were densely clustered in the high and plain area, and sparsely scattered in the slope area in Layer 3. Artifacts were contained in the zone with a gradient of 3.2 degrees, measuring between 20 and 30 centimeters in thickness. Stone tool making workshops and hearths were also found in this layer. Stone tool making workshops were classified into: the place making flakes, blades, and microblades, and the place making specialized tools, such as burins. Polished stone tools, which were associated with chipped stone artifacts were distributed in the northern area of the site and in the lower part of the cultural layer. More than six hearths were identified. Of them, four were clustered in a closed area measuring 13.0 meters in length and 4.4 meters in width.

Excavated chipped stone artifacts include microblade cores, endscrapers, burins, tanged points, leaf-shaped points, awls, notches, denticulates, handaxes, and cleavers. Various raw materials, including vein quartz, rhyolite, silicified shale and tuff, quartzite, chalcedony, crystal, and obsidian, were used for making tools. Of these raw materials, rhyolite, tuff and vein quartz are scattered in the channel of the Boseonggang River and crystal is also distributed in Jeamsan Mountain, Jangheung-eup and Yuchi-myeon. About 20 polished stone artifacts uncovered from the site consisted of chipped axes with polished edge, polished plates and pebbles, notches, and warp weight-shaped tools. Ferruginous quartz, which was raw material of red pigment, was also found in Layer No. 3. Seven charcoal samples collected in this layer produced the radiocarbon dates ranging from 25,500-18,500 BP dating to the middle phase of the Late Paleolithic.

The lithic industry of the site consists of microblade cores prepared by the technique, commonly known as the Yubetsu, and microblades represented by burins and endscrapers. Analysis of obsidian artifacts indicates that these objects were made of raw materials imported from Baekdusan Mountain and the Japanese archipelago.

[Lee Gikil]

Artifacts from Sinbuk

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Gimpo
Singok-ri Site
신곡리 유적

This site is located at Singok-ri San 36-3, Gochon-myeon, Gimpo City, within the Gyeonggi-do Province. It is placed on the south-facing slope of a low hill rising the south of the Hangang River. This area consists of low hills rising around 20 meters above sea level and alluvial plains about 10 meters above sea level. The Imjingang River meets the Hangang River close to the site.

The site is divided into three localities. The sediment layers were 4 meters deep in Locality 1, and 2 meters deep in Localities 2 and 3. The stratigraphic profile of Locality 1 shows the chronological deposition pattern the following order from the top soil: a surface layer (Layer I), a brown clay layer (Layer II), a brown and dark brown clay layer (Layer III), a dark brown clay layer (Layer IV), a red-yellow or reddish brown clay layer (Layer V), a dark brown clay layer (Layer VI), a grayish brown clay layer (Layer VII), a dark brown sand layer with breccia (Layer VIII), and a weathered bedrock layer.

The excavation of three localities yielded a total of 715 stone artifacts. Excluding a few objects including cores uncovered from a dark brown clay layer with soil cracks (Layer IV), all artifacts were uncovered from Layer VIII laid on a weathered bedrock layer. Artifacts were mixed with sands, angular pebbles, and vein quartz in this layer. About 40 percent of the excavated objects were made of river gravels and a few vein quartz and quartzite artifacts were unearthed. The excavated artifacts consisted of cores, flakes, and tools. Most of the excavated

Stratigraphic profile and artifact distribution at Singok-ri

Cleaver from Singok-ri

tools were choppers and chopping tools, and a few points, handaxes and cleavers were uncovered. Artifacts were scattered on the surface of the valley in this layer. This interment pattern of the artifacts suggests that these objects were transported by water flows.

In addition to the raw materials, artifacts were densely clustered in Layer VIII in Locality 2. The sediments were laid on relatively even ground and a grayish brown silty sand layer formed by water flows were identified in this locality.

Three soil samples collected from Locality 1 produced the OSL dates of 26,050±1900 BC (Layer IV), 32,590±2880 BC (Layer VI), and 32,570±2260 BC (Layer VII).

Many Paleolithic sites have been excavated close to this site, including the Janggi-dong site in Gimpo City the Wondangdong and Bollo-dong sites in Incheon Metropolitan City, the Deogi-dong site in Ilsan, and the Paleolithic sites in Unjeong District in Paju City. Including the stone artifact buried pattern of the Singok-ri site, the excavated contexts of such sites exposes the regional characteristic that artifacts were mixed with angular vein quartz rocks. [Jeon Bumhwan]

| Reference |

Jeon, Bumhwan, 2010. *Singok-ri Site, Gimpo: The Excavation Report of the Cultural Sites at Singok-ri for Construction an Apartment Bulding in District 3 of Singok, Gimpo.* Korea Cultural Heritage Foundation.

Cheongju
Soro-ri Site
소로리 유적

This site is located at Soro-ri, Oksan-myeon, Heungdeok-gu, Cheongju City, within the

Chungcheongbuk-do Province. The site is situated on the gentle slope of a low hill, 20 meters higher than the river bed. A little valley that was created by water erosions runs from the southeast. The Mihocheon River runs about 900 meters south of the site. The sediments deposited in this site can be classified into five layers and further re-classified into nine layers by the excavator. Stone artifacts dating to the Paleolithic were contained in Cultural Layer No. 1 (Layer 2-2) at District A, Cultural Layers Nos. 1 and 2 (Layers 2 and 3) at District B, and Cultural Layer Nos. 1, 2 and 3 (Layer 3-1) at District C.

According to the excavator, among the 2,041 stone artifacts uncovered in District A, 1,436 pieces (70.4 %) were chips, the by-products from flaking process or the wastes produced when the tools were being used. A total of 72 retouched tools (3.5 %) including scrapers, endscrapers, denticulates, beak-shaped tools, and awls, were uncovered from this layer. Most artifacts were made of quartzite (72.5 %) and vein quartz (25.8 %) and a few objects made of other raw materials including sandstone, tuff, gneiss, rhyolite, or granite were also unearthed.

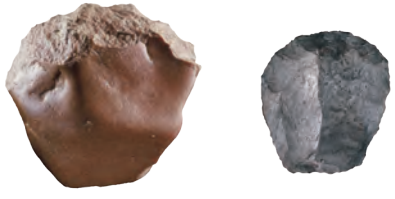
The excavation of Cultural Layer No. 1 in District B yielded 72 objects including four cores, six hammerstones, nine retouched tools, 21 flakes, and 27 chips. The excavated artifacts included scrapers, endscrapers, notches, choppers, chopping tools, and polyhedrons. In particular, three flakes and a scraper unearthed from this layer have been discovered to be the parts of a refitted object. These artifacts demonstrate that artifacts buried in this site were not moved from the remote area. A chopper and a flake were recovered from Cultural Layer No. 2. Including 40 objects collected from the surface, a total of 114 artifacts were uncovered from District B. Most artifacts were made of quartzite (64.9 %) and vein quartz (28.9 %) and a few objects made from other raw materials, such as gneiss or dyke rocks were also uncovered.

All three cultural layers in District C contained only a handful of chipped stone artifacts. The excavation of Cultural Layer No. 1 yielded 83 artifacts including ten tools consisting of choppers, chopping tools, scrapers, cleavers, denticulates and polyhedrons, and 73 objects comprising hammerstones, anvils, cores and flakes, and large quantities of chips. Two artifact concentrations were recognized, and the distance between them was 25 meters. Cores, anvils, hammerstones, flakes, and 28 refitted pieces consisting of between two and twenty seven flakes were uncovered from these places. The excavation of Cultural Layer No. 2 yielded four artifacts including scrapers, cores and flakes, and a few chips. The excavation of Cultural Layer No. 3, which was a stratum was found only in this district,

yielded six artifacts including scrapers, endscrapers, denticulates, and hammerstones, and a few chips. A refitted piece consisting of two flakes was also unearthed from this cultural layer.

Most of the excavated artifacts were unearthed from Cultural Layer No. 1 and the number of unearthed objects from Cultural Layer Nos. 2 and 3 was small. Most of them were made of vein quartz and quartzite and a few pieces were made of other raw materials, such as sandstone, granite, tuff, gneiss, rhyolite. Most artifacts were flakes and by-products of flaking process, such as cores and chips. Cultural layers yielded few retouched tools and the types of the excavated object were relatively simple. Judging from the typological characteristics of the excavated stone objects, Cultural Layer Nos. 1 and 2 were strata deposited during the Late Paleolithic, while Cultural Layer 3 can be a little older than that.

[Woo Jongyoon]



chopper Endscraper

Artifacts from Soro-ri

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Danyang
Suyanggae Site
수양개 유적

The Suyanggae site (Historic Site No. 398) is located at Aegok-ri, Jeokseong-myeon, Danyang County, within the Chungcheongbuk-do Province.

The 9th and 10th excavations, which were conducted in 2001 and 2008 respectively, revealed a pebble layer in terrace formed in the place rising between 160 and 165 meters above sea level (45 and 50 meters above the present river bed). Various stone artifacts including handaxes, planes, and spheroids were recovered from this area. The excavation of the artifact bearing layer before the Late Paleolithic, which was also recognized around 130 meters above sea level, yielded stone artifacts produced by direct percussion, such as scrapers, planes, and points. Samples collected from the Late Paleolithic cultural layer (Layer IV) produced the absolute dates of 18,630 BP, and 16,400 BP. This stratum is a clay layer yielding more than 30,000 stone artifacts. Over 90 percent of the excavated artifacts

View of the Suyanggae site

View of the excavation

Stone tool making workshop

Tanged point

Microblade core

Endscraper

Artifacts from Suyanggae

were made of angular shale nodules.

Uncovered stone artifacts from this site include handaxes, choppers and chopping tools. More specifically, about 250 microblade cores and 50 tanged points were significant artifacts unearthed from the site. With respect to striking platforms, microblade cores were classified into three styles: Type I (unprepared flaking), Type II (longitudinal flaking), and Type III (vertical flaking). Type IIb can be compared to the Yubetsu technique. The excavation of this site revealed several stone tool making workshops where hammerstones and microblade cores were mixed with large quantities of flakes.

Tanged points, microblades and microblade cores unearthed from the site provide important information to the study

of lithic technology and Late Paleolithic culture in the Korean Peninsula. [Lee Yungjo]

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Paju
Unjeong I Site
운정 1 지구 유적

Unjeong (Unjeong District No. 1) is located at Gyoha-eup, Paju City within the Gyeonggi-do Province. It was made into a large-scale housing site planned as a response to the shortage in housing in and around the capital city, Seoul. In order to conduct the salvage excavations of this district, a series of surface survey were carried out in 2002 and then the preliminary excavations of 45 localities were conducted in 2004-2006. On the basis of the results of the preliminary excavations, archaeological remains found in 30 localities were excavated in 2006-2010. Of them, Paleolithic artifacts were excavated at 13 localities, namely Locality Nos. 4, 5, 7, 11, 12, 15, 16, 19, 34, 35, 36, 37 and 47. Locality 7 was re-sectored into 7 and 7-1 and Locality No. 36 was re-divided into 36-1, 36-4 and 36-5.

The topography of the area is made up of alluvial plains and low hills that are lower than 40 meters above sea level. Small streams between valleys run from south to north, and finally flow into the Gongneungcheon River. In the area, the Paleolithic sites are mainly situated on two landforms, hill slopes and valleys. Raw materials of the stone artifacts, including gneiss, schist, vein quartz and quartzite, are extensively distributed in this area.

The stratigraphic profile of this district shows the chronological deposition pattern the following order from the bottom: a weathered bedrock layer, sedimentary layers on a valley bottom, sedimentary layers on a slope, and sedimentary layers in the modern and contemporary era. Sedimentary layers on a valley bottom contained large quantities of vein quartz fragments transported from slopes and a few pieces of stone artifacts were contained in the mass of vein quartz fragments. Of sedimentary layers on a slope, a dark brown clay layer with the upper soil crack was identified over the entire area of the site. In accordance with

the topographical conditions, various layers including a bedrock layer, a sandy clay layer, and a pebble layer were deposited under a dark brown clay layer. A reddish brown clay layer with the lower soil crack was found in Locality No. 16.

Stone artifacts were mainly uncovered from the upper and lower parts of a dark brown clay layer with the upper soil crack, a reddish brown (or yellowish brown) sandy clay layer deposited under a dark brown clay layer, and a layer containing vein quartz fragments on a weathered bedrock layer. Of the upper part of the brown clay layers, stone artifacts were only uncovered from Locality No. 16. This layer was formed in the Late Paleolithic dating to 12,150 BP. The OSL and AMS radiocarbon dates of the samples collected from the lower part of a brown clay layer and a sandy clay layer range from 37,000 to 30,000 BP. The determined absolute dates of an artifact containing layer on a weathered bedrock layer range from 48,000 to 35,000 BP. Synthesizing the depositional patterns of sediments, the results of the absolute dating analysis, and the assemblage of artifacts, the strata containing stone artifacts could be classified into three: Artifact Containing Layer Nos. 1, 2 and 3 from the bottom. Since the sediments of the site were made up of loads transported from slopes, the term 'artifact containing layer' is more appropriate than the term 'cultural layer'.

Artifact Containing Layer No. 1 was identified over the entire area of the site, and most stone artifacts were uncovered from this layer. It was a sedimentary layer deposited on a bedrock layer containing large quantities of vein quartz fragments. Lithic remains from this layer were made up of stone tool making implements including hammerstones, debitages consisting of cores and flakes, core tools comprising handaxes, picks, choppers, and polyhedrons, and flake tools, such as scrapers, endscrapers, and notches. Vein quartz was the major raw material; most core tools were made of vein quartz and quartzite. The edges and ridges of the most excavated lithic remains from this layer were smoothed, and thus they seem to have been re-deposited. Although the measured absolute dates of the samples collected from this layer range between 48,000 and 35,000 BP, it is a possible supposition that artifacts were manufactured earlier than this date.

Artifact Containing Layer No. 2 was laid in a few localities; and this layer yielded fewer stone artifacts than Artifact Containing Layer No. 2. Raw materials and assemblage patterns of lithic remains from this layer were almost identical to those of Artifact Containing Layer No. 1. With sediments eroded from slopes, it seems that stone objects of this layer were re-deposited

items, because artifacts were laid the same direction with loads. The OSL and AMS radiocarbon dates of the samples collected from this layer range from 37,000 to 30,000 BP.

Artifact Containing Layer No. 3 was only discovered at Locality No. 16. This layer contained retouched pieces showing the typical stone tool industry of the Late Paleolithic in Korea, such as microblade cores, flakes, scrapers, and endscrapers. A charcoal sample collected from this layer produced the radiocarbon date of 12,150 BP.

Irrespective of localities and strata, artifact containing layers yielded more cores than flakes. Most stone artifacts seem to be re-deposited items, because their edges and crests were smoothed. Obsidian microblade cores and endscrapers were found in the features of the historic era indicating that most parts of the Late Paleolithic layers were destroyed and disturbed. [Kim Jongheon]

(1) Wadong-ri I Site
와동리 I 유적

This site is located at Wadong3-ri Jeon 499 and 551-554 (Locality No. 11) and Wadong4-ri San 20 (Locality No. 19). The distance between Locality Nos. 11 and 19 is about 300 meters. Both localities, which are situated on the valley, show considerably similar deposition and stone artifact assemblage patterns. The sediments of both localities were made up of weathered fragments of gneiss, the bedrock, and fragmental matters transported from nearby slopes.

The stratigraphic profile of the site shows the chronological deposition pattern the following order from the top soil: a surface layer (Layer No. 1), a layer deposited in the modern and contemporary era (Layer No. 2), a light brown clay layer (Layer No. 3), a light brown sand layer (Layer No. 4), brown and dark brown clay layers (Layer No. 5), brown and yellowish brown sand layers (Layer No. 6), and a weathered bedrock layer). Layer No. 3 was mainly laid on the elevated area. Judging from the fact that the lower part of this stratum contained large quantities of the vein quartz fragments, we can assume that the sediments became transported from the upper slopes. Layer No. 5 covered in the center of the valley and its vicinity and was formed with soil cracks. A brown sand layer, the upper part of Layer No. 6, was laid on a weathered bedrock layer in the elevated area. By considering the deposition of vein quartz fragments and the existence of lenticular quartz, it was likely a re-deposited stratum whose sediments were transported from the upper slopes. A yellowish brown clay layer in the lower part of Layer No. 6, which was mainly deposited in the lower area, was made up of gravels and coarse sands. All layers contained masses of the vein quartz

fragments with a few stone artifacts.

Stone artifacts were unearthed from Layer Nos. 2 (Artifact Containing Layer), 4 (Artifact Layer No. 1), 5 (Cultural Layer) and 6 (Artifact Layer No. 2) in both localities. A total of 242 stone artifacts comprising 242 objects including 23 items were collected from the surface level in Locality No. 11 and 194 objects including 43 items were collected from the surface level in Locality No. 19. Most stone artifacts were stone tool making implements including hammerstones and anvils, and debitages, such as cores, flakes, and chips. Core tools were composed of coppers, chopping tools, points, handaxes, and polyhedrons. Most lithic tools were made using angular vein quartz nodules distributed around the area. Whereas cores and flakes had sharpened edges, retouched objects had smoothed edges.

There were no measured absolute dates in the site. Judging from the determined absolute dates of the samples collected from the sedimentary layers in nearby sites, Layer No. 5, a cultural layer seems to be deposited in the Last Glacial Maximum. The absolute date of Artifact Layer Nos. 1 and 2 were estimated to be 30,000 BP and between 60,000 and 20,000 BP respectively. The ratio of flakes and chips is considerably lower than that of cores. By considering that about 20 percent of stone artifacts had sharpened edges, these objects may represent different episodes of human behaviors from that produced from stone objects with smoothed edges. Therefore, the Paleolithic layers contained both artifacts found in situ as well as transported objects. [Kim Jongheon]

Artifacts from Wadong-ri I

| Reference |

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(2) Wadong-ri III Site
와동리 III 유적

This site is located in Locality No. 15 covering Wadong3-ri 168, 170-1, and 175-3. In this locality, the Paleolithic stone artifacts were found in the sediments of the slopes and foots of the low hill about 15 meters above sea level. Fluvial deposits of the paleo-channel measuring about 2.0 meters in thickness covered the summit of the hill.

The stratigraphic profile of the site shows the chronological deposition pattern the following order from the bottom: a weathered bedrock layer (Layer No. 9), a

brownish gray sand layer (Layer No. 8), a light reddish brown sand layer (Layer No. 7), a red sandy clay layer (Layer No. 6), a reddish brown clay layer (Layer No. 5), a light brown clay layer (Layer No. 4), a dark brown clay layer (Layer No. 3), a yellowish brown clay layer (Layer No. 2) and a surface layer (Layer No. 1). Layer Nos. 7 and 8 were fluvial deposits; and Layer Nos. 3-6 were clinothem beds composed of clays with viscous properties. Layer Nos. 3 and 5 had a line of soil cracks respectively. The upper part of the upper soil crack curved down the slope. Therefore, we can understand that these cracks formed after the arrival of the layer.

A total of 215 stone artifacts including 203 vein quartz objects and 12 quartzite items were recovered from Layer No. 6. With stone artifacts, this layer contained quartz pebbles of various sizes, the raw materials for making stone tools. In addition to 34 cores and 104 flakes, core tools including choppers, chopping tools, points, and large endscrapers, and flake tools made up of scrapers, notches and endscrapers were uncovered from this layer.

Samples collected from Layer No. 6 and the fluvial deposits laid in the summit of a hill produced the OSL dates of 48,000±5000 BP and 50,000±4000 BP. The measured AMS radiocarbon dates of samples collected from sedimentary layers were 15,600±200 BP and 29,600±500 BP in Layer No. 3 and 33,600±400 BP and 35,600±500 BP in Layer No. 6. [Kim Jongheon]

Artifact from Wadong-ri III

| Reference |

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(3) Wadong-ri IV Site
와동리 IV 유적

This site is located at Wadong3-ri Jeon 149-11 (Locality No. 12) and Wadong3-ri Jeon 571 (Locality No. 16).

Locality No. 12 is situated on the even ground in the right side of the hill extending towards southwestwards. The stratigraphic profile of this locality shows the chronological depositional pattern from the top: a dark brown sand layer (Layer No. 1), a brown sandy clay layer (Layer No. 2), a light reddish brown sandy clay layer (Layer No. 3), a reddish brown sandy clay layer (Layer No. 4), a brown silty sand layer (Layer No. 5), a yellowish brown sand gravel layer (Layer No. 6), and a weathered bedrock layer (Layer No. 7). Layer No. 4 had a line of soil cracks, but did not contain stone artifacts. With

fragmental matters of the weathered bedrock and vein quartz fragments, 39 stone artifacts including cores, flakes, hammerstones, choppers, chopping tools, polyhedrons, scrapers, endscrapers, notches, and points, which were made of quartz, vein quartz, and quartzite, were unearthed from Layer No. 6. Vein quartz fragments were lying north-south, the parallel with the incline direction.

In addition to artifacts whose surfaces were not weathered, some stone artifacts from Locality No. 12 had severely weathered surfaces and therefore, it can be assumed that sedimentary layers were alternately eroded and deposited for a long time.

Locality No. 16 is located on the southeastern summit of a low hill extending southeastwards and its south-facing slope. Top soils covered on a weathered bedrock layer in the summit; and sediments became deeper towards the foot of a hill. The southwestern area of the site was a valley; and a wide peat layer was laid in this place.

The stratigraphic profile of this locality shows the chronological depositional pattern from the top: a grayish brown sandy clay layer (Layer No. 1), a dark brown sandy clay layer (Layer No. 2), a red clay layer (Layer No. 3), a dark brown clay layer (Layer No. 4), a brown sandy clay layer (Layer No. 5), a reddish brown sandy clay layer (Layer No. 6), a light brown silty sand layer (Layer No. 7), and a weathered bedrock layer. Layer Nos. 1 and 2 were disturbed by the cultivation. The upper part of Layer No. 4, which had a line of soil cracks, was named Cultural Layer No. 1. The color of sediments became yellow or yellowish brown towards the bottom in Layer No. 5. The upper part of this layer was designated as Cultural Layer No. 2. Layer No. 6 was laid on some areas in the upper slope. The lower part of this layer was named Cultural Layer No. 3. This layer was formed with a line of soil cracks. Layer No. 7 is the fluvial deposit.

A total of 986 stone artifacts were unearthed from three cultural layers and an artifact containing layer at this locality. Artifact Containing Layer, which was found in peats laid in the lowland at the southern part of the locality, yielded bleached stone artifacts that were mixed with large quantities of quartz and vein quartz. It seems that these artifacts were corroded under the wet condition in peats. Cultural Layer No. 1 yielded a total of 462 objects made of quartz and quartzite, including 46 cores, 184 flakes, two core tools, 45 flake tools, and six hammerstones. Of retouched tools, which were made up of endscrapers, scrapers, and notches, the rates of endscrapers were high. Judging from the excavated rates of cores, flakes and chips and the existence of hammerstones and refitted pieces, stone tools were produced in this layer. A charcoal sample collected from this layer was AMS

dated and calibrated to 12,150 BC. By considering the determined absolute date, stratigraphy and typological characteristics, this layer was formed in MIS 2.

Cultural Layer No. 2 was laid in the entire area of this locality but the number of the excavated stone artifact was very little in number. Rows of vein quartz were found in the northeast-southwest and stone artifacts were laid parallel with the line of the vein quartz. This layer yielded a total of 378 stone artifacts including cores, flakes, core tools consisting of handaxes, points, choppers, chopping tools, polyhedrons, and large endscrapers, flake tools comprising scrapers, endscrapers, and notches, anvils, and hammerstones. Quartz and quartzite were the main raw materials. The uncovered hammerstones, anvils, flakes and chips from this layer suggest the existence of stone tool making workshops. However, this layer did not contain refitted artifacts and yielded relatively large stone artifacts. By considering such facts and the direction of stone artifacts, therefore, it seems that these objects might have been transported or re-deposited. The layer was formed in the late phase of MIS 3 dating to the early phase of the Late Paleolithic but it is possible that stone artifacts were produced earlier than this date.

Cultural Layer No. 3, which covered the western part of this locality, yielded 44 stone artifacts made of yellow quartz. The stone artifacts of this layer were made up of cores, flakes, scrapers, and endscrapers. It is difficult to reveal the cultural characteristic of this layer, because the excavated numbers of artifacts were not sufficient. It seems that this layer was deposited in the middle and late phases of MIS 3. [Kim Jongheon]

| Reference |

Kim, Jongheon, 2010. *The Wadong-ri Site IV in Paju*. Gyeonggi Institute of Cultural Properties.

(4) Wadong-ri V Site
와동리 V 유적

This site is made up of three localities, Locality No. 4 at Wadong2-ri 262 and 263, Locality No. 5 at Wandong2-ri, 241, 252, 253 and 254, and Locality No. 7-1 at Wandong2-ri 267 and 270. These three localities are located in a valley extending southeast and northwest.

Locality No. 4 is situated on the foot of the slope in the west side of the valley. The landform of this place was changed to the even ground by the building construction. The stratigraphic profile of this locality, the slope of the valley measuring about 10 meters in depth , shows the chronological deposition pattern the following order from the bottom, a weathered bedrock layer, a yellowish brown sandy clay layer (Cultural Layer No. 1), and a dark brown clay layer (Cultural

Layer No. 2). A total of 227 stone artifacts including 158 objects from Cultural Layer No. 1 and 119 objects from Cultural Layer No. 2 were recovered from this locality. Excluding a core, all artifacts were made of vein quartz fragments. The uncovered stone artifacts were made up of cores, flakes, core tools including points, choppers, chopping tools, and planes, and flake tools consisting of scrapers, endscrapers, notches, beak-shaped tools, awls, and denticulates.

Locality No. 5 is situated on the foot of the east-facing slope of a ridge extending south and north. The stratigraphic profile of this locality shows the chronological deposition pattern the following order from the bottom: a weathered bedrock layer, a dark brown coarse sand layer (Cultural Layer No. 1), a brown coarse sand layer, a yellow or brown sandy clay layer, a reddish brown sandy clay layer (Cultural Layer No. 2), a dark brown clay layer, and a surface layer. A dark brown clay layer was divided into the lower (Cultural Layer No. 3), middle (Cultural Layer No. 4), and upper strata. A total of 1,036 stone artifacts including 340 objects from Cultural Layer No. 1, 165 objects from Cultural Layer No. 2, 248 objects from Cultural Layer No. 3, and 248 objects from Cultural Layer No. 4 were unearthed from this locality. All cultural layers contained stone tool making implements and debitages, such as hammerstones, cores, flakes, and chips. The stone tool industry of Cultural Layer No. 1 shows the different pattern from that of Cultural Layer Nos. 2, 3 and 4. The ratio of core tools including choppers, chopping tools, handaxes, polyhedrons, and planes is higher than the flake tools made up of scrapers, endscrapers and notches in Cultural Layer No. 1 but other three cultural layers shows the opposite pattern. Most stone artifacts from these four cultural layers were made of vein quartz; and a few objects made of quartzite and other raw materials were also uncovered. Raw materials distributed in this area were used for making stone artifacts. The core tools outnumbered the flake tools 3 to 2. The distribution pattern of the stone artifacts suggests that these objects were transported from the upper slope. Samples collected from the sediments produced the OSL dates of 37,000±300 and 45,000±300 BP (a dark brown coarse sand layer), and 35,000±300 and 37,000±300 BP (a brown coarse sand layer) respectively.

Locality No. 7-1 is located at the upstream area of the valley in which Locality No. 5 is placed. The stratigraphic profile of this locality shows the chronological deposition pattern the following order from the bottom: a weathered bedrock layer, a dark brown coarse sand layer, a brown clay layer, a brown sandy clay layer, a dark brown clay layer, and a surface layer. The sediments become thicker towards the valley bed. A

dark brown coarse sand layer was laid in the entire area of this locality. It seems that this stratum was intruded into the upper part of a weathered bedrock layer by water flow.

A total of 256 stone artifacts including 221 objects from a dark brown sandy clay layer, five objects from a brown sandy clay layer and 30 objects from the ground were unearthed and collected in this locality. Although these objects were contained in two different layers, typological characteristics of them suggest that they were manufactured at the same period. They might be buried in different layers during the re-deposition processes of the sediments. Most stone artifacts were made of vein quartz and quartzite. The uncovered stone artifacts were made up of stone tool making implements and debitages including hammerstones, cores, flakes, and chips, and core tools comprising handaxes and polyhedrons, and flake tools consisting of scrapers and notches. Of the uncovered objects, cores outnumbered flakes and this pattern was also detected in the assemblage of tools.

On the basis of the stratigraphic profile and the typological characteristics of the stone artifacts at Locality No. 5 where the sediments were remained in the deepest among three localities, it can be assumed that Cultural Layer No. 1 at Locality No. 5 was deposited at the same time with Cultural Layer No. 1 at Locality No. 4 and Artifact Layer at Locality No. 7-1. These three layers yielded mainly core tools including handaxes, points, choppers and chopping tools. Both Cultural Layer No. 4 at Locality No. 5 and Cultural Layer No. 2 at Locality No. 4 were characterized by the flake tool industry consisting of scrapers and denticulates. The measured absolute dates of Cultural Layer No. 1 at Locality No. 5 were between 45,000 and 37,000 BP. These dates almost correspond to the absolute dates of a reddish brown sandy clay layer at Locality No. 15, which is measured in between 35,600 and 33,600 BP. The date of Cultural Layer No. 4, the uppermost cultural layer in Locality No. 5, can be assumed to be between 29,600 and 15,600 BP, which were produced by samples collected from a dark brown clay layer at Locality No. 15. It is possible that the objects yielded from Cultural Layer No. 1 at Locality 5 were earlier than the determined absolute dates, since they were re-deposited items. Therefore, it can be assumed that these artifacts may have been produced during the Middle Paleolithic or earlier. Cultural Layer Nos. 2, 3 and 4 were strata deposited from

Handaxes from Wadong-ri V

the early phase of the Late Paleolithic.

[Kim Jongheon]

| Reference |

Woo, Jongyoon, and Seung-won Lee, 2012. *Report on the Excavation of Unjeong Paleolithic Site I, Paju*. Institute of Korean Prehistory.

(5) Dongpae-ri Site
동패리 유적

This site, which was designated as Locality No. 41, is located at Dongpae-ri Jeon 180. This area is the foot of a low hill with the south-facing gentle slope. The sediments, which contained vein quartz transported from the upper slopes, became deeper towards the south.

The stratigraphic profile of this locality shows the chronological depositional pattern from the top: a yellowish brown clay layer (Layer No. 1), a dark brown clay layer (Layer No. 2), a yellowish brown clay layer (Layer No. 3), a dark brown sandy clay or yellowish brown clay layer (Layer No. 4), a sandy soil layer (Layer No. 5), and a weathered bedrock layer (Layer No. 6). Layer No. 2, in which a line of soil cracks was formed, yielded five stone artifacts including a core and four flakes. By considering that this layer contained large quantities of the fragmental matters eroded from a bedrock layer; we can fathom that the sediments of this layer became transported from the upper slopes. The sediments of Layer No. 5 were fluvial deposits.

It was assumed that Layer No. 2 was deposited around 20,000 BC on the basis of the stratigraphic feature of the sediments. It was very difficult to discern the stratigraphy of this locality, because the paleosol layers were laid only in a limited area; and clays were mixed with large quantities of the fragmental matters. [Kim Jongheon]

| Reference |

Kim, Agwan, and Sangyeong So, 2009. *The Report of Excavation Site at Dongpae-ri, Paju City*. Korea Institute of Heritage.

(6) Dongpae-ri II Site
동패리 II 유적

This site, which was designated as Locality No. 47, is located at Dongpae5-ri San 157 and Jeon 50. The site is situated on the east-facing slopes of low hills rising about 35 meters above sea level. The excavated area included a valley running to the south, and a slope of the west hill.

The stratigraphy of the slope was different from that of the valley. The stratigraphic profile of the slope shows the chronological deposition pattern the following order from the top soil: a surface layer, a reddish brown sandy clay layer, a dark brown clay layer (Artifact Containing Layer), a light brown sandy clay layer (Artifact

Containing Layer), a dark brown clay layer (Artifact Layer), a brown sandy clay layer (Artifact Layer), a light reddish brown sandy clay layer (Artifact Layer), a reddish brown clay layer, a light brown sandy clay layer (Artifact Layer), a reddish brown sandy clay layers (Artifact Layer), a grayish blue silty sand layer, a layer consisted of breccia and sands, and a weathered bedrock layer. A line of soil cracks was formed in two strata, a dark brown clay layer and a blown sandy clay layer. The valley, which was laid with silt layers and breccia, did not yield any artifact.

A total of 40 stone artifacts were recovered from an artifact containing layer. By considering the fact that this layer contained large quantities of vein quartz fragments, these objects were transported from the upper slopes. A total of 18 stone artifacts were uncovered from four layers named the artifact layer by the excavator. In addition, 13 objects were collected on the surface. Unearthed and collected objects were composed of cores, flakes, hammerstones, handaxes, choppers, chopping tools, polyhedrons, scrapers, and endscrapers. Excluding a quartzite object, all artifacts were made of vein quartz. The cores occupied the majority of the excavated and collected artifacts. To conclude, most artifacts were uncovered in slopes and the flaked stone artifacts with only a few flaked stone artifacts, indicating that occupy the minority. Judging from such facts, stone artifacts buried in this site were transported items. [Kim Jongheon]

| Reference |

Kim, Kitae, 2010. *The Dongpae-ri II Site in Paju*. Gyeonggi Institute of Cultural Properties.

(7) Yadang-ri I Site
야당리 I 유적

This site is made up of four localities, Locality No. 34 at Yadang2-ri 636-54, Locality No. 35 in Yadang2-ri 636-1, Locality No. 36-1 in Yadang2-ri 162-1, and Locality No. 36-4 in Yadang2-ri 161-2. These localities are located on ridges extending from a hill lying northwest-southeast. Locality No. 34 is situated on the slope of a ridge extending from eastward from a hill. Low hills ranging between 35 and 40 meters above sea level rise around this area. A small stream runs about 4 kilometers east of this locality and the other small stream flows about 3 kilometers south of this locality. Locality 35 is placed to the west of Locality No. 35. Locality Nos. 36-1 and 36-4 are located on the summit and the west-facing slope, and the south-facing slope of a ridge extending southward from the hill respectively.

The stratigraphic profile of Locality No. 34 shows the chronological deposition pattern the following order from the bottom: a weathered bedrock layer, a brown

sand layer, a gray slay layer, a dark brown sandy clay layer, and a surface layer. Stone artifacts were uncovered from a brown sand layer covering a weathered bedrock layer. Vein quartz fragments measuring between 20 and 40 centimeters in length were densely clustered in the upper part of this layer. Even rocks over 1.5 meters were buried in this stratum. A total of 143 stone artifacts including 17 objects collected from the ground were excavated from this locality. Most stone artifacts were made of vein quartz and quartzite. The uncovered stone artifacts were made up of stone tool making implements and debitages including hammerstones, pebbles (raw material), cores, flakes, and chips, and tools comprising cleavers, handaxes, choppers, chopping tools, and scrapers. Most tools had smoothed edges. The surfaces of the core tools were severely worn or crumbled. By considering the facts that pebbles, stone tool making implements and debitages were scattered, and there was no refitted artifact in this layer, it is possible that they were transported and re-deposited objects with vein quartz fragments. Samples collected from this layer produced the OSL dates of between 66,000 and 50,000 BP. Judging from the fact that most tools uncovered from this layer were made of cores, they may have been produced during the late phase of the Middle Paleolithic.

Locality 35 is located on the gentle slope ranging between 29 and 33 meters above sea level. The stratigraphic profile of this locality shows the chronological deposition pattern the following order from the bottom: a weathered bedrock layer (Layer No. 10), a yellowish brown sand layer (Layer No. 9), a gray sandy clay layer (Layer No. 8), a gray clay layer (Layer No. 7), a yellowish brown clay layer (Layer No. 6), a gray clay layer (Layer No. 5), a light brown clay layer (Layer No. 4), a grayish brown clay layer (Layer No. 3), a reddish brown clay layer (Layer No. 2), and a surface layer (Layer No. 1). Layers Nos. 4 and 5, which were strata deposited under the wet condition, contained vein quartz fragments. Layer Nos. 2 and 3 had a line of soil cracks respectively. In this locality, Paleolithic stone artifacts were yielded from the upper part (Cultural Layer No. 2) and the lower part (Cultural Layer No. 1) of Layer No. 2. A total of 360 stones, including 17 objects. The excavation of this locality revealed 360 stone artifacts including 17 objects from a disturbed surface layer, 260 items from Cultural Layer No. 1, and 83 pieces from Cultural Layer No. 2. Most stone artifacts were made of vein quartz and a few quartzite objects became unearthed. Both cultural layers contained debitages including cores, flakes and chips, core tools comprising handaxes, picks, choppers, chopping tools, planes, and polyhedrons, and flake tools consisting of scrapers and notches. The ratio

of the core tools, particularly choppers and chopping tools, was high. The determined OSL dates of the samples collected from this locality are between 38,000 and 37,000 BP.

Locality No. 36 includes a hill rising about 32 meters above sea level, valleys and the foot of the hills. The excavator divided this locality into five sectors. Of them, Locality Nos. 36-1, 36-4 and 35-6 were included in the Yadang-ri I site.

Locality No. 36-1 was the even farmland located in the northern part of the hill. Sediments in the southern part of this locality remained relatively intact, but were gradually disturbed by the later erosion processes and crop cultivation towards northward. The stratigraphic profile of this locality shows the chronological deposition pattern the following order from the bottom: a weathered bedrock layer (Layer No. 6), a dark brown sandy clay layer (Layer No. 5), a dark clay layer (Layer No. 4), a yellowish brown clay layer (Layer No. 3), a dark brown clay layer (Layer No. 2), and a surface layer (Layer No. 1). A line of the soil cracks was detected in Layer No. 2 but its upper part was severely disturbed. It seems that Layer No. 4 was formed under the wet condition. The Paleolithic artifacts were uncovered from Layer No. 5 (Cultural Layer No. 1), Layer No. 4 (Cultural Layer No. 2), and Layer No. 3 (Cultural Layer No. 3). Stone artifacts were mixed with vein quartz fragments in these three layers. A total of 351 stone including 180 objects from Cultural Layer No. 3, 84 objects from Cultural Layer No. 2, 40 objects from Cultural Layer No. 1, and 47 objects from the ground were yielded from this locality. Most objects were made of vein quartz. The uncovered stone artifacts were made up of debitages including cores, flakes and chips, core tools comprising picks, choppers, chopping tools and polyhedrons, and flake tools consisting of scrapers and notches. Most tools had smoothed edge surfaces. Therefore, we can fathom that they may have been transported and re-deposited objects. It seems that a few tools, which had sharpened edge surfaces, were transported from nearby areas. A soil sample collected from Cultural Layer No. 2 produced the AMS radiocarbon date of 35,000±2000 BP. Therefore, it is possible that Cultural Layer Nos. 1 and 2 were deposited before the late phase of MIS 3. Judging from a line of soil cracks, Cultural Layer No. 3 and 2 were formed between the late phase of MIS 3 and MIS 2.

Locality No. 36-4 is located on the foot of a hill lying northwest-southeast, which rises about 40 meters above sea level. The excavator divided this locality into four sectors. Sector 1 is situated on the foot of the south-facing slope of the eastern ridge. Sector 2 is placed on the east-facing slope of the western ridge. Sectors 3 and 4 are located on

the valley between the two ridges and they did not yield any artifacts. The stratigraphic profile of Sector 1 shows the chronological deposition pattern the following order from the bottom: a weathered bedrock layer, a brown sandy clay layer, an angular stone layer, a brown sandy clay layer, a dark brown clay layer, a light brown clay layer, an earth reclaimed layer, and a surface layer. From the bottom, the sediments of Sector 2 were made up of a weathered bedrock layer, a sand layer, a dark yellowish brown sandy clay layer, a brown sandy clay layer, a yellowish brown sandy clay layer, a dark yellowish brown sandy clay layer, a dark yellowish brown clay layer, and a surface layer. A line of soil cracks was formed in a dark brown clay layer in Sector 1 and a brown sandy clay layer in Sector 2. Paleolithic stone artifacts were unearthed from a brown sandy clay layer in Sector 1 and a dark yellowish brown sandy clay in Sector 2.

A total of 949 stone artifacts including 331 objects from Sector 1 and 618 objects in Sector 2 were uncovered. Most objects were made of vein quartz and a few quartzite and sandstone objects became unearthed. Both sectors yielded large quantities of debitages including cores, flakes and chips, and pebbles (raw material); but the numbers of retouched tools e.g., choppers, scrapers, and endscrapers, were few. A ditch filled with coarse sands and vein quartz fragments was found in a weathered bedrock layer. Of 618 stone artifacts uncovered from Sector 2, 460 objects unearthed from the ditch shows the similar assemblage pattern and typological characteristics with those from a brown sandy clay layer.

Of the uncovered objects from Locality No. 36-4, cores outnumbered flakes but tools show the opposite pattern. Some artifacts that had smoothed edge surfaces and ridges may have been re-deposited items. Samples collected from this locality produced the OSL dates of between 43,000 and 35,000 BP (a brown sandy clay layer in Sector 1) and between 43,000 and 42,000 BP (a sand layer in Sector 2). There was no artifact belonging to the Late Paleolithic at this locality. Judging from the assemblage of stone objects, which was made up of choppers, chopping tools, and polyhedrons, we can interpret that they became produced before the Late Paleolithic.

[Kim Jongheon]

Artifacts from Yadang-ri I

| Reference |

Woo, Jongyoon, and Seung-won Lee, 2012. *Report on*

the Excavation of Unjeong Paleolithic Site II, Paju. Institute of Korean Prehistory.

(8) Yadang-ri II Site
야당리 II 유적

This site is located at Yadang-ri 644-4. A U-shaped valley is located in the area where low hills about between 25 and 40 meters rise above sea level. Paleolithic artifacts were found in the valley. The stratigraphic profile of the channel shows different deposition pattern from the side. From the bottom, the strata of the channel were made up of weathered bedrock, a brown sandy clay layer, a dark gray clay layer, a brown sand layer, a reddish brown sand layer, a light brown sand layer, and a surface layer. The side was laid with a weathered bedrock layer, a brown sandy clay layer, a brown clay layer, a light brown clay layer, a dark brown sandy clay layer, and a surface layer from the bottom. A brown clay layer, which had a soil cracks, was not found in the channel but a brown sandy clay layer, which contained angular stones and stone artifacts, were laid in both areas. Two charcoal samples collected from a brown clay layer with soil cracks produced the AMS radiocarbon dates of 30,770±350 BP, and 31,660±270 BP respectively.

The excavation of the site yielded a total of 1,436 stone artifacts made of vein quartz and quartzite. Most objects were made of angular stones; but remarkable items were made of pebbles. The excavated numbers of stone tool making implements and debitages, which include cores, flakes, chips, hammerstones, were 1,076. The site yielded a total of 360 tools made up of cores and flake tools, and semi-finished products. Core tools include polyhedrons, choppers, and large scrapers. Polyhedrons occupy the majority. Flake tools were composed of scrapers, notches, and cleavers. Most artifacts show the worn surfaces. This is because these objects were ground during the sediment transport process from the upper slope to the lower channel. It can be suggested with a high possibility that a brown sandy clay layer, which contained stone artifacts, were deposited earlier that a brown clay layer. The determined absolute dates of sample collected from this layer laid in nearby site are between 48,000 and 35,000 BP. It can be assumed that stone artifacts yielded from this layer were produced earlier than such dates. It seems that these objects were manufactured before MIS 3.

[Kim Jongheon]

Handaxes from Yadang-ri II

| Reference |

Woo, Jongyoon, and Seung-won Lee, 2012. *Report on the Excavation of Unjeong Paleolithic Site III, Paju.* Institute of Korean Prehistory.

W

Suncheon
Wolpyeong Site
월평 유적

The Wolpyeong site (Historic Site No. 458) is located at Woram-ri 204-2, Oeseo-myeon, Suncheon City, within Jeollanam-do Province. This is a large-scale Paleolithic site situated on a hill that rises 190-220 meters above sea level, the western end of Godongsan Mountain (709.4 meters). The Songgwangcheon and Oeseocheon Rivers run three sides of the site like moat. Good quality quartz pebbles were distributed on the river channels. Ten Paleolithic sites including the Oerokgol site were distributed in the vicinity of the site.

The stratigraphic profile of the site shows the chronological deposition pattern the following order from the top soil: a plough zone (Layer No. 1), a light yellowish brown clay layer (Layer No. 2a), a dark brown clay layer (Layer No. 2b), a brown clay layer (Layer No. 3a), a yellowish brown clay layer (Layer No. 3b), a yellowish brown sandy clay layer (Layer No. 3c), a dark brown sandy clay layer (Layer No. 4), a yellowish brown clay sand layer (Layer No. 5), a yellowish brown sandy clay layer (Layer No. 6) a yellow silt layer (Layer No. 7), a dark brown gravel sand layer (Layer No. 8), and a gneiss bedrock layer. Of these 12 strata, the excavators classified Layer Nos. 2a and 2b into Cultural Layer No. 4, and Layers Nos. 3a, 3b and 3c into Cultural Layer No. 3, Layer No. 3 into the Middle Cultural Layer, Layer No. 5 into Cultural No. 2, and Layer No. 6 into Cultural Layer No. 1.

Artifacts from Cultural Layer Nos. 3 and 4 were made of vein quartz (92-95 %), and acidic volcanic rock and crystal (4-6 %). Most artifacts from the Middle Cultural Layer were made of vein quartz (99. 5 %). Vein quartz was extensively distributed on the river channels in front of the site and the land mass in the Boseonggang River basin consisted of acidic volcanic rock.

The excavation of the site revealed about

9,500 stone objects in Cultural Layer No. 4, 1,420 stone artifacts in Cultural Layer No. 3, and 3,005 stone artifacts in the Middle Cultural Layer. All three cultural layers had stone tool-making workshops. For examples, more than 60 endscrapers were uncovered from Cultural Layer No. 4. In addition to a place making blanks of rhyolite microblade core, and crystal microblades, various types of stone tools including microblade cores, endscrapers, burins, awls, tanged points, leaf-shaped points, choppers, chopping tools, polyhedrons, ball-shaped implements, small handaxes, anvils, hammerstones, and an oil lamp-shaped implement made of a palm-sized pebble engraved with lines were unearthed from Cultural Layer No. 4.

The stone stool industry of Cultural Layer No. 3 was similar to that of Cultural Layer No. 4 but the number of the unearthed artifacts was one-seventh of that from Cultural Layer No. 3. Various stone artifacts including endscrapers, scrapers, notches, denticulates, beaker-shaped tools, handaxes, choppers, chopping tools, and polyhedrons were recovered from the Middle Cultural Layer. Particularly, 33 sets of refitted items consisting of a core and flakes, and tools and flakes were uncovered from this cultural layer.

Soil samples collected at the site produced the radiocarbon dates of 10,840±350 BP (Layer 2a), 21,500±300 BP (Layer 2b), 18,200±100 BP (Layer 3a), 27,500±150 BP (Layer 3b), and 36,000±400 BP (Layer 3c). On the basis of these determined radiocarbon dates and typological characteristics of the uncovered artifacts, it can be assumed that Cultural Layer Nos. 3 and 4 became deposited during the later phase of the Late Paleolithic.

View of the Wolpyeong site

View of the excavation

Artifacts from Wolpyeong

The excavation results of the cultural layers deposited in an extensive area (70,000 ㎡) without disturbance of the site,

including stone tool-making workshops, an oil lamp-shaped stone object, polished pebbles, provide invaluable information for studying and reconstructing the daily life of the Paleolithic people. Moreover, five cultural layers laid in the site can be used for establishing the chronology of the Late Paleolithic in Korea. In particular, microliths unearthed from the site, e.g., cores, endscrapers, tanged points, and leaf-shaped points, are valuable archaeological data for conducting typological studies as well as for understanding the microlithic culture distributed in Northeast Asia including Korea, Japan, China, and Siberia. [Lee Gikil]

| References |

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Lee, Gikil, and Eun-jeong Kim, 2009. *Suncheon Wolpyeong Site: 2005 Years, 3rd Excavation*. Chosun University Museum.

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Daegu
Wolseong-dong Site
월성동 유적

This site is located at Wolseong-dong 777-2, Dalseo-gu, within Daegu. The site is situated on the alluvial fan developed to the northwest of Apsan Mountain (658.7 meters) and Cheongnyongsan Mountain (793.1 meters) rising in the southern edge of the Daegu basin.

The stratigraphic profile of the site shows the chronological deposition pattern the following order from the top soil: a surface layer, a yellowish brown clay layer (Layer I), a light brown clay layer with particles of manganese and soil wedges (Layer II), a sand gravel layer (Layer III), a grayish yellow sandy clay layer (Layer IV) and a weathered bedrock layer (Layer V).

Artifacts were densely clustered in the lower level of Layer I (Layer I-②) and a few artifacts were uncovered from the upper level of Layer II (Layer II-①) in this site. It seems that some artifacts which were first buried in Layer I-② moved to Layer II-①.

The excavation of the area measuring about 300 ㎡ revealed 13,184 artifacts, which were made of hornfels, silicified shale, obsidian, vein quartz, chert, and quartzite. The excavator reported that hornfels and silicified shale were quarried in the vicinity of the site, while obsidian was obtained from

the distance source, Baekdusan Mountain. Most of the uncovered artifacts were chips, microblades and microblade cores. Many microblade cores were shaped by bifacial retouch and the platform was prepared by chipping ski-spalls, while a small number of cores were prepared without notable traces of retouch. Unearthed retouched tools consist of scrapers, burins, points, composite tools, and awls. The excavation exposed artifact concentrations, four large and eight small. In addition to implements, each cluster contained large quantities of debitages such as flakes, and indicating that these concentrations represent stone tool workshops.

A sample collected from Layer I-② was OSL dated to around 30,000 BP, while typological interpretation of unearthed artifacts suggests that the site was mainly formed from 25,000 to 15,000 BP.

[Lee Sangmok]

Endscraper

Microblade

Artifacts from Wolseong-dong

| Reference |

Lee, Jaegyeong, 2008. *The Wolseong-dong Paleolithic Site, Daegu*. Gyeongsangbukdo Institute of Cultural Properties.

Donghae
Wolso Site
월소 유적

The Wolso site is located at Mukhojin-dong 1-46, Donghae City, within the Gangwon-do Province. This site is situated about 200 meters west from the eastern cost of Korea and can be found on a high marine terrace rising between 70 and 80 meters above sea level. A small valley extends towards north and it demarcates this site into two sectors, East and West. From the top soil, the stratigraphic profile of East Sector shows the chronological deposition pattern the following order: a surface layer (Layer 1), a light brown clay layer (Layer 2), a dark brown clay layer (Layer 3a), a red clay layer

(Layer 3b), a yellowish brown clay layer (Layer 3c), a golden yellow clay layer (Layer 4a), a gray clay layer (Layer 4b), a reddish brown clay layer (Layer 5), a yellowish brown sand layer (Layer 6), a reddish brown sand layer (Layer 7), and a sandy gravel layer (Layer 8). In East Sector, artifacts were unearthed from Layers 2, 3b, 4b, 6 and 7. Scrapers and endscrapers were concentrated in Localities A and B, the summit of this sector, and Locality B, the south-facing slope of this sector. Locality A-1 yielded a broken tanged point. Layers 4 and 5 yielded handaxes and cleavers. Most chipped stone artifacts uncovered from these two layers were made of gneiss.

From the surface, the stratigraphic profile in West Sector shows the chronological deposition pattern the following order: a plough zone (Layer 1), a light brown clay layer (Layer 2), a dark brown clay layer (Layer 3a), a red clay layer (Layer 3b), a yellowish brown clay layer (Layer 3c), a golden yellow clay layer (Layer 4a), a gray clay layer (Layer 4b), a reddish brown clay layer (Layer 5a), a yellowish brown clay layer (Layer 5b), a reddish brown sandy clay layer (Layer 6a), a yellowish brown clay layer (Layer 6b), a reddish brown sand layer (Layer 7), and a sand gravel layer (Layer 8). Layers 2, 3b, 4b, 5b and 6b yielded stone artifacts. Artifact concentrations were found in some areas in Layers 2 and 3, which were identified as stone tool production workshops. Stone artifacts were scattered in Layers 4b, 5b and 6b. While Layers 2 and 3 contained small tools, large tools including handaxes and polyhedrons were recovered from Layers 4b, 5b and 6b.

Samples collected from Layer 4b in Localities A-1, and Layers 5b in Localities A-2 and B in East Sector produced OSL dates of 89,000±4000 BP, 79,000±5000 BP, and 81,000±10,000 BP respectively. The OSL date of a sample collected from Layer 7 at Locality C in East Sector is 96,000±14,000 BP. In addition, charcoal samples collected from Layer 4b at Locality A-2 in East Sector, and Layer 3b at Locality C in West Sector produced the AMS radiocarbon dates of 54,850±3320 BP and 43,450±790 BP respectively.

While Artifact Containing Layers Nos. 1 and 2 laid in the upper strata of Layer 5 contained small tools, Artifact Containing Layers 3, 4 and 5 deposited under Layer 5, yielded large artifacts. Considering the measured absolute dates, Layer 5 seems to have been deposited in MIS 5a. Layers formed in MIS 4 contained large tools, such as handaxes. A number of small artifacts appear around the horizons that can be dated to 40,000 to 50,000 BP, as the excavator estimates.

Most Paleolithic sites excavated at Yeongdong (eastern Gangwon-do Province)

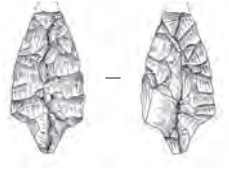
Area were located in terraces and artifacts were contained in clay layers deposited by the transportation of sediments from slopes.

[Hong Seonghak]

View of the Wolso site

Handaxe

Polyhedron



Stone arrowhead

Artifacts from Wolso

| Reference |

Lee, Haeyong, and Seonghak Hong, 2010. *Report on the Excavation of Weolso Site, Mukhojin-dong, Donghae.* Yemaek Institute, of Cultural Properties.

Yeoncheon
Wondang-ri Site
원당리 유적

This site is located at Wondang2-ri 701-4 and Wondang-ri 932-1, Jangnam-myeon, Yeoncheon County, within the Gyeonggi-do Province. This site is situated on a slope of a hill (34 meters) rising close to the Imjingang River.

The first excavation of the site, which was conducted at the area of Wondang2-ri 701-4, revealed seven strata. The stratigraphic profile of this area shows the chronological deposition pattern the following order from the top soil: a plough zone (Layer No. 1 measuring 22 centimeters in thickness), a brown clay layer (Layer No. 2 measuring between 11 and 22 centimeters in thickness), a dark brown clay layer (Layer No. 3 measuring between 16 and 42 centimeters in thickness), a grayish clay layer (Layer No. 4 measuring between 54 and 76 centimeters in thickness), a brown clay layer (Layer No. 5 measuring between 25 and 35 centimeters in thickness), a light brown clay layer (Layer No. 6 measuring between 54 and

68 centimeters in thickness), and a dark brown clay layer (Layer No. 5 measuring between 37 and 43 centimeters in thickness). Of these seven strata, Layer No. 7 (Cultural Layer No. 1) contained artifacts dating to the Early Paleolithic, including choppers, cores, scrapers, points, and endscrapers and Layer No. 4 (Cultural Layer No. 2) contained scrapers belonging to the Late Paleolithic.

The second excavation of the site, which was carried out at the area of Wondang2-ri 701-4, exposed six strata. The stratigraphic profile of this area shows the chronological deposition pattern the following order from the top soil: a surface layer (Layer No. 1 measuring 22 centimeters in thickness), a dark grayish red clay layer (Layer No. 2 measuring between 90 and 116 centimeters in thickness), a light brown clay layer (Layer No. 3 measuring between 32 and 46 centimeters in thickness), a reddish brown clay layer (Layer No. 4 measuring between 14 and 50 centimeters in thickness), a light yellowish brown clay layer (Layer No. 5 measuring between 20 and 34 centimeters in thickness), and a dark red clay layer (Layer No. 6 measuring between 20 and 34 centimeters in thickness). Of these six strata, only Layer No. 5 contained choppers and other artifacts.

The third excavation of the site, which was conducted at the area of Wondang-ri 932-1, revealed four strata. The stratigraphic profile of this area shows the chronological deposition pattern in the following order from the top soil: a plough layer: (Layer No. 1 measuring 15 centimeters in thickness), a dark brown clay layer (Layer No. 2 measuring 50 centimeters in thickness), a brown clay layer (Layer No. 3 measuring 50 centimeters in thickness), a dark yellowish brown sand layer (Layer No. 4 measuring 23 centimeters in thickness). Seven segments of the stone circle, which were built of fist-sized stone artifacts, basalt rocks, and river gravels, were excavated in this area. The artifacts from this layer were variably made of vein quartz, quartzite, granite, basalt, and slates.

The fourth excavation of the site, which was conducted at the area of Wondang-ri 932-1, revealed four strata. The stratigraphic profile of this area shows the same chronological deposition pattern with the area excavated in the third excavation in the following order from the top soil: a plough zone: (Layer No. 1 measuring between 8 and 18 centimeters in thickness), a dark brown clay layer (Layer No. 2 measuring between 26 and 60 centimeters in thickness), a brown clay layer (Layer No. 3 measuring between 22 and 28 centimeters in thickness), a dark yellowish brown sand layer (Layer No. 4 measuring between 14 and 30 centimeters in thickness. A total of 41 stone objects were recovered from Layer No. 2.

[Choe Mujang]

Handaxe Chopper

Artifacts from Wondang-ri

| References |

Choe, Mujang, 1997. *Report on the Excavation of the Palaeolithic site at Wondang-ri, Jangnam-meon, Yeoncheon County, Gyeonggi-do Province*. Konkuk University Museum.

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Y

Yeoju
Yeonyang-ri Site
연양리 유적

This site is located at Yeonyang-ri 348-4, Yeoju-eup, Yeoju City, within the Gyeonggi-do Province. The Namhangang River runs through the area close to the east and north of the site towards northwestward. Hwanghaksan Mountain (175 meters) rises to the west of the site and a low line of hills rising between 60 and 70 meters above sea level runs along the river channel located south of the site. This site is situated on a hill slope rising about 67 meters above sea level.

The stratigraphic profile of Localities I and II shows the chronological deposition pattern the following order from the top soil: a surface layer (Layer No. 1), a light yellowish brown clay layer (Layer No. 2), a dark brown clay layer (Layer No. 3), a reddish brown clay layer (Layer No. 4), a yellowish red silty sand layer (Layer No. 5), a sand layer (Layer No. 6), a pebble layer (Layer No. 7), and a granite bedrock layer. Layer Nos. 2 and 3 were found to be eroded in some areas of the summit of a hill. Soil wedges were formed in Layer Nos. 3 and 4. The sediments of Layer Nos. 6 and 7 were fluvial deposits. Given the channel height, the roundness of particles, and the geographical features, these two layers were the river terrace.

The excavation of the site yielded a total of 1,782 stone artifacts, and most were made of vein quartz, quartzite and gneiss, and were densely clustered in the upper level of Layer No. 4. In addition to tools, the excavated objects included raw materials, stone tool making implements consisting of hammerstones and anvils, and debitages, such as cores, flakes and chips. This assemblage pattern suggests that this place may have been used as a workshop to make stone tools. Most of the uncovered tools were choppers and a few scrapers, notches and denticulates were recovered. Artifacts were densely clustered in pits installed on the

summit of a hill about 65 meters above sea level.

Four soil samples collected from the upper level of Layer No. 4 were OSL dated to 63,000±4000 BC and 67,000±3000 BC in Locality I, and 70,000±7000BC and 64,000±7000 BC in Locality II respectively.

The Yeonyang-ri site, an open-air site formed in the riverside, was the first excavated Paleolithic site within the area of Yeoju City. The excavated materials from this site provide important information for studying the Paleolithic culture in the Namhangang River basin. [Lee Jeongcheol]

Choppers from Yeonyang-ri

| Reference |

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Sangwon
Yonggok-ri Cave
용곡리 동굴 유적

This site is located at Yonggok-ri, Sangwon County (the past-day Pyeongyang), within the Hwanghaebuk-do Province. The site is composed of two caves. Cave No. 1 is situated 45 kilometers southeast of Pyeongyang and Cave No. 2 is located about 2 kilometers east from Cave No. 1. Kim Il-sung University carried out the excavations of these two caves in 1980-1981. The sedimentary layers of Cave No. 1 were made up of 12 strata and Paleolithic artifacts were uncovered from Layer Nos. 8 and 11. Animal bone samples collected from these layers produced the U/Th dates of 71,200±2000 BP (Layer No. 8), and 49,900±2000 BP and 44,300±2000 BP (Layer No. 9) respectively. Stalagmites from the Paleolithic layers produced the TL dates of 111,000±10,000 BP (Layer No. 8) and 82,000±8000 BP (Layer No. 10) respectively.

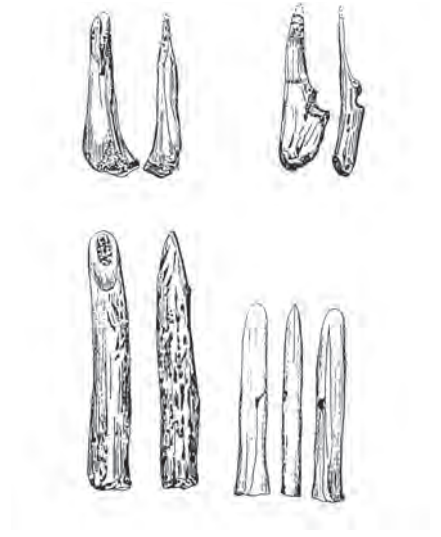
The excavation of Cave No. 1 yielded faunal remains of the middle phase (Layer Nos. 8 and 9) and the late phase (Layer Nos. 10 and 11) from the Upper Pleistocene. Layer 8 contained fossils of animal which lived in the warm temperate zone. The numbers of *Dicerorhinus kirchbergensis* fossils found were few. It seems that Layer No. 8 was formed in a warm temperate forest. Layer 9 contained fossils of *Dicerorhinus kirchbergensis* and *Bubalus* sp., (where the habitat was a hot climate) and bones of animal inhabited in a temperate zone, the transition zone between the temperate and sub-tropical climates, and the transition zone between the temperate to sub-arctic

climates. Faunal remains in Layer No. 10 were composed of animals that inhabited in a warm mixed forest and grassland zone. Layer No. 11 did not contain fossils of animals inhabited in a warm climate. This fact suggest that the climate of this area changed to a cool temperate mixed forest and grassland zone. Analysis of faunal remains corresponds to the results of pollen analysis.

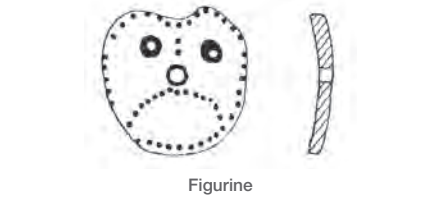
The excavators classified Layer No. 8 into Cultural Layer No. 1, Layer No. 9 into Cultural Layer No. 2, Layer No. 10 into Cultural Layer No. 3, and Layer No. 11 into Cultural Layer No. 4. The excavation of Cave No. 1 revealed several hearths, and yielded stone artifacts, bone and antler tools, and an art object. Hearts were found in Cultural Layer Nos. 2 and 4. All four cultural layers contained stone artifacts. Vein quartz was the main lithic raw material. Uncovered artifacts include choppers, chopping tools, handaxes, scrapers, endscrapers, points, cleavers, burins, and hammerstones. Cultural Layer Nos. 2 and 4 yielded bone and antler tools, such as points and awls. In particular, an animal head-shaped bone object was unearthed from Cultural Layer No. 4.

Cultural Layer Nos. 2, 3 and 4 contained two *Homo sapiens* fossils. An individual of fossil from Cultural Layer No. 2 was named the Yonggok Man Type I (the early type *Homo sapiens*) and a human from Cultural Layer Nos. 3 and 4 were classified into the

Stone artifact



Bone artifact



Figurine

Artifacts from the Yonggok-ri Cave

Yonggok Man Type II (the late type *Homo sapiens*).

The sedimentary layers of Cave No. 2 were composed of 10 strata. From them, Layer No. 8 was the Paleolithic culture layer and Layer No. 9 is the Neolithic culture layer. Cultural Layer No. 1 yielded vein quartz and quartzite tools manufactured by direct and projectile percussions, such as coppers, chopping tools, points, and scrapers.

[Han Changgyun]

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Daejeon
Yongho-dong Site
용호동 유적

The Yongho-dong site (Monument No. 42 of the Daejeon Metropolitan City) is located at Daedeok-gu, within Daejeon. This site is situated in the entrance of Yongho Village which is 40.5 meter above sea level. The Yonghocheon River converges into the Geumgang River in this area. As the excavator states, the sedimentary layer of this site can be divided into the lower river terrace deposits and the upper paleosol. From a surface layer, the strata can be re-classified into a plough zone (Layer 1), a dark yellowish brown-dark brown clay layer (Layer 2), a dark brown clay layer (Layer 3a), a light brown clay layer (Layer 3b), a yellowish brown sandy clay layer (Layer 3c), a dark yellowish brown sandy clay layer (Layer 5), a sand layer (Layer 5), a river gravel layer (Layer 6), a weathered bedrock (Layer 7). The excavation team named Layer 2 as Cultural Layer No. 1, and Layers 3a and 3b were named to Cultural Layer Nos. 2 and 3 respectively. Cultural Layer No. 4 was deposited in a boundary between Layers 4 and 5. The excavator suggests that the soil crack feature in the upper horizon were formed in Layer 3a (Cultural Layer No. 2) and the lower soil wedges were observed in Layer 4.

Cultural Layer No. 4 contained cores, flakes, scrapers, notches, choppers, chopping tools, polyhedrons, and handaxes. Most of stone artifacts uncovered from this layer were made of vein quartz and quartzite. The excavation of Cultural Layer No. 3 yielded cores, flakes, tanged points, points with denticulate retouch, scrapers, notches, choppers, chopping tools, and polyhedrons. Compared to the prior Cultural Layer No. 3, a more variety in terms of types of retouched tools were recovered from this cultural layer. Pebble of which both sides are ground were significant artifacts yielded from this layer. Along with vein quartz and quartzite tools,

View of the Yongho-dong site

View of the excavation

Fireplace

Point Tanged point

Polished stone artifact Handaxe

Artfacts from Yongho-dong

tuff and hornfels tools were also found in this layer. The excavation of Cultural Layer No. 2 revealed stone plates of which one side was evenly ground, endscrapers, scrapers, denticulates, anvils, choppers, chopping tools, and polyhedrons. Hearths and stone artifacts making workshops containing scrapers, points, denticulates, choppers, chopping tools, cores, and flakes were also recognized from Cultural Layer No. 1.

A charcoal sample collected from the upper level of the Layer 3a produced the radiocarbon date of 38,500±1000 BP. Cultural Layer Nos. 3 and 4 were deposited in the Middle Paleolithic and Cultural Layer No. 1 and 2 were formed in the Late Paleolithic. Aira-Tanzawa, or AT volcanic ashes were recovered from Layers 2 and 3a.

[Han Changgyun]

| Reference |

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Pocheon
Yongjeong-ri Site
용정리 유적

This site is located at Yongjeong-ri, Gunnae-myeon, Pocheon City, within the Gyeonggi-do Province. This area is a part of Pocheon basin. The Pocheoncheon River runs to the west of the site situated on the summit of a low hill rising between 117 and 126 meters above sea level. This area is about 20-30 meters higher than the nearby alluvial plain. The river terrace deposits in the Pleistocene cover biotite granite, the bedrock of the site. Thick Paleolithic deposits were laid on the river terrace deposits.

The stratigraphic profile of the sites shows the chronological deposition pattern the following order from the top soil: a surface layer (Layer No. 1), a light brown clay layer (Layer No. 2), a brown clay layer (Layer No. 3), a dark brown clay layer (Layer No. 4), a reddish brown clay layer (Layer No. 5), a yellowish brown sandy clay layer, a brown clay layer (Layer No. 7), a brown sandy clay layer (Layer No. 8), and a pebble layer (Layer No. 9 and the river terrace deposits). On the basis of the color and particle size of the sediments, Layer Nos. 3 and 4 were divided into two and four substrata respectively. The thicknesses of sediments were between 5 and 7 meters. Soil cracks were formed in Layer Nos. 3, 4, 5 and 7.

Stone artifacts were unearthed from Layer No. 2 (Cultural Layer No. 1), Layer No. 3 (Cultural Layer No. 2), Layer No. 4 (Cultural Layer No. 3), Layer No. 5 (Cultural Layer No. 4), and Layer No. 6 (Cultural Layer No. 5).

The excavator divided the area within a 200 meter radius into four sectors, Locality Nos. 1, 2 and 3 in District A and District B.

The excavation of the site yielded a total of 12,234 stone artifacts including 298 objects from Cultural Layer No. 2, 2,130 objects from Cultural Layer No. 2, 2,487 objects from Cultural Layer No. 3, 4,141 objects from Cultural Layer No. 4, and 3,178 objects from Cultural Layer No. 5. About 90 percent of artifacts from all cultural layers are debitages made up of cores, flakes, and chips. Obsidian objects including blades and microblades became unearthed from Cultural Layer No. 1. Typologically, stone artifacts from other cultural layers did not show much typological differences. Large core tools were mainly made of gravels and angular nodules. Core tools outnumbered retouched small flake tools. Although a few handaxes and points were uncovered, most of the excavated core tools were made up of choppers, and polyhedrons. The majority of the flake tools were composed of scrapers, denticulates, and notches.

Of various types of the raw materials selected for making tools including vein quartz, quartzite, granite, schist, sandstone,

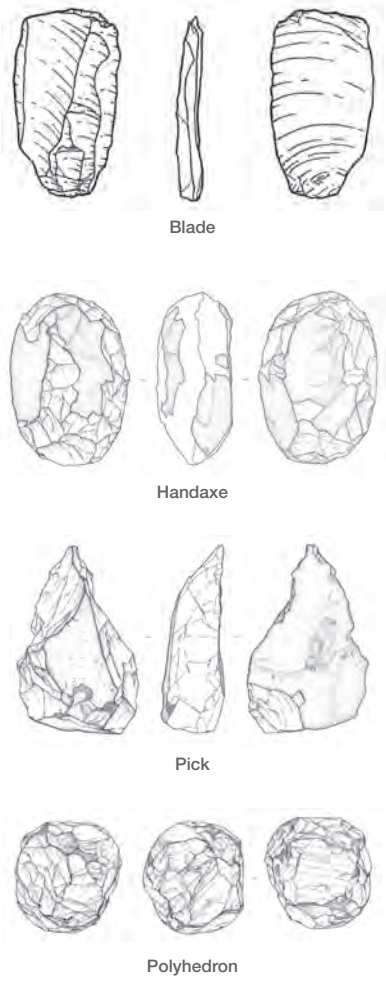
tuff, basalt, and obsidian, most objects were made of vein quartz, weathered pieces from the bedrock of this area, and quartzite formed within Precambrian gneiss and schist. Knappers occupying this site were able to collect quartz and quartzite gravels, which were extensively distributed on the river channels.

Considering that the determined absolute dates of the light brown clay layer laid in other excavated Paleolithic sites in the Hantangang River basin ranges between 24,000 and 15,000 BP, it can be assumed that Cultural Layer No. 1 was the stratum formed during the Late Paleolithic dating about 20,000 BP. Samples collected from other cultural layers produced the OSL dates of between 34,000±3000 and 41,000±1800 BC (Cultural Layer No. 2), between 40,500±2900 and 62,000±8000 BC (Cultural Layer No. 3), between 52,300±3800 and 81,000±5000 BC (Cultural Layer No. 4), and between 73,500±7000 and 92,000±8000 BC (Cultural Layer No. 5) respectively.

It is the largest Paleolithic site to have been excavated in the Pocheoncheon River basin to date. Stone artifacts and the sequence of lithic assemblage provided significant information in the studies of chronological change pattern of the stone tool making technique and the Paleolithic culture in the Pocheon area.

[Seo Insun]

View of the Yongjeong-ri site



Artifacts from Yongjeong-ri

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Daejeon
Yongsan-dong Site
용산동 유적

This site is located at Yongsan-dong, Yuseong-gu, within the Metropolitan City of Daejeon. A low hill rises to the east of this site. The Gwanpyeongcheon Stream, which runs into the Gapcheon River, flows to the west of the site. This site is situated a kilometer away from the Gapcheon River and about 4 kilometers away from the Geumgang River. Sedimentary layers of the site consist of the lower fluvial deposits and the upper clay layers transported from slopes. The majority of chipped stone artifacts were uncovered from the upper level of a brown clay layer (cultural layer) which was deposited earlier than soil wedges, about 35 meters in altitude. Particles of oxidized iron and manganese are sedimented in the upper level of this site. Particles of this layer were found to be coarser towards the lower level. A reddish brown clay layer with the typical soil crack feature, which was deposited under the cultural layer, covers a yellowish brown clay layer.

Stone artifacts were distributed on the area measuring 80 meters in length and 60 meters in width on this site. More specifically, artifacts were found to be even more densely clustered in an oval-planned sector measuring 40 meters in length and 20 meters in width. The excavation of the site yielded more than 2,200 stone artifacts. Chipped stone artifacts made of hornfels (or silicified shale) and vein quartz comprise about half of the total artifact collection. In addition to chips that occupy the majority of the total numbers of artifact, flakes, blades, and cores were uncovered from this site. Over half of the implements found on this site were tanged points (38 pieces), whether they are complete or broken. In addition, the cultural layer on this site recorded a few pieces of scrapers, endscrapers, notches, denticulates, awls, burins, choppers, chopping tools, and polyhedrons. Out of the 38 tanged points, 8 pieces were found to be intact in form. In addition 13 items of which the tips

were broken, 11 broken tangs, 6 pieces of which top halves of the point remained were collected. The lengths of the intact items range between 5 and 9 centimeters.

Many blades were flaked from most parts of the cores, presumably as hornfels were the most suitable raw materials for making tools by flaking technique. Blades were made of hornfels or silicified shale. Most of the found pieces were broken and only about 20 blades were found intact. The average length of them is 5.0 centimeters and the longest one is 10.1 centimeters. It seems that large quantities of tanged points made of hornfels were produced and repaired on this site.

A soil sample collected from the spot where stone tools were densely clustered produced the radiocarbon date of 24,430±870 BP. The radiocarbon date of a soil sample collected from the lower part of soil cracks is 19,310±790 BP. Judging from the fact that samples for measuring the radiocarbon dates are soils, we need to be cautious to accept them. In addition, the cultural layer did not contain any microblades and microblade cores. The excavator suggests that the cultural layer might have been formed in between 30,000 and 25,000 BP during the Late Paleolithic. [Kim Hwan-il]

Core

Tanged point

Blade

Artifacts from Yongsan-dong

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Cho, Sanggi, and Hwan-il Kim, 2007. *Yongsan-dong Palaeolithic Site, Daejeon, Korea*. Central Institute of Cultural Heritage.

Pocheon
Yongsujaeul Site
용수재울 유적

This site is located at Jung-ri 552, Gwanin-myeon, Pocheon City, within the Gyeonggi-do Province. The Paleolithic site is situated on the plain (106 meters) surrounded by high mountains including Jijangsan Mountain rising 877 meters above sea level. The Geonjicheon River, which runs towards southwards through this area, flows into the Hantangang River. The bedrock of this area is made up of basalt formed in the Pleistocene around the Hantangang River, Precambrian gneiss, and Cretaceous tuff.

The stratigraphic profile of the site shows the chronological deposition pattern the following order from the top soil: a surface layer (Layer No. 1), a dark brown sandy clay layer (Layer No. 2), a light brown sandy clay layer (Layer No. 3), a brown clay layer (Layer No. 4), a yellowish brown silty sand layer (Layer No. 5), a sand gravel layer (Layer No. 6), and a basalt bedrock (Layer No. 7). The upper part of Layer No. 4, which had the upper soil crack, was found eroded thus the sediment deposition between Layer Nos. 4 and 3 shows the unconformity.

Stone artifacts were uncovered from Layer No. 4 (Cultural Layer No. 1) and Layer No. 3 (Cultural Layer No. 2). A total of 1,310 stone artifacts including blade cores, microblade cores, flakes, blades, microblades, tanged points, burins, and hammerstones were recovered from Cultural Layer No. 1. Most objects were made of tuff (98.9 %) and were debitages made up of blades, microblades, flakes, and chips. Retouched pieces take some 0.8 percent of the total collection. Stone artifacts were densely clustered in an area within a five meter radius in this stratum and lots of refitted artifacts were unearthed in this place. Moreover, high-quality tuffs were extensively distributed around this area. Therefore, it may have been temporarily occupied for making stone tools.

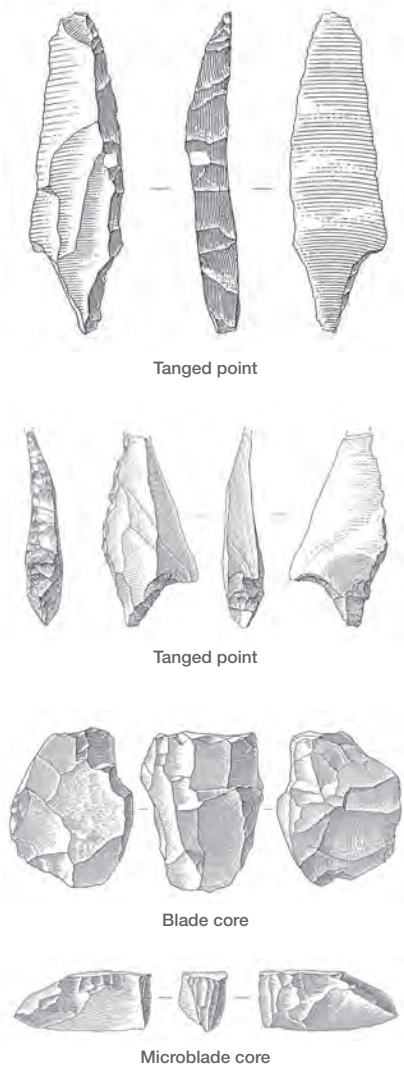
A total of 1,757 stone artifacts made up of blade cores, microblade cores, flakes, blades, microblades, tanged points, endscrapers, scrapers, burins, awls, and splintered pieces, which were made of various types of raw materials including tuff, vein quartz, obsidian, chalcedony, and crystal, were unearthed from Cultural Layer No. 2. The ratio of the shaped tools is 7.3 percent. Different types of stone artifacts and raw materials were buried in different points in Cultural Layer No. 2. Such buried patterns suggest two possibilities. One possibility may be that that the site was occupied by different contemporary groups. The other possibility may be that a group systematically divided and organized their living space.

The excavation of Cultural Layer Nos. 1

and 2 yielded 26 sets of the refitted artifacts made up of 68 objects, and 28 sets of the refitted artifacts composed of 76 objects respectively. These artifacts have contributed to studies on the stone tool production technique during the Paleolithic. Use-wear Analyses on tools including endscrapers, scrapers, and blades revealed various wear patterns including traces created by the attachment of the handle and during the tool making process. Baekdusan Mountain was the main source for obsidian artifacts (PNK 1 and PNK 2) unearthed from Cultural Layer No. 2.

Charcoal samples collected from the upper and lower parts of the level in which stone artifacts were laid in Cultural Layer No. 1 produced the AMS radiocarbon dates of 24,060±130 BP, and 42,080±600 BP respectively. The determined AMS radiocarbon date of a soil sample collected from Cultural Layer No. 2 is 19,170±100 BP. Considering that the measured AMS radiocarbon dates of samples collected from a brown clay layer at the Paleolithic sites in the Hantangang River basin range from 24,000 to 15,000 BP, Cultural Layer No. 2 was likely formed in around 20,000 BP.

The excavation results of two cultural layers at the Yongsujaeul site provide important data for studying the functional change of the Paleolithic site as well as the chronological change pattern of the stone tool making technology. Further comparative studies on the Paleolithic sites distributed in the Hantangang River basin will contribute to the understanding of the cultural exchange pattern in this area. [Seo Insun]



Artifacts from Yongsujaeul

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Cheongju
Yullyang-dong Site
율량동 유적

This site is located at Yullyang-dong 500-3, Cheongwon-gu, Cheongju City, within the Chungcheongbuk-do Province. This site is located in the foot of a low hill deposited in a confluence of two rivers: the Musimcheon and Yullyangcheon Rivers. Pleistocene fluvial deposits that are laid on coarse-grained granitic bedrock are distributed in many places across the area. The bottom of sedimentary layer in the site is 57.4 meters above sea level and about 10 meters above the bed of the Yullyangcheon River. According to the excavator, the deposits are divided into eight strata. The particles of the upper layers (Layers I, II, III, IV and V) were deposits transported from hill slopes and the lower layers (Layers VI, VII and VIII) were laid with sediments transported by the river flow. It is assumed that a peat layer (Layer VIII), the lowest stratum, was formed in the last interglacial period characterized by the warm and humid temperatures. The upper layers contained three lines of soil wedges and two cultural layers and an artifact containing layer was identified in the lower layers.

Including a stone tool making workshop, the excavation of Cultural Layer No. 1 (Layer IIIa, a brown silty sand layer), which is the lower part of the upper soil cracks, yielded a circular-or oval-shaped organic aggregate measuring between 40 and 100 centimeters in diameter. Of 707 artifacts uncovered from this layer, 428 objects (60.5 %) were distributed in a stone tool making workshop. The artifacts were made of vein quartz and these account for 90.5 percent of the total excavated stone objects. Most objects unearthed from this layer were debitages, such as cores, flakes, and chips; and the number of tools including scrapers, endscrapers, notches and awls is 35 (4.5 %). Most retouched pieces were expediently made using flakes and angular chunks with adequate shape and size. The excavation of Cultural Layer No. 2 (Layer IIa, a dark brown silty sand layer) yielded 64 artifacts including four retouched tools, such as scrapers, endscrapers and notches. A chopper was unearthed from an artifact containing layer (Layer VI, and yellowish brown sand layer), and this was laid below the lower soil wedge.

Nine samples were collected in this site which produced the absolute dates. An organic aggregate in Cultural Layer No. 1

is dated to 22,360 BP, the middle phase of the Late Paleolithic. The radiocarbon date of Cultural Layer No. 2 is 13,800-13,100 BP, the late phase of the Late Paleolithic. An organic sample collected from an artifact containing layer produced the radiocarbon date of 50,000-38,900 BP. [Woo Jongyoon]

Choppers from Yullyang-dong

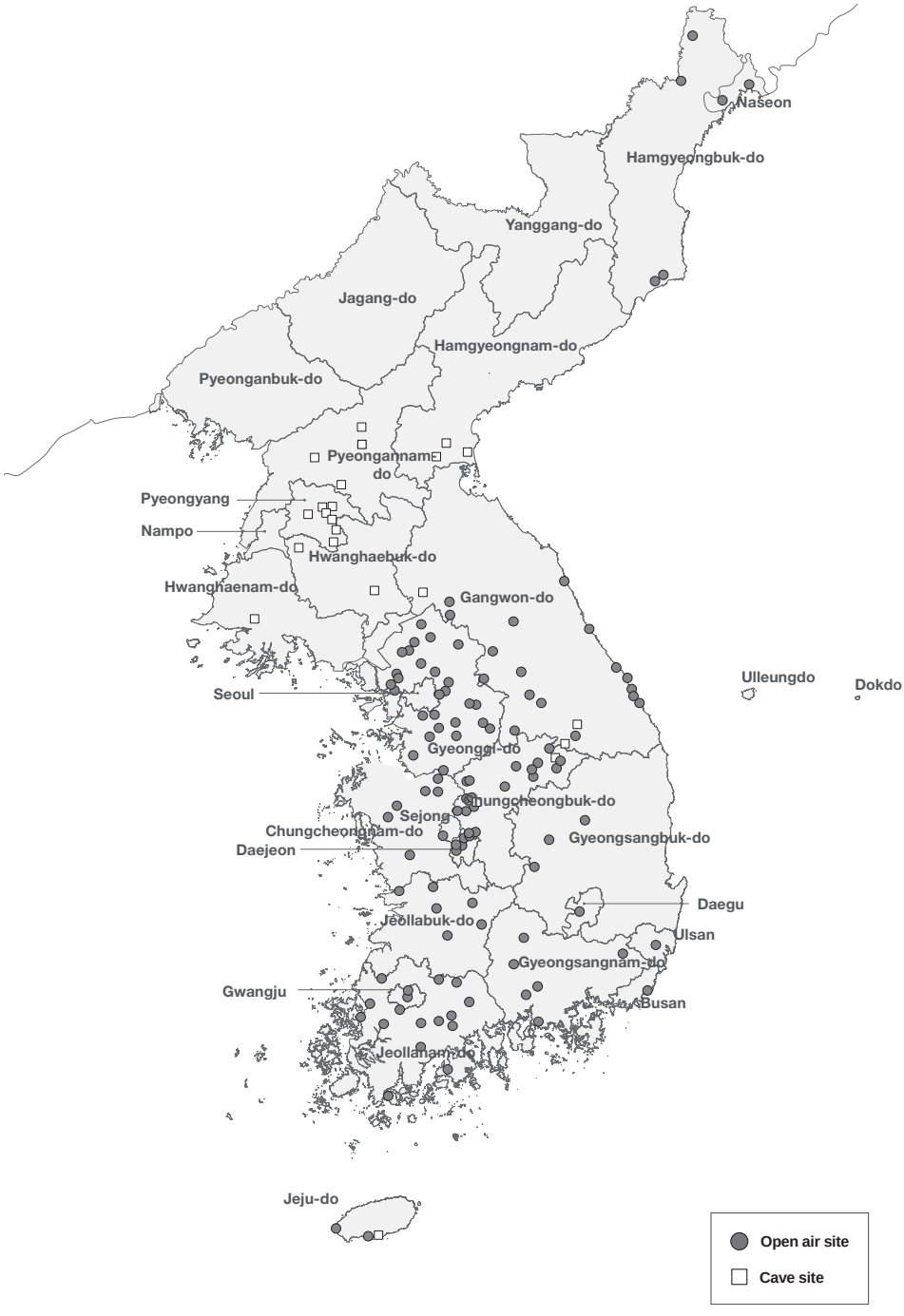
| Reference |

Lee, Yungjo, and Jongyoon Woo, 2005. *The Paleolithic Site at Yullyang-dong, Cheongju*. Chungbuk National University Museum.

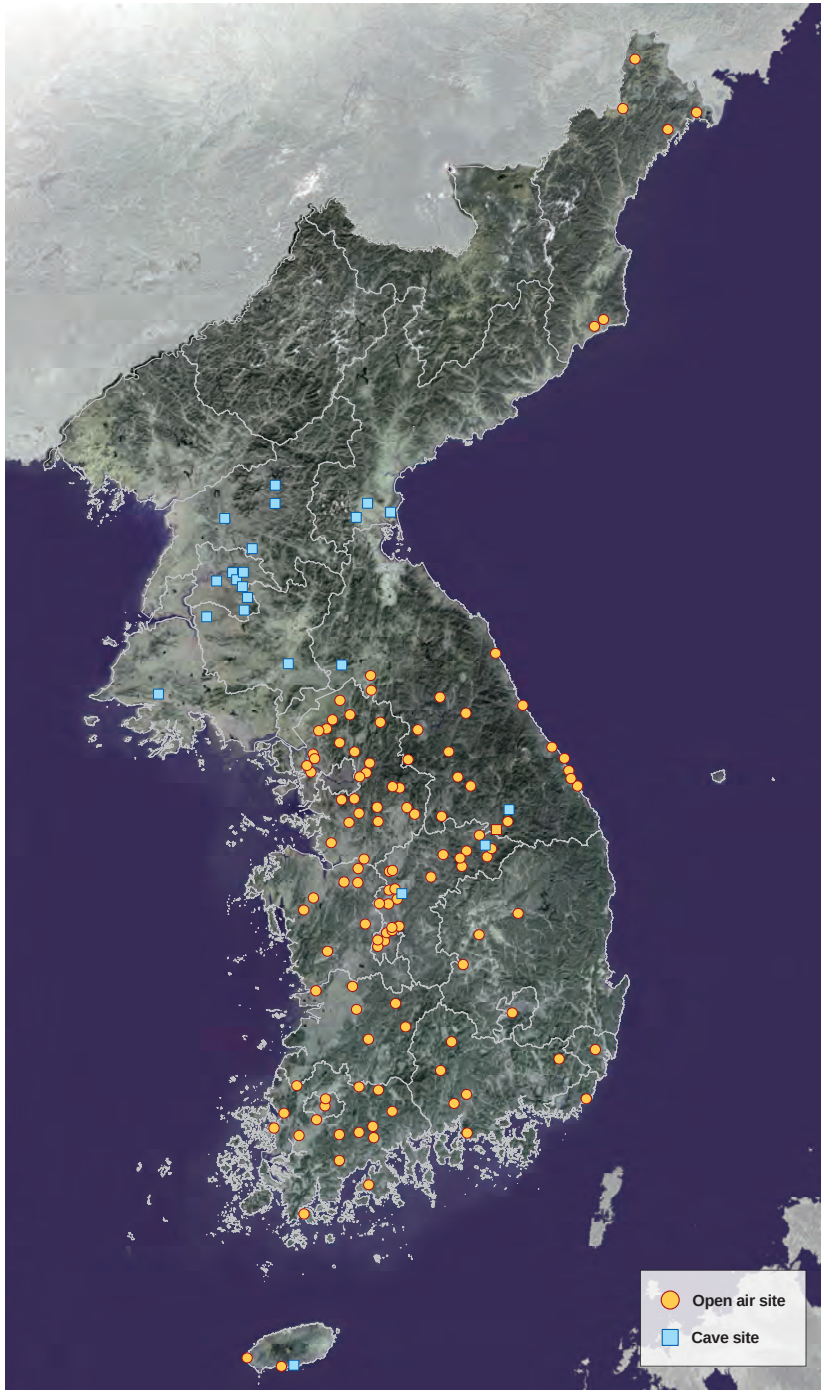
DICTIONARY
OF KOREAN
ARCHAEOLOGY

DISTRIBUTION MAP

Site Distribution Map



Site Distribution Map(Satellite Image Map)



The Paleolithic Sites in South Korea

Lists of the Paleolithic Sites in South Korea

Number	Administrative distric	Site
1	Seoul	Godeok-dong Site
2	Goyang	Deogi-dong Site
3	Gyeonggi-do Gwangju	Gungpyeong-ri Site
4	Gyeonggi-do Gwangju	Sam-ri Site
5	Gimpo	Singok-ri Site
6	Gimpo	Janggi-dong Site
7	Namyangju	Jisaeul Site
8	Namyangju	Hopyeong-dong Site
9	Namyangju	Deokso Site
10	Incheon	Bullo-dong Site
11	Incheon	Wondang-dong Site
12	Seongnam	Botteul Site
13	Anseong	Gaejeong-ri Site
14	Anseong	Manjeong-ri Site
15	Yangju	Gwangseok-ri Site
16	Yangpyeong	Byeongsan-ri Site
17	Yangpyeong	Dogok-ri Site
18	Yeoju	Yeonyang-ri Site
19	Yeoju	Baekseok-ri Site
20	Yeoncheon	Hoengsan-ri Site
21	Yeoncheon	Eundae-ri Site
22	Yeoncheon	Jeongok-ri Site
23	Yeoncheon	Namgye-ri Site
24	Yeoncheon	Geumpa-ri Site
25	Yongin	Dongbaek-ri Site
26	Yongin	Singal-dong Site
27	Yongin	Cheongdeok-dong Site
28	Yongin	Pyeongchang-ri Site
29	Uiwang	Poil-dong Site
30	Uijeongbu	Millak-dong Site
31	Goyang	Ilsan New City Site

Number	Administrative distric	Site
32	Paju	Unjeong I Site
33	Paju	Sangjiseok-ri Site
34	Yeoncheon	Wondang-ri Site
35	Paju	Gawol-ri and Juwol-ri Site
36	Paju	Jangsan-ri Site
37	Pocheon	Hwadae-ri Swimteo Site
38	Pocheon	Neulgeori Site
39	Pocheon	Yongjeong-ri Site
40	Pocheon	Yongsujaeul Site
41	Hwaseong	Daeyami-ri Site
42	Hwaseong	Gumuncheon-ri Site
43	Gangneung	Simgok-ri Site
44	Gangneung	Jusu-ri Site
45	Gangneung	Damsan-dong Site
46	Gangneung	Jeongdongjin-ri Site
47	Gangneung	Dusan-dong Site
48	Gangneung	Anhyeon-dong Site
49	Goseong	Wondang-ri Site
50	Goseong	Bongpyeong-ri Site
51	Donghae	Nobong Site
52	Donghae	Gumi-dong Site
53	Donghae	Pyeongneung-dong Site
54	Donghae	Gigok Site
55	Donghae	Chuam-dong Site
56	Donghae	Wolso Site
57	Donghae	Balhan-dong Site
58	Yanggu	Sangmuryong-ri Site
59	Inje	Bupyeong-ri Site
60	Yangyang	Dohwa-ri Site
61	Yeongwol	Samok-ri Site
62	Yeongwol	Yeondang Pinangul Cave

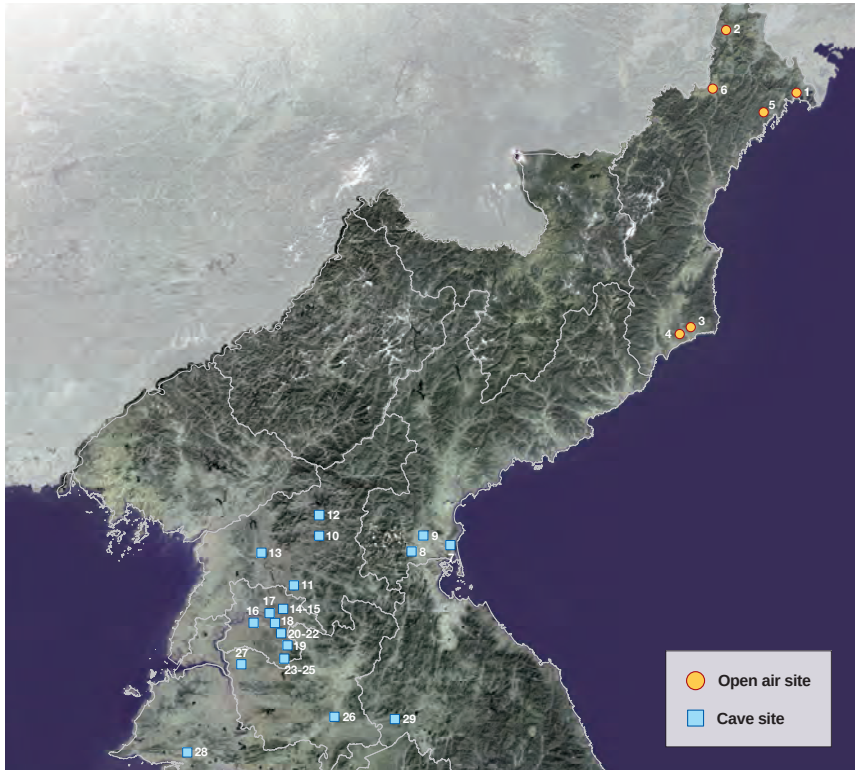
Number	Administrative distric	Site
63	Wonju	Maeji-ri Site
64	Cheorwon	Jangheung-ri Site
65	Cheorwon	Gangsan-ri Site
66	Chuncheon	Galdun Site
67	Chuncheon	Seosang-ri Site
68	Chuncheon	Geodu-ri Site
69	Pyeongchang	Gihwa-ri Ssanggul Cave
70	Hongcheon	Guseongpo-ri Site
71	Hongcheon	Hahwagye-ri Site
72	Hongcheon	Yeonbong-ri Site
73	Hongcheon	Nae·Oesampo-ri Site
74	Hongcheon	Mogok-ri Site
75	Hoengseong	Hyeoncheon-ri Site
76	Hoengseong	Budong-ri Site
77	Goesan	Geomseung-ri Site
78	Danyang	Suyanggae Site
79	Danyang	Gunanggul Cave
80	Danyang	Sangsi III Rock Shelter
81	Danyang	Geumgul Cave
82	Jecheon	Changnae Site
83	Jecheon	Gyesan-ri Site
84	Jecheon	Duhak-dong Site
85	Jecheon	Jeommal Cave
86	Chungju	Myeongo-ri Site
87	Jincheon	Janggwan-ri Site
88	Cheongju	Soro-ri Site
89	Cheongju	Mansu-ri Site
90	Cheongju	Hakso-ri Site
91	Cheongju	Durubong Cave
92	Cheongju	Keunnyonggul Cave
93	Cheongju	Jageunnyonggul Cave
94	Cheongju	Nosan-ri Site

Number	Administrative distric	Site
95	Cheongju	Yullyang-dong Site
96	Cheongju	Saemgol Site
97	Cheongju	Biha-dong Site
98	Cheongju	Bokdae-dong Site
99	Cheongju	Bongmyeong-dong Site
100	Cheongju	Daenong Site
101	incheon	Songdu-ri Site
102	Chungju	Bongbang-dong Site
103	Chungju	Geumneung-dong Site
104	Chungju	Yongtan-dong Site
105	Daejeon	Yongsan-dong Site
106	Daejeon	Yongho-dong Site
107	Daejeon	Daejeong-dong Site
108	Daejeon	Dunsan Site
109	Daejeon	Gujeuk-dong Site
110	Daejeon	Noeun-dong Site
111	Cheonan	Usin-ri Site
112	Cheonan	Suheol-ri site
113	Cheonan	Dujeong-dong Site
114	Cheonan	Yonggok-dong Site
115	Cheonan	Cheongdang-dong Site
116	Asan	Sirok-dong Site
117	Asan	Cheongnyonggol Site
118	Asan	Gwongok-dong Site
119	Yesan	Singa-ri Site
120	Hongseong	Ogam-ri Site
121	Gongju	Seokjangni Site
122	Buyeo	Nabok-ri Site
123	Gunsan	Naeheung-dong Site
124	Iksan	Sinmak Site
125	Imsil	Haga Site
126	Jangsu	Chimgok-ri Site
127	Jeonju	Sageun-ri Site

Number	Administrative distric	Site
128	Jeonju	Jang-dong Site
129	Jeonju	Bonggok Site
130	Jinan	Jingeuneul Site
131	Goheung	Handong Site
132	Gokseong	Jusan-ri Site
133	Gokseong	Songjeon-ri Site
134	Gokseong	Oji-ri Site
135	Gwangju	Sanwol-dong Site
136	Naju	Dangga Site
137	Naju	Chongok-ri Site
138	Naju	Songwol-dong Site
139	Naju	Sanging Site
140	Naju	Yongho Site
141	Muan	Piseo-ri Site
142	Hampyeong	Danghasan Site
143	Gwangju	Chipyeong-dong Site
144	Suncheon	Jungnae-ri Site
145	Suncheon	Wolpyeong Site
146	Suncheon	Oerokgol Site
147	Suncheon	Juksan Site
148	Suncheon	Geumpyeong Site
149	Suncheon	Gokcheon Site
150	Yeonggwang	Majeon Site
151	Yeonggwang	Gundong Site
152	Yeonggwang	Wondang Site
153	Wando	Daldo Site
154	Jangheung	Sinbuk Site
155	Hwasun	Sachang Site
156	Hwasun	Daeugi Site
157	Hwasun	Dosan Site
158	Hwasun	Daejeon Site
159	Boseong	Hajuk Site
160	Daegu	Wolseong-dong Site

Number	Administrative distric	Site
161	Sangju	Sinsang-ri Site
162	Andong	Maae-ri Site
163	Gimcheon	Eungi-ri Site
164	Miryang	Gorye-ri Site
165	Jinju	Jangheung-ri Site
166	Geochang	Imbul-ri Site
167	Geochang	Jeongjang-ri Site
168	Sacheon	Igeum-dong Site
169	Sancheong	Oksan-ri Site
170	Jinju	Naechon-ri Site
171	Ulsan	Okhyeon Site
172	Busan	Jwa-dong·Jung-dong Site
173	Seogwipo	Gangjeong-dong Site
174	Seogwipo	Saengsugwe Site
175	Jeju	Gosan-ri Site

The Paleolithic Sites in North Korea



Lists of the Paleolithic Sites in North Korea

Number	Administrative distric	Site
1	Naseon	Gulpo-ri Site
2	Onseong	Gangan-ri Site
3	Hwadae	Jangdeok-ri Site
4	Hwadae	Seokseong-ri Site
5	Naseon	Bupo-ri Site
6	Hoeryeong	Jigyeong-dong Site
7	Geumya	Guljaedeok Cave
8	Gowon	Dacheon-ri beomgul Cave
9	Geumya	Yongnam-ri Cave
10	Bukchang	Punggok-ri Cave
11	Seongcheon	Geumpyeong-ri Cave
12	Deokcheon	Seungnisan Cave
13	Suncheon	Jangseon-dong Cave
14	Seungho	Mandal-ri Cave

Number	Administrative distric	Site
15	Seungho	Hwacheon-dong Cave
16	Yeokpo District	Daehyeon-dong Cave
17	Seungho	Seungho III ho Cave
18	Seungho	Geumok-ri Cave
19	Sangwon	Geomeunmoru Cave
20	Sangwon	Jung-ri Cave
21	Sangwon	Geumcheon Cave
22	Sangwon	Cheongcheongam Cave
23	Sangwon	Yonggok-ri Cave
24	Sangwon	Nodong-ri Cave
25	Sangwon	Daeheung-ri Cave
26	Pyeongsan	Haesang-ri Cave
27	Hwangju	Cheongpadae Cave
28	Taetan	Naengjeonggol Cave
29	Cheorwon	Jeotan-ri Cave

Romanization System of the Korean in South and North Korea

Number	Korean	Chinese	South Korea	North Korea
1	굴포리 유적	羅先 屈浦里遺蹟	Gulpo-ri Site	Kulpo-ri Site
2	강안리 유적	穩城 江岸里遺蹟	Gangan-ri Site	Kangan-ri Site
3	장덕리 유적	花臺 長德里遺蹟	Jangdeok-ri Site	Jangdok-ri Site
4	석성리 유적	花臺 石城里遺蹟	Seokseong-ri Site	Soksong-ri Site
5	부포리 유적	羅先 鮒浦里遺跡	Bupo-ri Site	Pupho-ri Site
6	지경동 유적	會寧 地境洞遺蹟	Jigyeong-dong Site	Jigyong-dong Site
7	굴재덕 동굴 유적	金野 굴재덕 洞窟遺蹟	Guljaedeok Cave	Kuljaedok Cave
8	다천리 범굴 유적	高原 多泉里 범굴遺蹟	Dacheon-ri beomgul Cave	Tachon-ri Pomgul Site
9	용남리 동굴 유적	金野 龍南里 洞窟遺蹟	Yongnam-ri Cave	Ryongnam-ri Site
10	풍곡리 동굴 유적	北倉 豊谷里 洞窟遺蹟	Punggok-ri Cave	Phunggok-ri Cave
11	금평리 동굴 유적	成川 錦坪里 洞窟遺蹟	Geumpyeong-ri Cave	Kumphyong-ri Cave
12	승리산 동굴 유적	德川 勝利山 洞窟遺蹟	Seungnisan Cave	Mt.Sungri Cave
13	장선동 동굴 유적	殷山 長鮮洞 洞窟遺蹟	Jangseon-dong Cave	Jangson-dong Cave
14	만달리 동굴 유적	勝湖 萬達里 洞窟遺蹟	Mandal-ri Cave	Mandal-ri Cave
15	화천동 동굴 유적	勝湖 貨泉洞 洞窟遺蹟	Hwacheon-dong Cave	Hwachon-dong Cave
16	대현동 동굴 유적	力浦 大峴洞 洞窟遺蹟	Daehyeon-dong Cave	Taehyon-dong Cave
17	승호 3호 동굴 유적	勝湖 3號 洞窟遺蹟	Seungho III ho Cave	Sungho No.3 Cave
18	금옥리 동굴 유적	勝湖 金玉里 洞窟遺蹟	Geumok-ri Cave	Kumok-ri Cave
19	냉정골 동굴 유적	苔灘 冷井골 洞窟遺蹟	Naengjeonggol Cave	Raengjonggol Cave
20	저탄리 동굴 유적	鐵原 猪灘里 洞窟遺蹟	Jeotan-ri Cave	Jothan-ri Cave
21	검은모루 동굴 유적	祥原 黑隅里 洞窟遺蹟	Geomeunmoru Cave	Komunmoru Cave
22	중리 동굴 유적 (독재굴)	祥原 中里 洞窟遺蹟	Jung-ri Cave (Dokjaegul Cave)	Tokjaegul Cave
23	금천 동굴 유적	祥原 金泉 洞窟遺蹟	Geumcheon Cave	Kumchon Cave
24	청청암 동굴 유적	祥原 청청암 洞窟遺蹟	Cheongcheongam Cave	Chongchongam Cave
25	용곡리 동굴 유적	祥原 龍谷里 洞窟遺蹟	Yonggok-ri Cave	Ryonggok-ri Cave
26	노동리 동굴 유적	祥原 蘆洞里 洞窟遺蹟	Nodong-ri Cave	Rodong-ri Cave
27	대흥리 동굴 유적	祥原 大興里 洞窟遺蹟	Daeheung-ri Cave	Taehung-ri Cave
28	해상리 동굴 유적	平山 海象里 洞窟遺蹟	Haesang-ri Cave	Haesang-ri Cave
29	청파대 동굴 유적	黃州 청파대 洞窟遺蹟	Cheongpadae Cave	Chongphadae Cave

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