

frequently preferable to an intimate contact with the men themselves. The portrait Keller creates of Seton suggests that an acquaintance with "Black Wolf" would be no exception. Perhaps because he is primarily viewed as a member of a large Victorian family, Seton surfaces as an egotistical child not unlike the character of Mr. Toad in *The Wind in the Willows* or a self-martyred victim amusingly like Eeyore in *Winnie-the-Pooh*. This comparison is apt, for today Seton's animal stories find their most appreciative audience in young readers, but while the comparison is apt, it is also ironic: Seton's "realistic" animal stories stand as the antithesis of the tales of Kenneth Grahame and A. A. Milne, where humanized animals pack picnic lunches for their boating excursions and undertake "Expeditions to the North Pole." Nevertheless, the wayward personalities of nursery characters soon lose their charm when transplanted to the flesh-and-blood adult. Keller depicts a person who "knew nothing about cooperation," whose "enthusiasm for martyrdom was almost entirely destructive," and who, in his memoirs, "resorts to unwarranted ridicule" of those friends and instructors who helped along his career.

Yet *Black Wolf: The Life of Ernest Thompson Seton* is not at all a vituperative condemnation of Seton. Instead, Keller attempts a frank assessment of the artist-naturalist and what motivated him. He was an over-achiever, a characteristic Keller implies grew out of his family relationships. Being one of ten sons must have exacted its toll. But the enormous and unnatural hatred Seton nurtured for his father largely commands Keller's attention in her forays into Seton's childhood. Although Keller can never identify the reason for this paternal hatred, she leaves little doubt in the reader's mind of its intensity. The family name of Thompson became an anathema to Seton; at one point, he dropped the name entirely, picking it up later as a middle name only at the request of his mother, to whom he was very close. In a 25-year period, he variously identified himself as Ernest Evan Thompson, Ernest Evan Thompson Seton, Ernest Thompson-Seton, Ernest Seton-Thompson, Wolf Thompson, Wolf Seton, and Chief Black Wolf. The confusion this must have caused his publishers and readers is obvious; the confusion in Seton's own mind is perhaps equally apparent.

Keller's biographical work deserves special praise. Seton left numerous autobiographical accounts, but they are so prejudiced by his sometimes outrageously egocentric view of events that Keller has been forced to find external verification of almost every event in Seton's life. Seton's charges against his father, the reader will be interested to note, are not substantiated by any of the other sons. In many ways, this typifies the enormity of Keller's task.

Throughout the book, Keller remains both candid and humane. At no point does she exploit or sensationalize her material in order to improve her sales or to simplify her subject so that it fits a stereotypic mold. Without question, Keller has her own notions about the origins and causes of Seton's personality — without such shaping ideas, biography cannot exist and we are left with nothing more than a chronological arrangement of facts about a human life. But Keller's assessment grows out of a desire to understand the enigmatic Seton, and although she finds that he resists every effort to comprehend him, the intelligent and sensitive proings into his life ultimately create a meaningful image of the man.

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Institut für Urgeschichte der Universität Tübingen, 1984. 138 p., photos, illus., maps, bib. Softbound. Dm. 43.

Umingmak, a Pre-Dorset site in the interior of Banks Island, was located and tested in 1965 by W.E. Taylor and R. McGhee. In 1970, 1973 and 1975, the Institut für Urgeschichte (Institute of Prehistory) carried out a series of excavations in order to establish the sedimentary sequence in the area and to test excavation and recording techniques developed in Paleolithic sites. In 1977 the institute published a preliminary report, edited by site director H. Muller-Beck, in the *Urgeschichtliche Materialhefte* series. *The Microblades of Umingmak* is only the second publication on the institute's excavations of this site and is the first of an intended series of final reports to be published in order of completion.

The format in inexpensive but effective, with good quality figures and photographs. Tables and figures would be easier to access if included in the text rather than at the end of the book. References to figures would be clearer if artifacts were individually numbered. More attention to editing will improve the readability of future volumes.

This volume comprises an analysis of 238 microblades and microblade fragments and one microblade core fragment located during the three excavations (1A1, 1A2, 1D). The author's objectives are to provide a qualitative and quantitative description of the microlithic artifacts; to reconstruct the method of production and the use of the blades; and to compare the blades within three excavation areas of the site and with blades from other sites in the Arctic.

Chapter 1 briefly introduces the research topic. The reader should refer to the preliminary report for full details on the location and environmental characteristics of the site.

Chapter 2 describes the initial discovery of the site and the three excavations conducted by the Institute of Prehistory. Little information is provided on actual excavation technique (i.e., use of screens, size of screen mesh, excavation tools), but methods of collection and recording, which differed from year to year, are described in detail. The major difference is that in successive excavations artifacts and bone of increasingly smaller dimensions were individually numbered and mapped. In 1975 all sediments were water sieved.

Chapter 3 describes the analytical methods used, including a list of attributes and an explanation of the relevant statistical tests. Although a definition of "microblade" is provided, Owen does not define "ridge blades," which are included in all statistical tests. In addition, the author admits to a problem in recognizing microblades but does not explain how this was resolved.

Chapter 4 deals with analysis of those attributes on the blades and the single core thought to reflect method of manufacture. Owen reconstructs manufacturing technique and suggests that, while similar throughout the site, some differences among excavation areas did exist — e.g., more ridge blades in 1A1 than in 1AD; more blades with cortex in 1D; the core fragment and blades with core remnants in 1A1. Although the author states that the blades were probably produced by pressure, she gives no documentation for this statement. Since the reconstruction lacks an experimental basis, it remains hypothetical.

Chapter 5 focuses on differences within the site. Although previous work by the author and others had demonstrated that it was not possible to distinguish intentional from accidental breaks or break method on microblades, Owen again attempts this task for the Umingmak microblades and is unsuccessful. Owen notes that median length, width, thickness and weight decrease from excavation area 1A1 to 1A2 to 1D. After conducting a median test, she concludes that this difference is statistically significant for width and thickness. One problem is that the actual differences are very small, ranging from 0.25 mm to 1.25 mm. In addition, the variation in length, which differs the most, is not significant according to the median test, while variation in thickness, which differs the least, is significant. These results are difficult to understand and appear to be misleading for this particular sample. Ridge blades, which are thicker and more numerous than "normal" microblades, are included in the analysis. Their presence may account

for the difference in size among areas, but this was not tested for by deletion from subsequent analyses. Owen proposes that the differences among excavation areas are caused by variation in excavation technique and presents a table comparing median measurements from the same area excavated in three separate years, again showing a decrease in overall size from 1970 to 1975. If IA2 (1975) and ID (1973) are included, then the decrease in size does not correspond to year of excavation. In fact, according to chapter 2, excavation technique does not differ as much as recording technique, and it is difficult to understand how this type of variation affects the size of artifacts recovered.

Chapter 6 addresses the problem of microblade use. Retouch is defined as deliberate alteration of an artifact, but the number of scars required or the size of the area affected is not discussed. A comprehensive description of the location and type of retouch, examined with a hand lens (10×) and binocular microscope (40×), is presented. Worked material is suggested, although no experimentation was conducted to provide a sound basis for the decisions. A study to examine usewear under higher magnification (500×) is planned; inclusion of these results would have been a valuable addition to this investigation. Residue analysis provided no conclusive results — there may be a type of resin of undetermined source on some blades. Owen concludes that retouched microblades were used in a great variety of ways, the majority being end-hafted for cutting soft materials (meat, hide, etc.), whittling wood, boring, engraving, and other, as yet undefined, activities. These are not new ideas and still remain to be tested by experimental work and more detailed environmental analyses.

Chapter 7 provides a summary of conclusions already drawn in earlier chapters regarding the differences among excavation areas. Unfortunately, absence of final analyses of other aspects of the site, (i.e., fauna, flora, other artifacts, artifact distribution, soils) makes it impossible for this author to provide descriptions and explanations of microblade use and production in the context of other behaviour at the site. There appear to be defined areas of microblade use and production in IA1, but since analysis of artifact distribution is not complete, further investigation is not attempted. Apparently, microblades from IA1, IA2 and ID belong to the same techno-complex. As already discussed above, the author relates differences in width and thickness to variation in excavation method, although variation in manufacturing stage, technique, and function may be more significant.

In chapter 8, Owen uses published data for comparisons with microblades from other arctic sites displaying a size trend — i.e., the more recent sites have larger microblades. Because microblades from Umingmak appear at both ends of the size continuum, Owen concludes that size is not culturally significant and that excavation technique is probably responsible for the observed difference in other sites. No evidence is presented to suggest that other archaeologists have excavated older sites more carefully or with a different technique than more recent sites. Even if the excavation or recording method is responsible for differences in microblade size noted at Umingmak, this conclusion cannot be generalized to the entire Arctic without substantial investigation.

Chapter 9 restates conclusions drawn in chapters 3-8. Owen mentions the need for microwear studies and refitting. This type of study also illustrates the need for experimental work addressing the problems of determining artifact function and manufacturing technique.

Although this publication deals with two poorly understood topics of Canadian Arctic prehistory, the human occupation of Banks Island and the cultural significance of microblades, it does not add to our substantive knowledge of either topic. It may be that the author was handicapped both by the stated goals of the original project and by the delay in completing analyses of other highly pertinent data. The analysis of manufacture and use lacks the requisite experimental basis, and the investigation of intra-site variability rests on the unsupported hypothesis that "excavation" technique affects the size of artifacts recovered at microlithic sites. However, Owen does present well-organized qualitative and quantitative descriptions of microlithic artifacts, both in the

form of raw data and summary tables. This publication is a valuable contribution to the extant data base and is recommended to professional archaeologists for this reason.

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Response from the author:

It is always important to receive feedback on published work and I am indebted to Ms. Greaves for her thorough review. Her comments and criticisms will be helpful in further publications. My comments on the review are given below.

"Tables and figures would be easier to access if included in the text rather than at the end of the book." I personally feel that tables 2-15 are too long to include in the text. Excerpts from these tables are included in the text where necessary. Tables 1A-C may have been better placed in the text. It was, however, felt that the data could be used more efficiently for further reference if presented together than if scattered throughout the text. Photos, drawings and maps were reproduced with higher quality and more expensive techniques than the text. Placing them together helped reduce costs.

"References to figures would be clearer if artifacts were individually numbered." Artefacts are referred to by their catalogue number which includes the excavation area from which they came. Catalogue numbers were used so that future researchers could easily access the material. Since the catalogue numbers are quite long, the individual artefact number was not always given when referring to figures. The figures are, however, precisely labelled.

"Little information is provided on actual excavation technique (i.e. use of screens, size of screens, excavation tools). . . ." Information on the use of screens and the mesh size is noted on page 4. With the exception of the excavation tools used (which varied only between the original survey and the later Tübingen excavations), excavation technique was described. According to Prof. Müller-Beck, the Tübingen excavations in Umingmak were purposely carried out more precisely and carefully from year to year although the method of uncovering finds did not vary. The changes are reflected in the increasingly more precise collection and documentation techniques as well as in the number of cubic meters excavated per person per day (p. 34-35). Within IA1 this fell from 4.64 m³ in 1970 to 1.73 m³ in 1973 to 0.76 m³ in 1975. Other differences included the excavation of arbitrary levels in IA1 in 1970 as compared to the careful separation of archeological layers in later excavations (p. 2-3) and the sieving of some sediments.

"In 1975, all sediments were water sieved." This statement is incorrect (see pg. 4). The Tübingen excavations in Umingmak are complicated by the fact that excavation technique not only varied from year to year, but also from area to area (IA1, IA2, ID) within a given year. In 1975, no sediments from IA1 were sieved and only random samples from ID. Only in area IA2 were all sediments water sieved.

"In addition, the author admits to a problem in recognizing microblades but does not explain how this was resolved." In any artefact analysis there are always pieces that do not fit definitely into the given categories. There was little problem in sorting out the very regularly shaped microblades from the rest of the Umingmak artefacts as stated on page 6. When analyzing microblades and blades, however, there is always some overlap with parallel-sided flakes or problems with classifying fragments. Questionable pieces were not included in the analysis (page 6).

"Although the author states that the blades were probably produced by pressure, she gives no documentation for this statement. Since the reconstruction lacks an experimental basis, it remains hypothetical." As stated on page 25, "The parallel sides of the negatives on the core fragment and the small platforms, regular shape and parallel edges of the microblades themselves" were seen as evidence that they were produced with pressure. Extremely regular microblades like those from Umingmak have, as far as could be ascertained from the pertinent literature, only been produced with pressure. The microblades were shown to experienced flint knappers (M. Newcomer, D. Cahen and J.

Tixier) who were also of the opinion that they were produced with pressure, although none of them were able to reproduce similar ones. The reconstruction is certainly hypothetical, but so are most reconstructions of flint knapping techniques.

"Although previous work by the author and others had demonstrated that it was not possible to distinguish intentional from accidental breaks or break method on microblades, Owen again attempts this task for the Umingmak microblades and is unsuccessful." This is not true. At the time of this analysis (1981), the literature suggested that intentional and accidental breaks could be distinguished (see page 30). As part of the analysis of the Umingmak microblades I carried out a series of experiments on breaks. The results showed that it was not possible to distinguish intentional from accidental breaks or break methods. As these experiments were published in detail elsewhere, they were only summarized in this book, but they were a part of the Umingmak analysis and not previous work.

"One problem is that the actual differences are very small, ranging from 0.25mm to 1.25mm." Note: the differences actually range from 0.25 to 1.5 mm. Microblades from Arctic Small Tool tradition sites, with the exception of some Independence I collections are extremely small. Differences in the size of samples are therefore also very small. Cultural comparisons have nonetheless been based on similarly small differences. I, however, do not suggest that these differences are due to cultural differences. The smallness of the variations is one of my reasons for arguing that the effects of excavation technique on size are of importance. These differences were larger within the IA1 area than those between areas (ranging between 0.35 and 4.9 mm).

"In addition, the variation in length, which differs the most, is not significant according to the median test, while variation in thickness, which differs the least, is significant." In testing the significance of variations in measurements between samples, it is not the absolute difference that is important but the relation of the difference to the total range of measurements and their distribution. I suggest that a statistics book be consulted.

"Ridge blades, which are thicker and more numerous than "normal" microblades. . . ." Ridge blades are not more numerous than "normal" microblades, but make up only 11.2% of the total Umingmak sample (see pages 19, 96). They do, however, make up a higher percentage of the microblades from IA1. This may partially account for the differences in thickness between the excavation areas of IA1, ID and IA2 as I have stated in the text. It does not, however, play a role within IA1.

"If IA2 (1975) and ID (1973) are included, then the decrease in size does not correspond to year of excavation." The excavations in ID (1973) were carried out in a manner similar to that of IA1 1975. Comparisons of excavation technique were limited to IA1 to rule out the influence of other factors. In addition, no information was available on the number of cubic meters excavated per day per person from these excavation areas.

"In fact, according to chapter 2, excavation technique does not differ as much as recording technique and it is difficult to understand how this type of variation affects the size of artefacts recovered." The largest size variation is between the artefacts discovered during the TAYLOR/MCGHEE survey and those of the later Tübingen excavations, not within the Tübingen excavations. Unfortunately TAYLOR and MCGHEE did not publish a detailed description of the excavation techniques used in their survey. During their two week survey of the whole Shoron Lake area they did, however, sink 13 large test pits alone at Umingmak (see page 2). MCGHEE has recently told me that he alone sunk the test pits at Umingmak within a few days using a shovel. It is not difficult to understand how artefacts recovered during this quick survey differed in size from those of later excavations. The purpose of a survey is also different from that of an excavation. Excavation technique within the Tübingen excavations did not vary as drastically, but the number of cubic meters of sediment excavated per person per day in IA1 was five times higher in 1970 than in 1975 (see pages 34-35 and my comments in paragraph 3 above).

"A study to examine usewear under higher magnification (500×) is planned; inclusion of these results would have been a valuable addition to this investigation." A usewear analysis of the microblades at higher magnifications was already in progress at the time of publication. Preliminary results were not included in the publication because of problems with post-depositional surface modification on the Umingmak microblades and a growing scepticism of the method. To investigate these matters, I organized and chaired a conference on Technical Aspects of Microwear Analyses with G. Unrath in Tübingen in February 1985. The papers presented at this Conference (published as *Technical Aspects of Microwear Studies on Stone Tools*, Linda R. Owen and Günther Unrath (eds.), Tübingen, 1986) suggest that use-wear studies at higher magnifications are not as reliable as previously assumed. In a multi-analyst blind test of use-wear traces on experimental tools action/motion was correctly reconstructed in only 55% of all cases (48% specifically and 7% to the group level) and worked material determined 48% of the time (26% specifically, 24% to group

level) ("An Evaluation of Microwear Studies: A Multi-Analyst Approach" by Unrath, Owen, van Gijn, Moss, Plisson and Vaughan). Other articles discuss how chemicals in sediments and post-depositional movement can change and destroy use-wear polishes. I therefore doubt whether at this time a use-wear analysis at higher magnifications would be a valuable addition to the data presented.

"No evidence is presented to suggest that other archaeologists have excavated older sites more carefully or with a different technique than more recent sites. Even if the excavation or recording method is responsible for differences in microblade size noted at Umingmak, this conclusion cannot be generalized to the entire Arctic without substantial investigation." As stated on page 55, it was not possible to discuss the excavation techniques used at other Arctic sites as they are generally not included in site reports. Nowhere do I mean to suggest that excavation technique is responsible for all size differences in Arctic microblade samples. Only that comparisons of size attributes should only be made between similarly excavated samples.

Further research has been carried out since the completion of the Umingmak manuscript in 1981. On the basis of the analysis I received a two and a half year scholarship from the Volkswagenwerk Foundation to investigate microblade and blade technology and use in the North American Arctic and the Upper Paleolithic of Europe for my doctoral dissertation. The results will be published this year (see also *World Archaeology* 17(1) 1985). In the course of this analysis, I had the opportunity to analyze Arctic collections and to talk to Arctic archaeologists in Ottawa, Edmonton, Fairbanks, Anchorage, Washington D.C. and Copenhagen. 10,000 microblades and blades from over 65 sites were analyzed. In addition, refitting, work on use-wear analysis and experimentation were carried out. Unfortunately this time-consuming work was not possible within the Umingmak analysis.

This research has supported the belief that artefact size is easily affected by non-cultural factors of which excavation technique is only one. On the basis of this later research, I also feel that one of the most important findings of the Umingmak analysis was the method of platform edge preparation used in the production of the Umingmak Pre-Dorset microblades.

I am always interested in exchanging ideas on microblade and blade technology or on Arctic prehistory in general.

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ARCTIC WHALING. PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM: ARCTIC WHALING, FEBRUARY 1983. Edited by H.K. S'JACOB, K. SNOEIJING and R. VAUGHAN. Netherlands: Arctic Centre, University of Groningen, 1984. 191 p. Softbound. No price listed.

Arctic whaling has become a popular subject for scientists and lay people. The adventures and hardships of commercial and aboriginal whalers provide intrigue to the layperson who vicariously relives these events. The aboriginal culture that evolved around the hunt provides information to the anthropologist for understanding the operation of northern native societies. The products of the hunt (i.e., the whale catches) offer cetologists a vital source of data for understanding the biology of marine mammals. Because of the ever increasing pressure to exploit the arctic environment, it is important that laypeople and scientists understand the position of marine mammals in the culture of native societies and in the oceans. Failure to achieve this could jeopardize the viability of the native cultures and the marine mammals uniquely adapted to the arctic environment. This book attempts to convey the current knowledge on the people, marine mammals, and environment associated with arctic whaling.

The book is a compilation of eleven papers and a summary of a panel discussion on the conflict between commercial and aboriginal whaling. The papers address the arctic climate and sea ice; the biology and ecology of whales; the history of native, European, and North American whaling; and the archaeology of native whaling societies. The last technical paper examines current policies and catch quotas concerning exploited whale populations and the methods used to hunt them.