New Evidence of Endscraper Reduction in Upper Paleolithic Japan

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Endscrapers are one of the major tool classes among the Upper Paleolithic assemblages of northern Japan. The microblade assemblages in Hokkaido, dated between 20,000 and 12,000 RCYBP, consist principally of abundant endscrapers on blades (Nakazawa et al. 2005). In spite of the general attention paid to the complexity of endscraper reduction processes (e.g., Blades 2003; Morrow 1997), there have been few explicit attempts to assess the various resharpening patterns of endscrapers from the Upper Paleolithic assemblages in Japan. In this paper, I present new evidence evaluating the edge-resharpening processes of endscrapers, based on observations of the refitted specimens from the Inada-1 and Beppu-1 sites located along the margins of terraces on the Tokachi Plain, eastern Hokkaido (Kitazawa and Yamahara 1997; Kitazawa and Sasajima 2003). The assemblages from both sites are characterized by endscrapers (Inada-1, n = 101; Beppu-1, n = 8) made on blades detached from prismatic obsidian blade cores. A small concentration of charcoal associated with the lithic assemblages at the Beppu-1 site yielded AMS ^{14}C dates of 13,400 ± 70 (Beta-149443) and 3730 ± 40 RCYBP (Beta-149444) (Kitazawa and Sasajima 2003); AMS ^{14}C dates were not obtained from

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the Inada-1 site. The technological and typological features observed on the stone tools demonstrate that both assemblages may be attributable to the "late period" of microblade assemblages in Hokkaido (Nakazawa et al. 2005; Takakura 2004).

Four specimens of endscrapers refitted with resharpening flakes and spall on the working edges are identified. A refitted specimen (Figure 1A) from the Inada-1 site shows that the former working edge was completely rejuvenated by a blow, and a new working edge was prepared by removing small chips. Because some broken endscrapers (Figure 1B–C) also demonstrate identical edge-resharpening processes, the observed specimen was not exceptional. Additionally, on four specimens from the Inada-1 site (Kitazawa and Yamahara

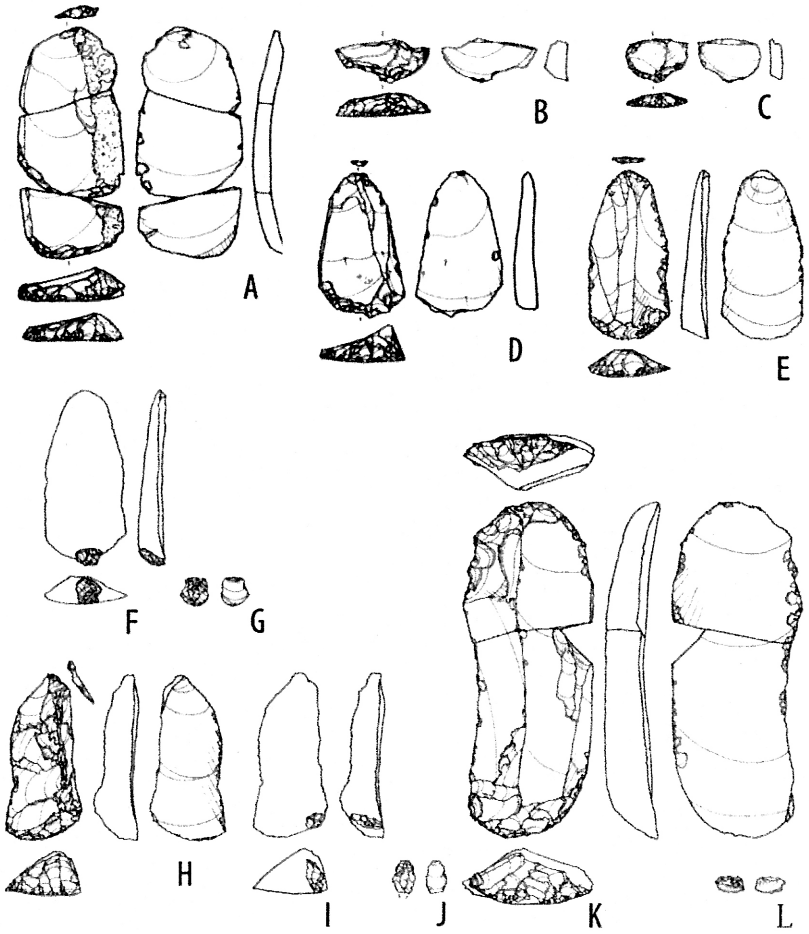

Figure 1. Lithic artifacts from the Inada-1 site (**A–D**) and Beppu-1 site (**E–L**). **A, F, I, K,** refitted specimens; **B, C, D, E, H,** endscrapers; **G, J, L,** chipped flakes (after Kitazawa and Yamahara 1997; Kitazawa and Sasajima 2003).

1997) part of a Hertzian cone can be observed on the dorsal face above the working edges of endscrapers (Figure 1D). Thus, these indicate that the spalls on working edges are not the result of accidental breakage while hafting, but were produced by deliberate percussion on the dorsal face to remove all working edges. In the Beppu-1 assemblage, three specimens (Figure 1: F, I, and K) are original endscrapers with small chipped flakes along their working edges. Endscrapers from the Beppu-1 site might have been reduced by removing small chips along the striking axis of blade blanks; this in turn gradually shortened their lengths. Unlike the Inada-1 site, this site has not yielded endscrapers broken by blows. Here, I measure the working edge angle formed between the unretouched ventral face and the retouched dorsal working edge. The angle is measured at the center of the working edges of the endscraper or chipped flake, and is recorded in degrees using a contact goniometer. Interestingly, the measurements of working edge angles reveal that the angles of former working edges (Figure 1G, 67°; 1J, 70°; 1L, 68°) are steeper than those of renewed ones (Figure 1E, 63°; 1H, 61°; 1K, 52°).

Obviously, these refitted specimens yield unique data that directly relate to variation in the edge-resharpening processes of endscrapers. Archaeologists analyzing endscrapers (e.g., Morrow 1997; Movius et al. 1968; Shott 1989; Yanase 1985) have interpreted the small ratio of length relative to initial blank size and the high steepness of the working edge angle as indicators of high intensities of retouch or utilization. However, the refitted specimens from Inada-1 and Beppu-1 sites suggest that shorter lengths and steeper edge angles do not necessarily signify intensive utilization of the endscrapers. They imply that variation in edge-resharpening processes can affect various morphological attributes of endscrapers, especially lengths and working edge angles. As a result, the reliability of inferences about the relationship between reduction intensity and morphological attributes of endscrapers will be improved by studying the influence of edge-resharpening processes.

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References Cited

Blades, B. 2003 End Scraper Reduction and Hunter-gatherer Mobility. *American Antiquity* 68:141–56.

Kitazawa, M., and T. Yamahara 1997 *Obihiro Inada-1 Iseki* [*Obihiro Inada-1 Site*]. Obihiro City Board of Education, Obihiro (in Japanese).

Kitazawa, M., and K. Sasajima 2003 *Obihiro Beppu-1 Iseki* [*Obihiro Beppu-1 Site*]. Obihiro City Board of Education, Obihiro (in Japanese).

Morrow, J. E. 1997 End Scraper Morphology and Use-life: an Approach for Studying Paleoindian Lithic Technology and Mobility. *Lithic Technology* 22:70–85.

Movius, H. L., Jr., N. David, H. M. Bricker, and R. B. Clay 1968 *The Analysis of Certain Major Classes of Upper Paleolithic Tools*. American School of Prehistoric Research Bulletin 26. Peabody Museum, Harvard University, Cambridge.

Nakazawa, Y., M. Izuho, J. Takakura and S. Yamada 2005 Toward an Understanding of Technological Variability in Microblade Assemblages in Hokkaido, Japan. *Asian Perspectives* 44:276–92.

Shott, M. 1989 Technological Organization in the Great Lakes Paleoindian Assemblages. In *Eastern Paleoindian Lithic Resource Use*, edited by C. J. Ellis and J. C. Lothrop, pp.221–37. Westview Press, Boulder, Colorado.

Takakura, J. 2004 Souki no Keitaiteki Heni to sono Keisei Katei [Variation and Its Formation Processes in the Form of End-Scraper]. *Kyusseki Koukogaku* [*Palaeolithic Archaeology*] 65:1–16 (in Japanese with English abstract).

Yanase, Y. 1985 Ranbado Iseki niokeru End Scrapers no Zokusei Bunseki [An Analysis of the Attributes of End Scrapers from the Ranbado Site]. *Koukogaku Kenkyu (Quarterly of Archaeological Studies)* 31(4):68–92 (in Japanese).