STONE INDUSTRIES AND SITE FORMATION OF THE CHONGOKNI PALEOLITHIC SITE

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Introduction

Since the first finds of Acheulean-typed handaxes at Chongokni in 1978, this site has been regarded as one of very important for understanding hominid dispersal in Korean peninsula and development of Palolithic stone industries in East Asia. Upon extensive researches, the Chongokni site turned out to be the one of the oldest and very well preserved open-air Paleolithic sites in Korea. Acheulean typed handaxes from the Chongokni were recognized as the first appearance in East Asia where no such tool types had been claimed by the time. The new evidence was considered to be against well known Movius' hypothesis of dichotomous cultural traditions in the development of World Paleolithic stone industries; Acheulean in Euro-African World and Chopper-chopping tool in East Asia. During the last more than 20 years, our understanding of the site has been better and better, but still some critical questions remain to be answered in future researches. Above all, the age of stone industries and geological formational processes are still being in hot debates. Recently significant progresses have been made on these topics.

History of research

Since the first excavation was carried out by a jointed team consisted of 5 insititutes, leaded by Late Professor Kim, Wonyong in 1979, 11 campaigns have been done. For the first five years, Locality 2 was excavated. In 1986 and 1992, salvage excavations were carried out for construction of military road in the Locality 2. In 1991, test excavation at the locality 5 revealed similar deposits to those found at the southwestern part of the locality 2. For a construction of road to Yonchon, Locality 3 was excavated. During the campaign, highest concentration of artefacts were exposed in a layer near the present surface. In 2000, whole area of the national monument 268 was surveyed by test pits to collect data of local stratigraphies and distribution of stone artefacts in layers. Along with archaeological researches, geological surveys and datings were carried out by excavation teams and other interested scientists.

Geology and age

The site is situated on the top of basalt bed rock which overlie Precambrian gneiss and granite. The basalt is believed to have originated from one small volcano, the Apsan in Pyounggang in the northeastern part of the Hantan-Imjin river basin. Two flows are often

claimed to be observed at the Chongokni, but it is unlikely long interval between the two flows. Recently, the basalt of the Chongokni was dated 0.5 MYA by K/Ar and it is confirmed by the fission track date of burnt soil underneath basalt. No positive evidence of hominid presence was found earlier than 0.5 mya yet, although there are some Quarternary deposits of gravel and silt underneath the basalt, often called Baekuiri Layer that is clearly older than 0.5 MYA.

The first age date was made by Prof. Kojima of Tokyo University. Maximum 0.27 mya was obtained from basalt by K/Ar method. Several more dates were from the basalt in the Hantan river basin and from sediments by TL. Several different tephras blown from Japan were identified in the upper layers, which are good evidence for understanding the age of the site. AT(about 25,000 BP) was found near the surface, and K-tz(about 95,000 BP) was recently identified in samples collected in level of about 1 m below from present surface at the 5520 excavation pit. At present, it is quite likely that the first hominid appearance can go back at sometime in mid- Middle Pleistocene, may be older than 350,000 BP(ref. Danhara in this proceeding), if sedimentation rate was constant.

Formational processes of sediments

Several meters of clay are often observed on the top of basalt or some fluvial/lacustrine deposits. There are several competitive explanations for the sedimentation processes on the top of the basalt, especially for clay deposits, aeolian from long distance, colluvial, local aeolian and overbank swampy deposit etc. Tentative conclusion from recent research seems to indicate aeolian origin from Siberian/northern China region would be more likely, except fluvial and lacustrine sediments at the lower part of deposits.

Stone industry

Chongokni stone industry is characterized by the presence of Acheulean-typed heavy duty components. Pointed or oval handaxes were shaped on cobbles or big flakes from large cobble. Interestingly some cleaver are also found with some variation in the components. Mostly they are covered with big deep flakes scars and cortex on some parts. Even though some were retouched extensively for making symmetrical plan and straight edges, most of handaxes could be classified as proto-type or Developed Oldowan etc. Some of them are reminiscent to those from Sangoan from central Africa. It may be necessary to distinguish them from typical Acheulean complex (Mode 2), tentatively mode 2A while 2B for typical ones.

If not Acheulean typed tools, Chongokni stone industry is not much different from those some other Lower Paleolithic stone industries found in East Asia. Choppers, polyhedral, heavyduty scrapers, small scrapers on flakes and chunks, roughly shaped denticulates, points etc. are found as shaped tools. Cores of many different stages including semi-biconical cores are observed and some of choppers could be classified as cores or core/choppers. There are some patterns in shaping tools, however few extensively retouched tools are found. It is very

few pieces deliberately retouched for particular function but mostly several flakings were carried out for making edges. In general, the Chongokni stone industry can be described as "expedient" one.

Cutural horizons in Stratigraphy

Stone artefacts were found in most of layers except lacustrine deposits which appear at bottom in some excavation pits. There are several horizons of lithic assemblages in clay and sandy layers. It is not quite clear that how many horizons exist in the stratigraphy. The lowest layer of stone artefacts is the fluvial sandy deposit above lacustrine one. Probably they were accidentally introduced by some geological processes. However, it indicates that hominid existed during the very first stage of sedimentation on the top of basalt, if not natural ones. They may be the same age as those stone artefacts that were found on basalt surface at the bottom of clay deposit in some excavation pits on the major ridge of the Locality 2.

The lowest level of artefact concentrations was exposed in clayish sandy deposits overlying fluvial sandy deposit. Relatively high concentrations of artefacts with some basalt cobbles were influenced by some surface water actions, for example winnowing processes. Several horizons of concentrated or isolated artefacts were observed in clay deposits. It is not clear how many cultural horizons exist in clay layers, but at least 4 are believed to exist. The oldest one is the one observed at the bottom of the clay layer that overlie sandy deposit, which can be observed in a pit on minor ridge in Loclaity 2 in 1992. Two loose concentrations of artefacts were in the clay layers in the LIISI pit. A dense concentration of artefacts found in the Locality I is the upper most horizon, which must be the youngest one. In addition to these concentrations, isolated or several associated stone artefacts were excavated in many pits with variation of levels. If current estimation of ages of clay deposits on the basis of aeolian process of formation could be acceptable, couple of tens thousand years difference exist between the lowest horizon and the highest horizon without any major change of tool making technology. In addition, it should be noted that some conjoined pieces were excavated being seperated maximum 90 cm in level, which implies post-deposition disturbance may be much more serious than our expectation even in fine grained sediment.

Problems and direction of future research

Age of stone industries from different layers, development of stone tool technology at the site, more detailed formational processes of cultural horizons, environmental change etc should be pursued. Interdisciplinary collaborational researches for immediate and for long-term projects would bring out better understandings of these topics.