

Investigation of the Kanedori Site in Iwate Prefecture, Northern Honshu

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I am Atsushi Kuroda, of the Tono City Board of Education in Iwate Prefecture. I was in charge of the 2nd and the 3rd excavations of the Kanedori site.

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The Kanedori site is located in Tono City, in Iwate Prefecture, in northern Honshu. The site was discovered in 1984 by Yoshio Takeda, who is one of the co-authors of this report. It was investigated by the Kanedori Excavation Group, led by Kyoichi Kikuchi, who is also a co-author, but, unfortunately, could not be here today because of health problems. The first investigation which took place from July 26, 1985 to March 31, 1986, covered some 300 square meter of the site. It revealed that the site contained materials, dating to the Middle Palaeolithic period. Because of the « Fujimura Scandal » of 2000, the municipal Board of Education conducted the second and the third investigations, for one month each, in 2003 and 2004. The investigations confirmed the Middle Palaeolithic status of the site.

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The Kanedori site is in the middle part of the Kitakami Highlands, to the west of the Kitakami River. There are many Palaeolithic sites in the area. To the east of the Kitakami River is the Ou Mountain Range, which forms the backbone of Northern Honshu. There are several volcanos in the Ou Mountains that sent out numerous tephra falls during the Pleistocene. The tephra deposits are most useful for age estimation of the Palaeolithic assemblages.

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The site is located in a remnant of the middle terrace of the Yuya River, in the southwestern part of the Kitakami Highlands. This geomorphological map shows the High, Middle, and Low terraces along the Yuya and Tassobe Rivers, which can be correlated with riverine terraces of the Sarugaishi and Kitakami Rivers, in terms of the relative heights from the river beds and from the sea level. It should be noted that the Middle terrace of the Yuya River, on which the site is located, can clearly be correlated with the Murasakino · Isawa Terrance of the Kitakami River, with reference to the horizon marker tephra, the Yakeishi-Murasakino Pumice, Or "Yk-M."

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This photograph shows a distant view of the site from the south.

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This is a close-up view of the site from the east. The site is on the tongue-shaped terrace which extends from Hiryu-san Mt. on the west bank of the Yuya River. It is at 242m above sea level, and at about 20m from the river bed. The terrace remnant hill on which the site is located is separated from the Hiryu-san Mt. by the National Highway 396. The Highway runs through a shallow valley, that marks the boundary between different kinds of bedrock: serpentine on the west side of the Highway, and argillite on the east side.

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This is a detailed plan of the excavation area. The Middle Palaeolithic materials were recovered from the 1985 excavation area, shown in buff colour.

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The investigation was conducted by horizontal excavation of lamina unit in each layer;

- Artifacts were recorded 3-dimensionally, and fabric measurement was conducted ;
- Of the scientific methods of investigation, the following were applied:
 - Analyses of physico-chemical properties of tephra, with the view to identifying its source and the eruption date;
 - Radiocarbon and OSL dating;
 - Phytolith analyses;
 - Geological research; and
 - Lithological analyses of the lithic artifacts.

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The site stratigraphy is as follows:

Stratum 1 is the present and old surface soils; Strata 2, 3a, 3b, and 3c are soft loam of volcanic origin;

Stratum 3d is pumice; Strata 4a, 4b, and 4c are clay; and Stratum 5 is terrace gravel.

Of these, cultural remains were found in the following strata: the lower part of Stratum 1 contained Late Yayoi to Final Jomon remains, and the upper part of Stratum 2 contained Early Jomon materials. Middle Palaeolithic materials were found in Strata 3b, 3c, which we call Cultural Layer III, and Strata 4a and 4b, called Cultural Layer IV. Each stratum is separated by unconformity, and slight unconformity exists between sub-strata. Cracks are present in the lower part of Stratum 4a and the upper part of 4b.

The following tephra have been identified: the tephra named Iw-Od dated 35000 to 50000 years ago in Stratum 3b; Yk-M (68000 to 78000 years ago) in Stratum 3d, and, from the lower part of Stratum 4a, were extracted Hj-Kth (84000 years ago) , Aso-4 (85000 to 90000 years ago) , Nr-N (90000 years ago) , and Toya (112000 to 115000 years ago) .

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This slide shows the stratigraphic positions of the Kanedori assemblages, and two other assemblages from near-by sites in the area, Kashiymadate and Ohwatari, in relation to the key horizon maker tephra.

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This cross section shows Strata 3b and 3c, which contained the artifacts of Cultural Layer III, and Strata 4a and 4b, from which Cultural Layer IV materials were recovered. It clearly shows the well-developed reddish-brown soil of Stratum 3.

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In Cultural Layer III, we noted an area of artifact-concentration, named Unit A, where we found large tools in hornfels and smaller tools made of siliceous shale, as well as many carbonized remains. There is also a more loosely-defined cluster of smaller artifacts in the southwest. We recovered 40 items from Cultural Layer III, which consists of one axe-shaped tool (No. 41), one discoidal core (No. 42), a chopper (No. 43), scrapers (Nos. 44, 45, 46, 49, and 50), a wedge-shaped tool (No. 47), flakes (Nos. 48, 51-59) and 24 chips. By the way, the axe-shaped tool (No. 41) was what led to the site discovery by Yoshio Takeda, and the core (No.42) was collected by the landowner and its imprint on the ground was subsequently confirmed.

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No artifact concentration area was found in Cultural Layer IV. The assemblage consists of oval artifact (No. 61), choppers (Nos. 62 and 64), chopping tool (No. 63), scrapers (Nos. 67 and 71), and flakes (65 and 66), for the total of 8 pieces. They are made with a hornfels including andalusite and the garnet. This hornfels is not included in Terrace Gravel and can gather it in a riverbed of the Tassobe River.

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Close-up of the axe-shaped tool and discoidal core from Culture Layer III.

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More of the artifacts from Culture III: choppers, scrapers, a wedge-shaped tool, and flakes.

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More flakes recovered from Culture Layer III.

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These are choppers and a chopping tool recovered from Culture Layer IV.

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As to the ages of Kanedori assemblages;

- Volcanic glass of Iw-Od tephra, dated 35000 to 50000 years ago, was found in the upper part of Cultural Layer III, and the Yk-M tephra, dated 68000 to 78000 years ago, is deposited in the lower part of Cultural Layer III. Thus, the age of Culture Layer III would be between 35000 years ago and 68000 years ago. This is consistent with the radiocarbon date of 46,480 \pm 710 BP obtained on a sample from the lower part of Culture Layer III.
- The age of Culture Layer IV is estimated to be between 68000 years ago and 85000 years ago, because of the presence of the Yk-M tephra deposits just above the Culture Layer IV, and because volcanic glass from Aso-4, dated 85000 years ago, and other tephra have been found in the Culture Layer itself.

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Culture Layer III is estimated to date between 35000 years ago and 68000 years ago, on the basis of tephrochronology and the radiocarbon method. Forty artifacts and numerous carbonized material were recovered from this Layer. The age of Culture Layer IV is estimated to be between 68000 years ago and 84000 years ago, on the basis of the tephra analyses. Eight artifacts and carbonized material were recovered from this Layer.

The Culture Layer III assemblage consists of large tools made of hornfels and small artifacts in siliceous shale. Absence of the handaxe and the pick, which are often found in early assemblages of China and the Korean Peninsula, seems to suggest unique composition of Palaeolithic assemblages in the Japanese Archipelago.

The Kanedori site, which can be firmly dated by means of tephrochronology and geochronology, is a rare example of Middle Palaeolithic site in Japan.

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That's it. Thank you very much.